



Advancing Learning: An Opportunity and an Obligation

Report on 2017 and a roadmap for the future



No₂

Dear Colleagues:

Over this past year, VPTL completed our merger with the Stanford Center for Professional Development and became home to the new Stanford Center for Health Education. These changes gave us the opportunity to examine the questions that guide VPTL's work, thoughtfully garner input from colleagues and advisors from all seven schools, and reflect on how we can contribute to Stanford's future.

With new university leadership, 2017 was a year for the Stanford community to reflect on the University's enduring values: a commitment to make important contributions to society and to human well-being, and to be the "university of high degree" that our founders envisioned.

Inspired by Marc Tessier-Lavigne and Persis Drell's call to action, the university embarked on a collaborative journey that included students, faculty, staff, postdocs, and alumni. Together, we brainstormed innovative ideas as part of long-range planning for Stanford's future. I was struck by the interest in increasing access to Stanford, expanding our efforts around inclusivity, and responding to the rapid change underway in how and what students learn. In the VPTL office, we are preparing for the university-wide priorities that will emerge from the long-range planning effort.

Reflecting the broad range of campus interest in future teaching and learning, our strategic plan focuses on these three main areas:

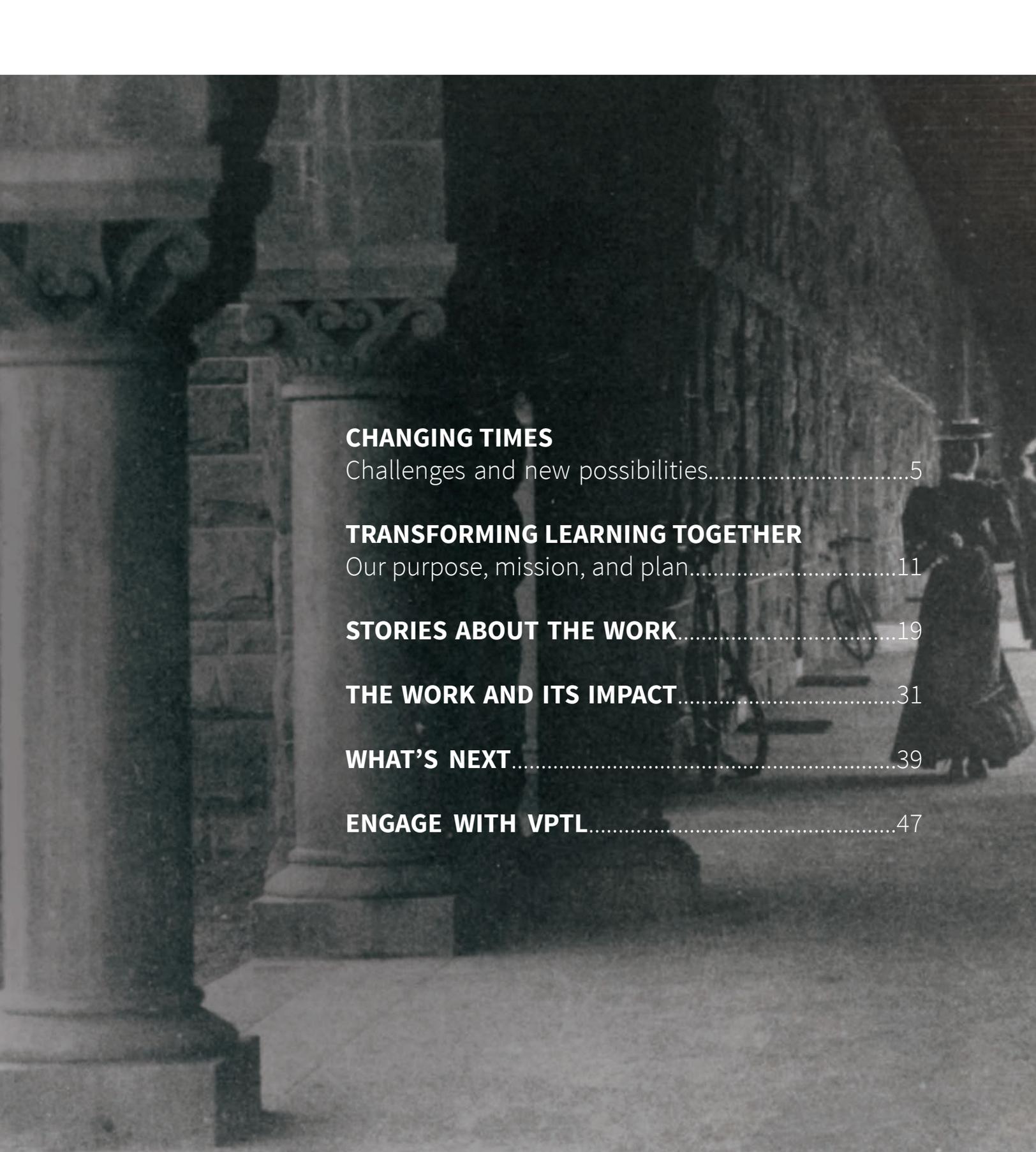
- Support for pedagogy, courses, and programs reaching residential, hybrid, and remote learners
- Planning, management, and support for the learning spaces, platforms, and tools of our evolving physical and virtual campus
- Liaison to academic research and evaluation, to connect our practice to research that informs VPTL's core programs and services

You will find descriptions of illustrative innovative programs and initiatives in these areas in this report.

I am pleased to thank the many colleagues advising us in our planning process and all of our collaborators for all the inspiring work you do. I look forward to more conversations in 2018. Please join us in the journey to transform learning.



John C. Mitchell
Vice Provost for Teaching & Learning



CHANGING TIMES

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Changing times

Challenges and new possibilities



The higher education landscape

Evident forces in the Information Age continue to affect Stanford and the ecosystem around us. As we build plans for the future, we recognize the changing nature of the higher education landscape in the United States and internationally. Here are a few themes that stand out:

THE CHANGING LIVES AND NEEDS OF LEARNERS

In a rapidly-evolving digital world that blurs the lines between formal education and informal learning, the lives and needs of students continue to change dramatically. Increased value is being placed on cognitive skills, adaptability, global awareness, cultural fluency, and lifelong learning.

THE EMERGING FOCUS ON LEARNERS AND LEARNING

An emerging focus on learner and learning, as opposed to teacher and teaching, represents a fundamental cultural shift necessary for appropriately measuring our success in teaching.

INCREASING CONCERN ABOUT THE VALUE OF EDUCATION

Increasing tuition, decreasing federal funding, ubiquity of content, and wage stagnation are forcing consumers to evaluate the worth of a university education.

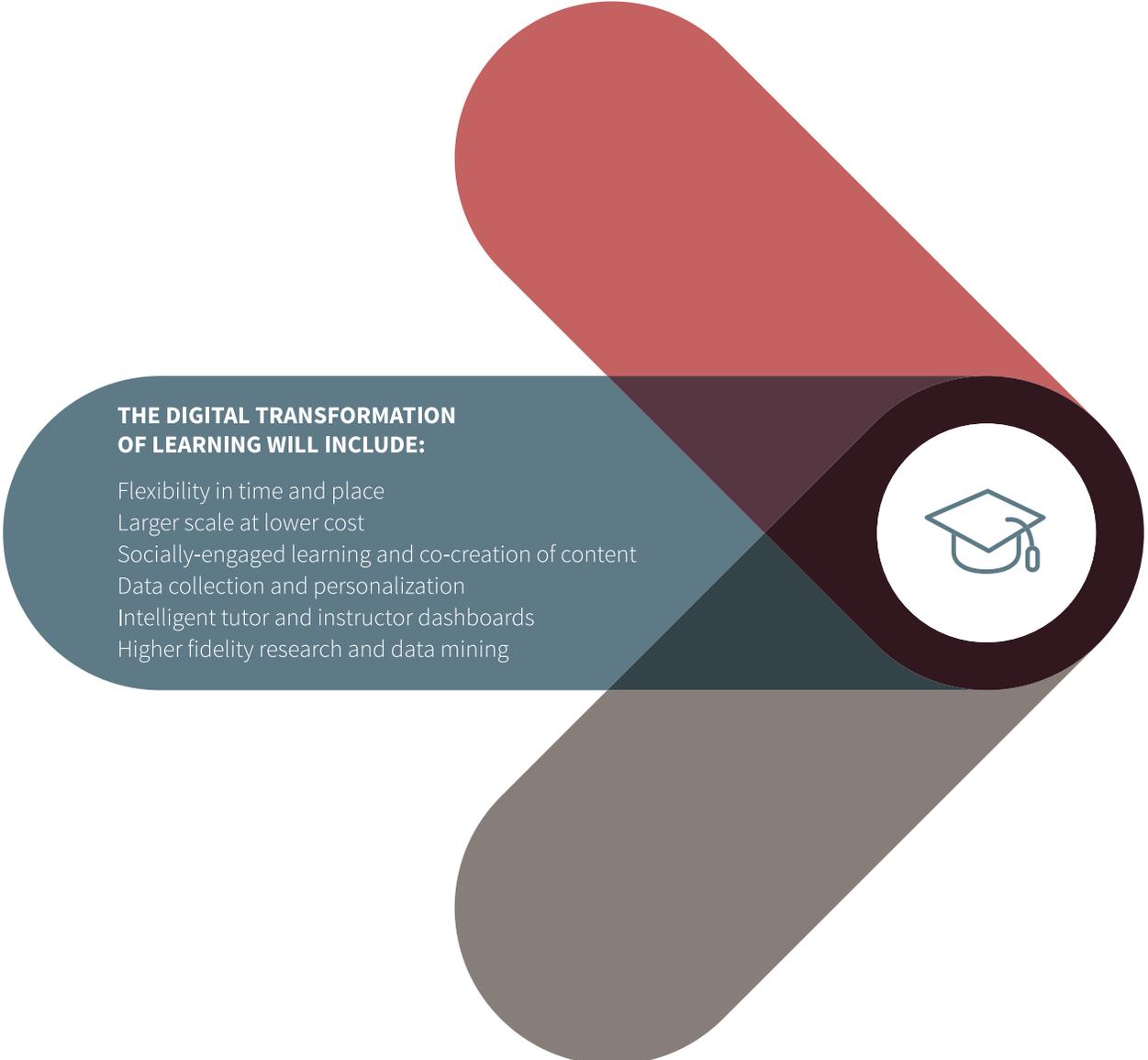
POPULATION GROWTH OUTPACES RESIDENTIAL CAPACITY

As population and costs increase, there is no proportional increase in physical global real estate. Residential experiences will be used strategically in combination with off-campus preparation, periods of site-specific immersive learning, and digitally-mediated engagement with peers and mentors away from campus.



Technology in the learning landscape

Digital technology, within the Information Age, has dramatically altered many aspects of human activity, including communication, accumulation and analysis of information, organizational behavior, politics, and the processes by which we think and learn.



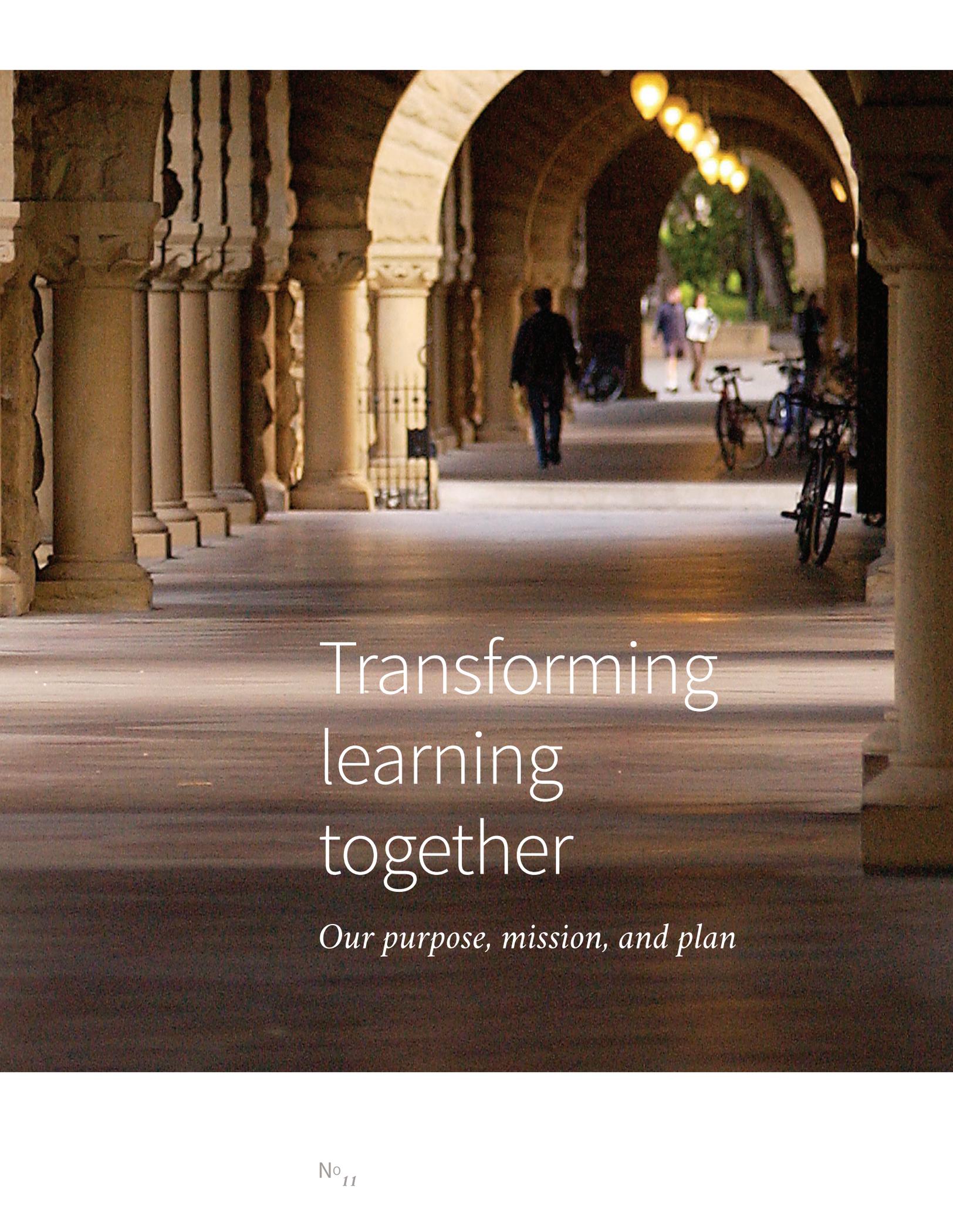
**THE DIGITAL TRANSFORMATION
OF LEARNING WILL INCLUDE:**

Flexibility in time and place
Larger scale at lower cost
Socially-engaged learning and co-creation of content
Data collection and personalization
Intelligent tutor and instructor dashboards
Higher fidelity research and data mining

We are moving from a physical campus to a more extensive, hybrid physical and virtual campus that involves technology-enhanced classrooms, digital platforms and tools for residential students, and many ways to engage digitally regardless of physical location. Digital touch points permeate every aspect of students' lives.

In the same way traditional industries, from airlines to agriculture to music, digitally transformed to improve the way people engage, so are Stanford educators leveraging new approaches to improve student learning outcomes.





Transforming
learning
together

Our purpose, mission, and plan



Our mission reflects campus priorities

VPTL's mission is to help Stanford invent the future research university through teaching and learning innovation for undergraduate, graduate, professional, and lifelong learning.

Our purpose

We are transforming learning together.





Questions guiding our work

How can we help Stanford...

ADVANCE PEDAGOGY AND LEARNING?

How might we increase the effectiveness of teaching and co-creation of knowledge by collaborating to help make teaching vibrant and informative for both instructors and students?

EQUIP TOMORROW'S STUDENTS?

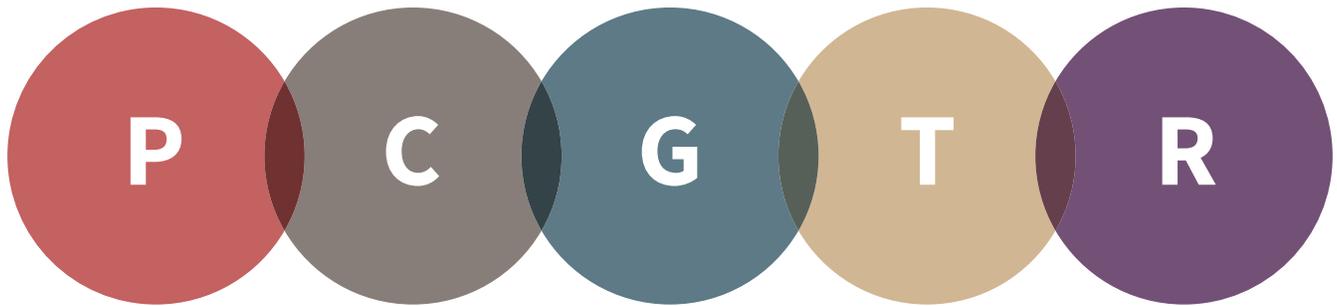
How might we best use student perspectives and learning behavior data to prepare current and future students with the tools and knowledge they need for a lifetime of learning?

DISSEMINATE KNOWLEDGE TO THE WORLD?

How can we be a generous provider of educational opportunity and facilitate efforts to share Stanford's research knowledge and specialized expertise broadly, through new models of learning and engagement?

Our plan

FIVE AREAS OF STRATEGIC FOCUS



PEDAGOGY AND LEARNING SUCCESS

Improve and advance pedagogy and learning success through faculty, instructor, and student programs and services

EXPANDED CREDIT AND DEGREE PROGRAMS

Support faculty teaching impact and learner opportunities through hybrid Stanford course credit and degrees

GLOBAL ENGAGEMENT

Support broader, non-degree educational engagement with departments, schools, and centers

LEARNING SPACES AND TOOLS

Build and maintain successful physical and virtual learning spaces and tools

RESEARCH COMMUNITY

Collaborate with schools and others to facilitate research, supporting success in teaching and learning on campus and beyond

“

I believe we have an obligation to use our educational content to enhance the learning experience of all — from the public to health promoters to practicing physicians — to make a significant impact in the improvement of global healthcare.

– Charles Prober, Senior Associate Vice Provost for Health Education for Stanford University, and Founding Director, Stanford Center for Health Education





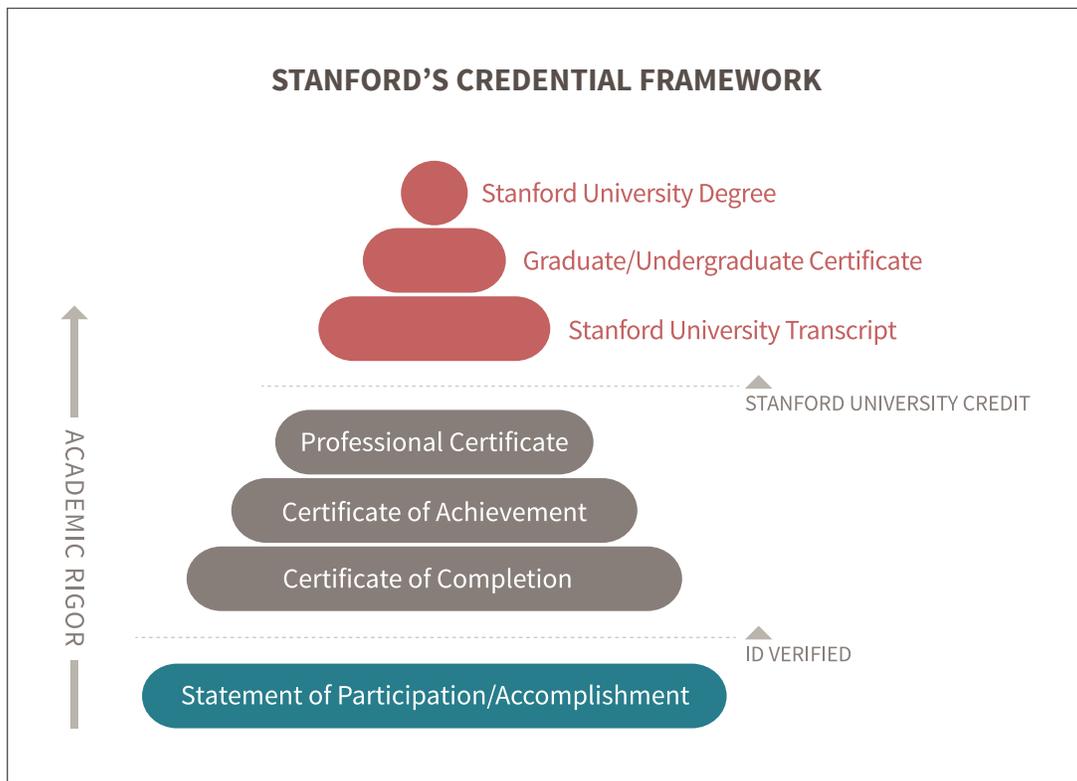
Stories about the work

CAMPUS-WIDE STORIES



Rationalizing credentials to nourish lifelong learning

Learners today want to earn credentials at almost every stage of their lives and careers. In response, universities have increased the number and diversity of credentialed learning opportunities they offer, but not always in a coordinated fashion. Stanford has rationalized the wide array of credentialed opportunities offered by the university’s seven schools through a campus-wide process facilitated by VPTL that included Stanford Faculty Senate sub-committees. Stanford’s credential framework features consistent educational pathways that range from free online courses to executive education programs, and from an accredited high school diploma to advanced online degrees — offering learners meaningful engagement with Stanford educators wherever they are in their life’s journey.





R

A robust infrastructure for educational data-sharing and governance

The emergence of online courses with massive enrollments has enabled an entirely new field of educational research: the analysis of educational data on a very large scale. This data-driven “science of learning” is being pioneered at Stanford thanks to a robust data-sharing platform developed by the VPTL-supported Center for Advanced Research through Online Learning (CAROL). CAROL, led by associate professor Mitchell Stevens, collects, stores, and manages instructional data from Stanford’s multiple instructional platforms, then makes it available to both local and international academic researchers. To date, CAROL has completed more than 100 data shares with academic researchers worldwide, sustaining a truly global and multidisciplinary scientific community.



T

A powerful new tool for student grading

A tool evaluated and supported by VPTL across multiple schools radically streamlined and improved how Stanford students' work is graded. Instructors in 68 Stanford courses now grade paper-based assignments and exams online, using easily-modified rubrics that offer high-quality, targeted feedback on student responses, and cutting grading times in half. The tool ensures consistent grading across multiple class sections and lets teaching staff view question- and rubric-level statistics to better understand student comprehension. The effort required extensive collaboration with faculty partners to evaluate, integrate, and implement the new technology and to ensure security and privacy for both students and instructors.



R

Enabling better learning about learning

Scholars associated with the Stanford Lytics Lab, directed by Professors John Mitchell, Mitchell Stevens, and Candace Thille, have advanced the science of learning through large-scale data analysis and the development of new educational technologies. In the past five years, lab-affiliated researchers have published more than 40 peer-reviewed articles in leading journals and conference proceedings, often in collaboration with VPTL colleagues. Lytics researchers are currently developing a body of experimentally-validated research that identifies targeted interventions most likely to improve student learning at scale. They are also seeking to identify design elements that make for more successful digital learning environments and exploring new methods and tools for teaching subjects as diverse as theorem proving, choreography, and thermodynamics.

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We have the capacity, the opportunity, and the responsibility to change the world... Our biggest danger is to be too incremental and not ambitious enough.

– *Stanford President Marc Tessier-Lavigne*

P

Earlier lab experiences for budding scientists and doctors

SCHOOL OF HUMANITIES & SCIENCES • VPTL COURSE DESIGN INSTITUTE

To foster first-year student interest in biology and to respond to increasing student interest in hands-on learning experiences, biology faculty Martha Cyert, Hunter Fraser, Deborah Gordon, Waheeda Khalfan, Christopher Lowe, Mary Beth Mudgett, and Tim Stearns collaborated with VPTL and created a new lab-based introductory biology class. The class, BIO60, is based on an exploration of infectious disease and encourages students to engage with scientific literature, design experiments, collaborate, and communicate what they've learned. Students now get the chance to “think like a biologist” from the start of their undergraduate careers.





Active learning in STEM

SCHOOL OF HUMANITIES & SCIENCES
SCIENCE & ENGINEERING FELLOWS PROGRAM

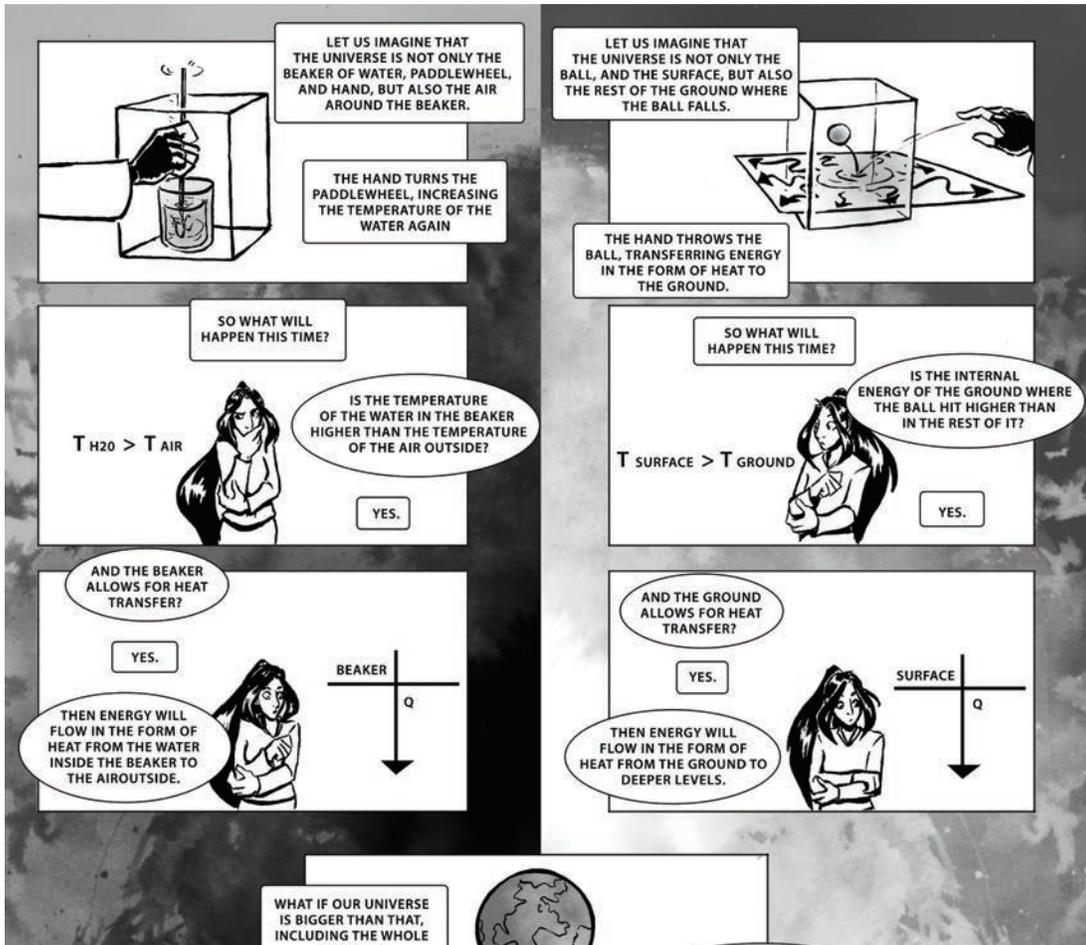
Traditional teaching techniques, such as lecturing, continue to dominate in most universities despite research showing that other methods can be much more effective. In collaboration with physicist and Nobel laureate Carl Wieman, VPTL is improving introductory STEM education at Stanford through workshops, events, and ongoing collaborations with STEM instructors in several Stanford departments. This work draws extensively upon Wieman's expertise in active learning and is now being instantiated in Stanford's new Science and Engineering Education Fellows (SEEF) program. SEEF is modeled after Wieman's successful Science Education Specialists program at the University of British Columbia. Fellows work with committed faculty to transition core courses from the conventional lecture model to problem-solving experiences that cultivate students' intellectual growth through engagement and practice.



Enriching general education in the UAE

SCHOOL OF ENGINEERING
VPTL PROFESSIONAL EDUCATION PROGRAM

As part of an important national innovation strategy, the United Arab Emirates (UAE) launched a large initiative to develop innovation talent across the nation's 79 degree-granting institutions. The Prime Minister's Office and the Ministry of Education turned to Stanford to create an undergraduate general education course on innovation and entrepreneurship, and to develop a large base of faculty with expertise to teach the course effectively. Co-academic directors Tom Byers and Pam Hinds, along with VPTL's Stanford Center for Professional Development and the Stanford Technology Ventures program, collaborated with the UAE on a multi-year, multi-component program. The program has empowered UAE faculty members, students, and others within government and industry to cultivate a more innovative mindset and drive concrete action.



T

A novel approach to thermodynamics

SCHOOL OF ENGINEERING • VPTL INNOVATION GRANT PROGRAM

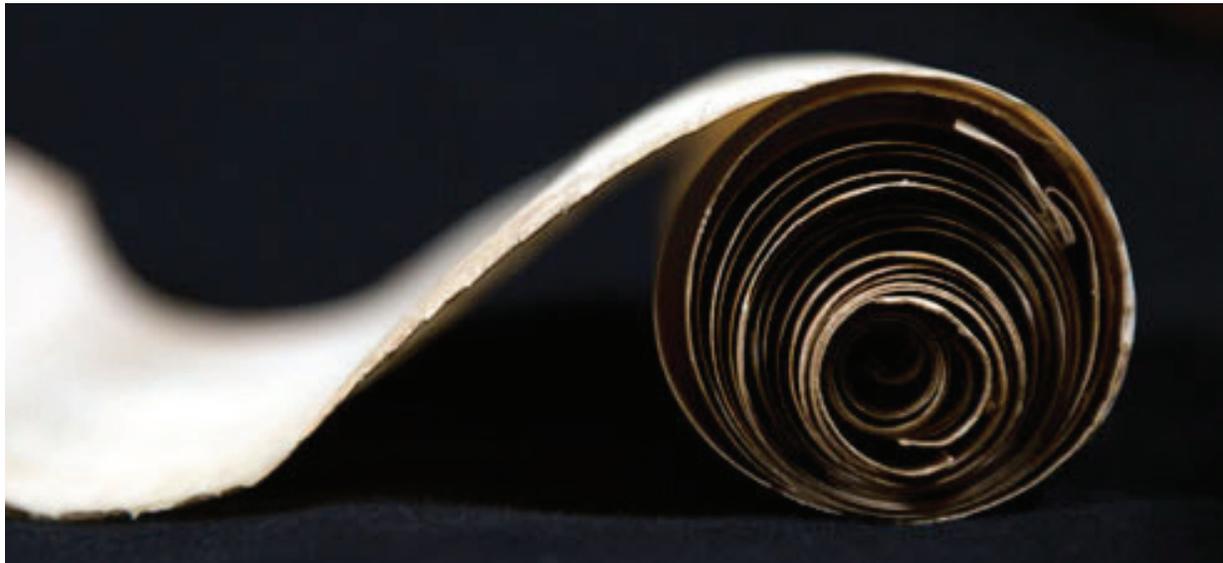
Thermodynamics is a foundational topic in science and engineering, but little research exists on the best way to teach it. A team led by materials science Professor Alberto Salleo recently tested a new approach by creating a graphic novel to demonstrate key thermodynamic principles in motivationally-engaging and pedagogically-effective ways. The novel uses a fictional storyline and professionally drawn diagrams to help students confront and move beyond common misconceptions about the laws of thermodynamics. Salleo’s course also utilizes targeted video lectures and online assessments to help students review core concepts and practice outside of class.



Making Stanford's treasures accessible to all

SCHOOL OF HUMANITIES & SCIENCES • VPTL INNOVATION GRANT PROGRAM

Interacting with the personal archives of people who shaped literary, scientific, and political history is a uniquely informative and inspiring experience. Stanford's libraries safeguard a rich trove of such materials, yet in the past, researchers have had to visit the university's campus to study these documents. By supporting Stanford Libraries' efforts to digitize treasures that range from medieval manuscripts to Martin Luther King, Jr.'s papers, VPTL has helped to make these materials broadly available, and has enabled the production of more thorough and reliable research.





Redesigning science learning spaces

SCHOOL OF HUMANITIES & SCIENCES • VPTL CLASSROOM DESIGN

When Stanford's Sapp Center for Science Teaching and Learning opened this academic year, the instructional spaces unveiled the Department of Chemistry's thoughtful planning and promotion of active learning. VPTL assisted faculty by providing architectural alternatives for the spaces to better support student engagement. VPTL also managed the implementation of an approach, agreed upon by the faculty, that modified classrooms to support small group work, including novel whiteboard configurations. In conjunction with these classroom design efforts, further collaboration with instructors resulted in the implementation of a new online grading service to support more efficient grading, and established an ongoing research effort to understand how well the revised classroom experiences are working.

“

...live such lives that it will be said of you that you are true to the best you know. I hope your lives will be truly earnest, not in the sense of going forth to acquire great wealth and great names; but to be conscientious workers, to be helpful to others, to send cheer and goodwill to those who need lifting up...

– Jane Stanford



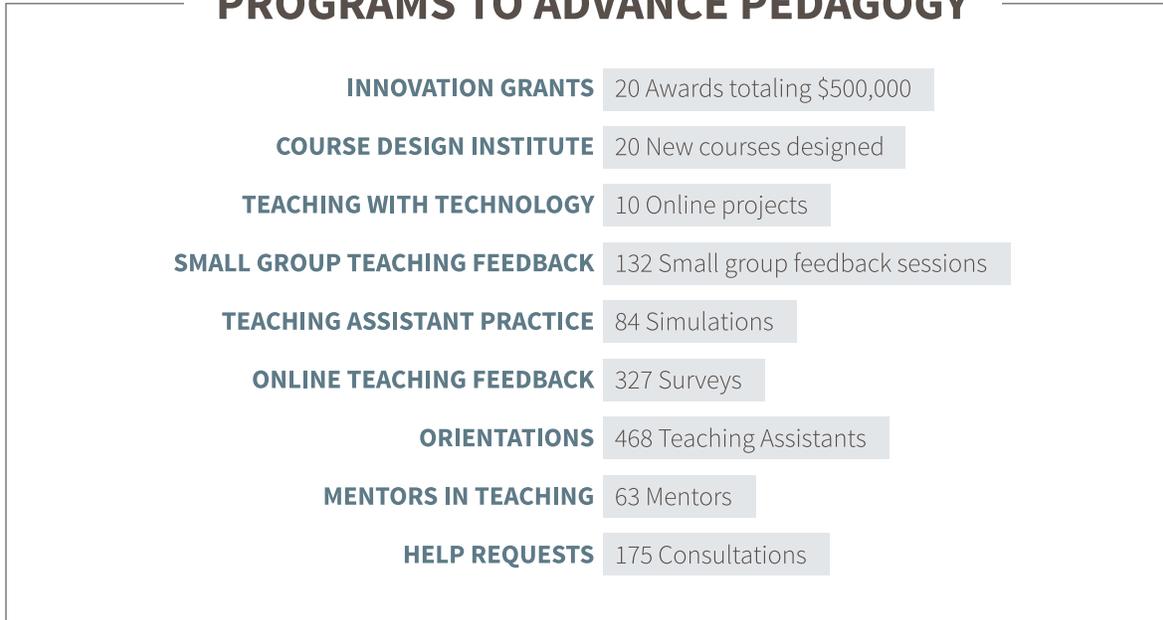


The work and its impact

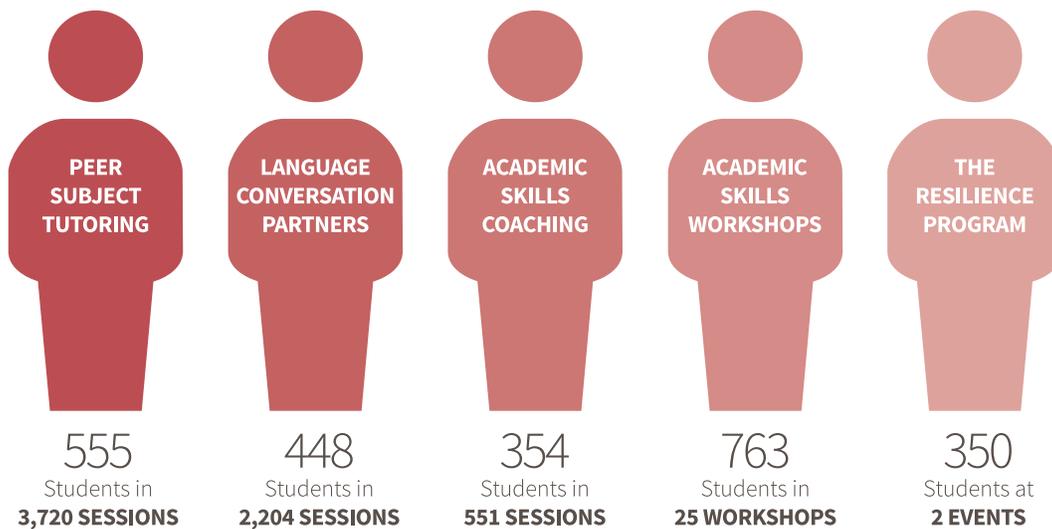
Stanford campus community

Academic year 2016-17

PROGRAMS TO ADVANCE PEDAGOGY



PROGRAMS TO SUPPORT LEARNING SUCCESS





SERVICES FOR LEARNING SPACES

UNIVERSITY CLASSROOMS

186

Classrooms equipped and maintained

INFORMAL LEARNING SPACES

100

Spaces supported

LATHROP LEARNING HUB

24-hour study area
Tech desk
Digital Language Lab



PROGRAMS AND SERVICES FOR LEARNING TOOLS

LEARNING SUPPORT VIA CANVAS

5,500

Courses

CONSULTATIONS

160

Instructors

ONLINE COURSES

13,200

Students

ACADEMIC TECHNOLOGY EXPO

225

Participants from 8 local universities

LANGUAGE TESTING

2,000

Student tests



PROGRAMS TO SUPPORT STUDENT TECHNOLOGY

COURSES

342

Students enrolled

WORKSHOPS

201

Students in 11 workshops

PEER SUPPORT

13,900

Tickets solved by 105 students

Degrees, credit, and global engagement

Academic year 2016-17



ENROLLED



EARNED



MASTER OF SCIENCE

Hybrid degree programs: **8**

Online degree programs: **3**

200+

Students

66

Degrees



GRADUATE

Certificate programs: **30**

Online courses: **180**

500+

Students

173

Certificates



PROFESSIONAL

Certificate programs: **7**

In-person programs: **44**

Online courses: **68**

21,600+

Learners

3,000+

Certificates



MOOCS

Online courses: **73**

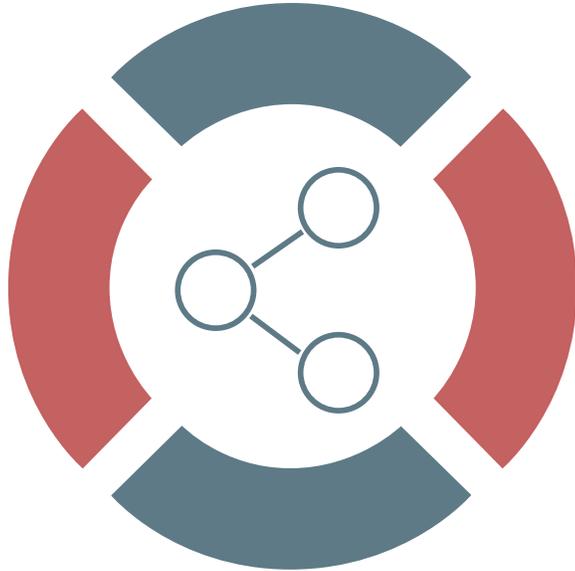
3,000,000+

Learners

54,000+

Completions

Research community

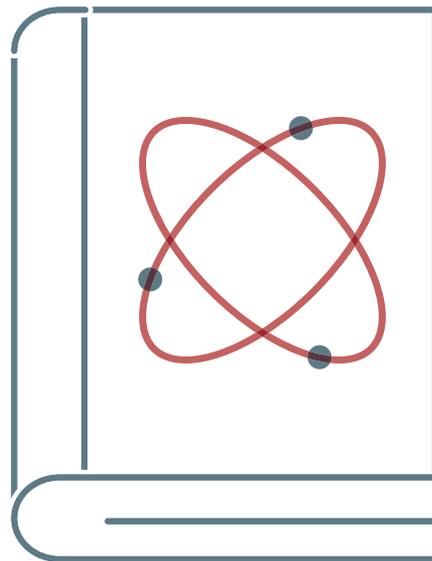


136

DATA SHARES
with academic
researchers

42

PAPERS PUBLISHED
using MOOC data



(Cumulative since 2012)

Funding model



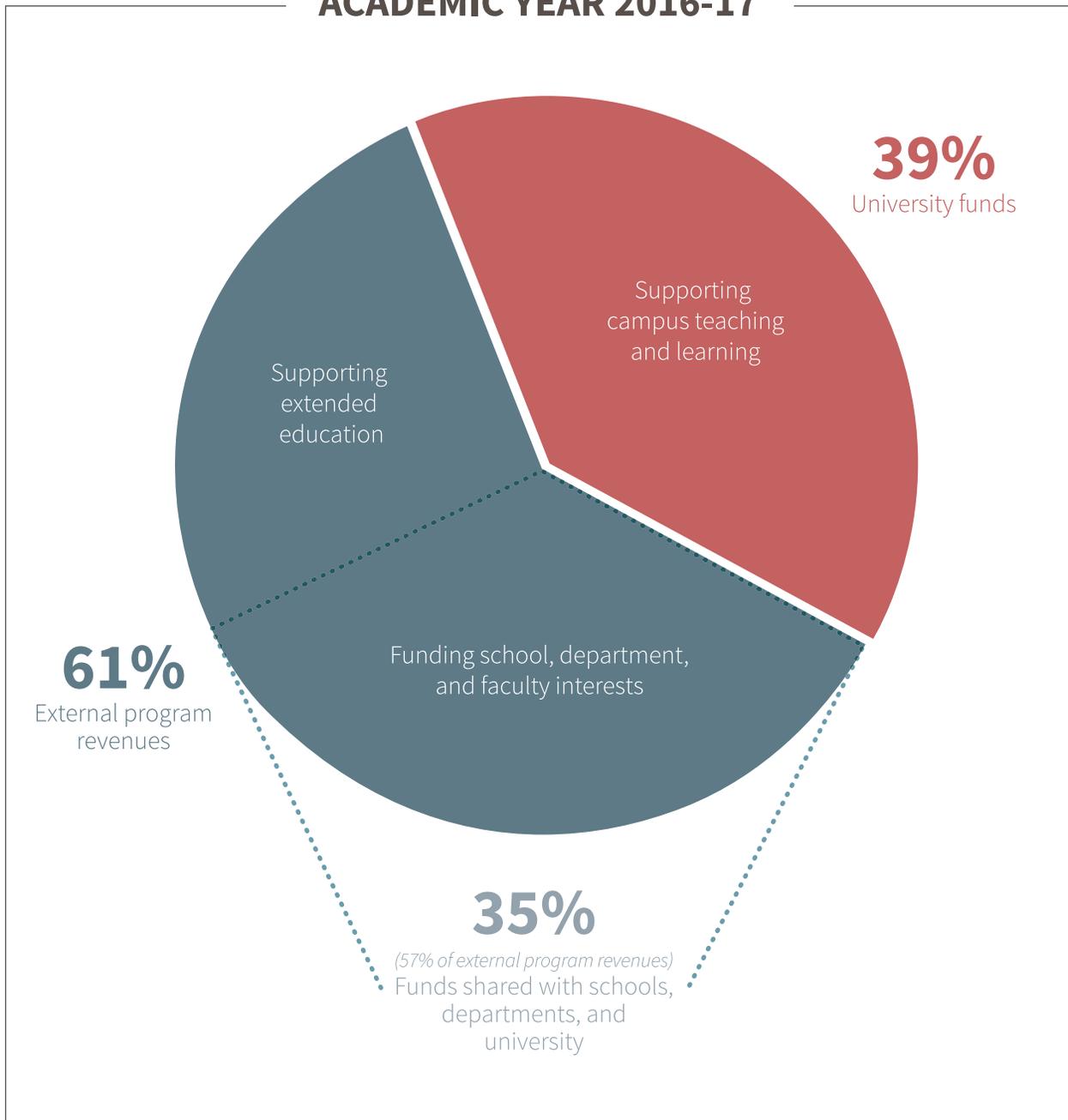
Funds which support the Office of the Vice Provost for Teaching and Learning include two primary sources: university funds and external program revenues.

University funds comprise nearly two-fifths of the overall VPTL budget and are directed toward campus teaching and learning services. Seventy percent of these funds supports programs and services for instructors and students. The remaining thirty percent of these funds supports learning spaces and tools for Stanford's evolving physical and virtual campus.

Gross revenue from extended learning courses and programs comprises three-fifths of VPTL's overall budget. Seventy percent of external program revenues are generated by professional courses and certificate programs; thirty percent represents tuition from credit and degree programs.

VPTL funding

ACADEMIC YEAR 2016-17



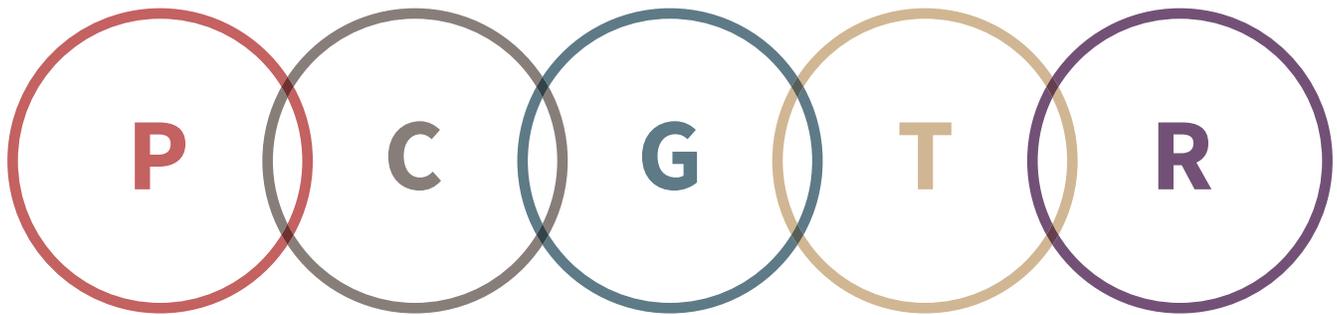




What's next

Long-range planning submissions

FIVE AREAS OF STRATEGIC FOCUS



PEDAGOGY AND LEARNING SUCCESS

Transform the learning experience for Stanford undergraduates

EXPANDED CREDIT AND DEGREE PROGRAMS

Double the total number of Stanford degrees

GLOBAL ENGAGEMENT

Pioneer the new global university

LEARNING SPACES AND TOOLS

Develop new classrooms to pilot new forms of learning: Learning Commons

RESEARCH COMMUNITY

Foster a research community: Learn-X and The Stanford Center for Learning and Research Practice



New thinking
is taking us
to new places



Stanford Master's degrees, anytime, anywhere

The massive increase in global demand for learning that powered the rise of MOOCs is also fueling unprecedented interest in high-quality, advanced academic degrees. To accommodate this demand, multiple Stanford academic departments are working with VPTL to develop new online-only and hybrid Master's degree programs that are unconstrained by physical limitations that otherwise limit the number of students the university can reach. Drawing on the School of Engineering's five decades of experience in remote learning, VPTL now acts as a facilitator for, and collaborator with, any department interested in creating Master's degree programs that offer students more flexibility in time and space for learning.

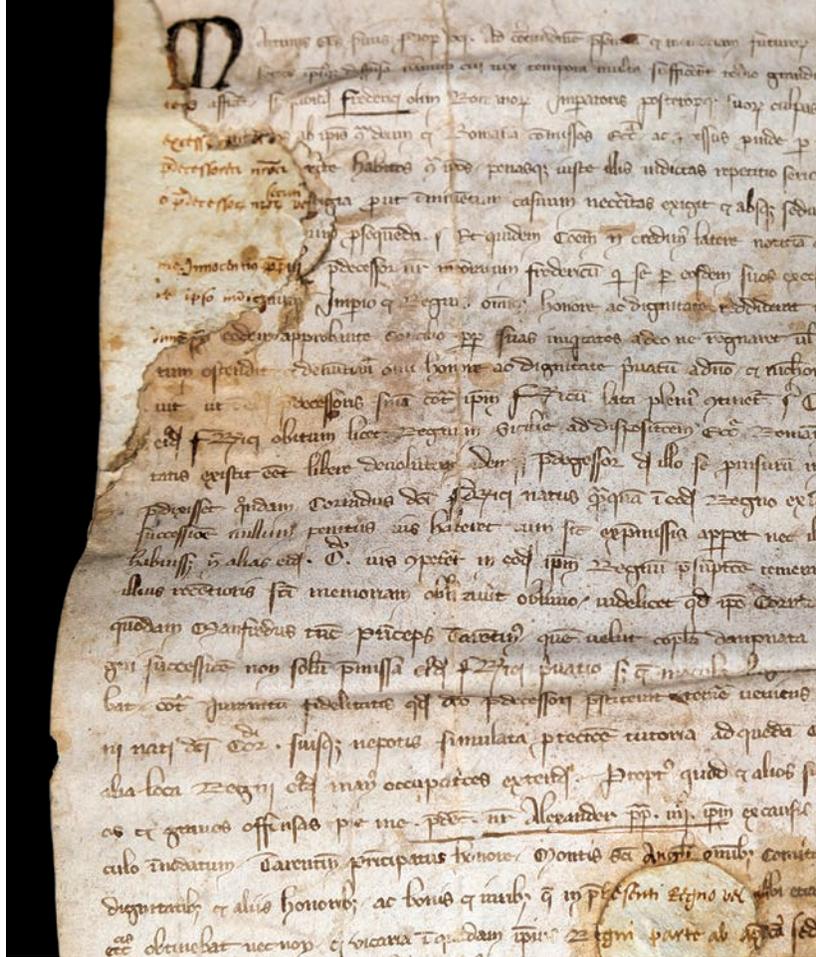


Digital MEdIC

Stanford is accelerating global access to health education by combining its rich experience in technology and digital learning with its leadership in medical care, teaching, and research. This effort is being led by the new Stanford Center for Health Education (SCHE), a partnership between Stanford's School of Medicine and VPTL, directed by Professor Charles Prober, MD. One of its core programs is the Digital Medical Education International Collaborative (Digital MEdIC), which is currently being implemented in India and South Africa. Participants in Digital MEdIC develop and share high quality, accessible, and customized healthcare learning experiences that are openly available online to anyone, anywhere, anytime.



- PEDAGOGY AND LEARNING SUCCESS
- EXPANDED CREDIT AND DEGREE PROGRAMS
- GLOBAL ENGAGEMENT
- LEARNING SPACES AND TOOLS
- RESEARCH COMMUNITY



Digging Deeper 3: Medieval Handwriting

By leveraging technical advances pioneered at Stanford, including a transcription tool developed by VPTL for customized input of medieval characters, Stanford researchers are advancing our understanding of medieval history while helping students around the world gain essential skills in literary and historical inquiry. The technology is being used in professor Elaine Treharne's *Digging Deeper 3* class to teach paleography, the study of ancient and historical handwriting, which has traditionally been taught only within the confines of library special collections. *Digging Deeper 3* provides a framework for teaching paleography to a worldwide community of learners, while also expanding access for Stanford's on-campus students.



American Prophet: The Inner Life and Global Vision of Martin Luther King, Jr.

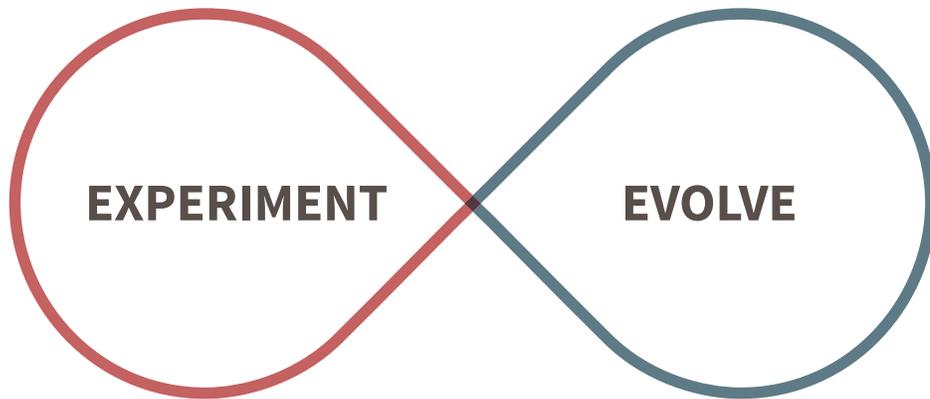
In his popular, free online course, *American Prophet*, history professor Clayborne Carson offers new insights into the life experiences and continuing significance of Martin Luther King, Jr.

American Prophet reveals the inner life of King through direct engagement with his writings and speeches. With VPTL support, Carson visited key locations in King's life to help contextualize his writings. The expanded MOOC uses best practices in online learning and employs new digital tools that let learners better investigate documents, timelines, and maps.





Engage with VPTL



The Learning Design Lab

The Learning Design Lab is a virtual place of ideation. Faculty are encouraged to pitch new ideas seeking VPTL funding, and together we move through a process of iterative experimentation. Outcomes are assessed and successful concepts are put into practice.

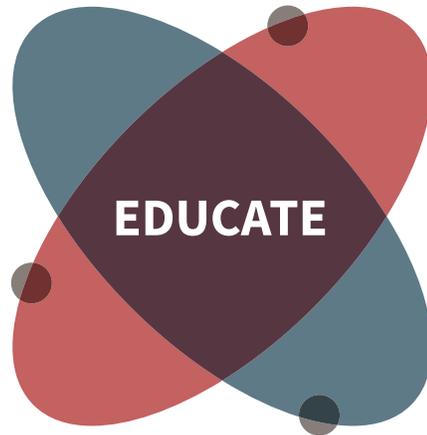
The Learning Design Practice

The Learning Design Practice hosts both a suite of services and recommended practices for a variety of topics under the umbrella of teaching and learning. The suite of recommended practices is an ever-evolving set of well-researched, well-documented approaches for reshaping the student experience.

Engage in The Lab and The Practice

Consult with VPTL to:

- Design a course at the Course Design Institute
- Create a novel degree program with support from an Innovation Grant
- Incorporate technology into a course via Teaching with Technology Workshops
- Build a new professional certificate or MOOC
- Learn to flip a class
- Turn mid-quarter and small group feedback into an actionable plan
- Encourage TAs to become better instructors through Orientation, Mentors in Teaching, and simulations
- Pilot a new digital tool through the Academic Technology Solutions Lab
- Design new classrooms optimized for active learning



Stanford Online

As a part of VPTL, Stanford Online provides learning opportunities to the public in conjunction with many of the university's schools and departments. Through free online courses, graduate and professional certificates, advanced degrees, and executive education programs, we are facilitating extended and meaningful engagement with Stanford faculty and their research, for learners of different ages, regions, and backgrounds throughout many stages of their lives and careers.

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Our mission as a university depends upon the presence and participation of people from all over the world, from all walks of life.

*– President Marc Tessier-Lavigne
and Provost Persis Drell*



Stanford | VPTL
Transforming Learning Together

GET STARTED

vptl.stanford.edu/getting-started-vptl

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