How might we survive and thrive in this shift?

“Punctuated Equilibrium”

Source: http://anthro.palomar.edu/synthetic/synth_9.htm
If we were designing post-secondary education for this moment in history what would it look like?
“The University as a Design Problem”
Profs. Ann Pendleton Jullian and Randy Bass

2030: Designing for context not content

What will the conditions of knowledge, technology, learning and work be in 15 years?

What kind of graduate would we want to produce?
Dancing with Robots
Human Skills for Computerized Work
by Frank Levy and Richard J. Murnane

LEARN

third way
fresh thinking
NEXT
Figure 3: Index of Changing Work Tasks in the U.S. Economy 1960-2009

Levy and Murnane, *Dancing with Robots*. 
“_________ is helping me become an agent of positive change.”
Knowledge of a domain

Knowledge of the world

Knowledge of yourself

Heidi Elmendorf, Ph.D.
Biology, Georgetown
Signature paradigm for learning in the 21st century?

The space of ... formation, transformation and whole student development
The great tension of our time in education is between integration and dis-integration.
Educating the whole person?

Knowledge + Skills + Dispositions (+ Values)

Dispositions:
- Learning to learn
- Critical thinking
- Creativity
- Curiosity
- Resilience
- Empathy
- Humility
- Ethical Judgment

Striving to cultivate a balanced person, with intellectual, affective, imaginative and reflective capacities.

“HARD SKILLS”
- Design environments where they are more likely to be cultivated.
- Unscripted contexts, guided inquiry and experience.
- “High-impact practices.”
Purdue-Gallop Poll on Engaged Work and Flourishing

Two most important predictors of success:

1) Adult mentor who cared about you
2) Sustained project
Purdue-Gallop Poll on Engaged Work and Flourishing

64% I had a professor who made me excited about learning.

27% Professor cared about me as a person.

22% A mentor who encouraged my goals and dreams.

14% had all three
Purdue-Gallop Poll on Engaged Work and Flourishing

32% A long term project that took a semester or more to complete.

30% Internship or job where applied learning.

20% Extremely involved in extracurricular activities or organizations.

%6 of all graduates
If we were designing post-secondary education for this moment in history what would it look like?

The Design Question
Signature paradigm for learning in the 21st century?

The space of ... formation, transformation and whole student development
VALUES

Excellence
We seek to challenge our students and educate them to the highest standards. To that end, we commit ourselves to providing excellent teaching, programs and services that are attained through self-reflection, evaluation and evidence-based inquiry.

Collaboration
Recognizing that support for student learning engages us in diverse and multiple ways, we value a community in which our members feel encouraged to share their experiences, insights, knowledge and skills so as to nourish and enrich the learning environment. We affirm that the College, as a community, is strengthened by the participation and representation of all its members in its governance.

Innovation and Creativity
We promote innovation and creativity that acknowledge both success and failure and build upon authentic, rich and dynamic learning experiences, inside and outside the classroom, to provide cutting-edge pedagogical and technological approaches to teaching and learning.

Well-being for All
We cultivate a healthy and inclusive learning and working environment in which all members of our community feel respected, valued and supported in the pursuit of their personal and professional goals. We aim to promote long-term health and well-being for all, sustainably.
GRADUATE PROFILE OUTCOMES

Learning to learn
Students will become active and engaged participants in their own learning through the effective use of learning and self-motivation strategies to enable them to achieve desired educational results.

Mastery of Program Competencies
Students will demonstrate the skills, knowledge and attitudes as expressed in the competencies of their program.

Communication
Students will demonstrate effective knowledge and skills in reading, writing, speaking, listening, and the presentation and delivery of information – using a variety of platforms including relevant software applications – in English and French.

Critical thinking, problem-solving skills and creativity
Students will be able to collect, organise and evaluate information from a variety of sources including electronic and web-based sources, and analyse and synthesize relevant information to draw informed conclusions and make judgments. Students will develop problem-solving skills in which they implement a strategy to answer an open-ended question or achieve a desired outcome. Students will demonstrate creative thinking by combining ideas or producing works in original ways.

Teamwork and leadership skills
Students will know how to collaborate with others, face-to-face and virtually, toward the setting of goals and priorities and implementing the means to achieve them. Students will learn to manage interpersonal relationships, resolve conflicts and assume responsibility for their own actions.

Quantitative literacy
Students will be at ease in working with, understanding and presenting numerical data using relevant software applications and possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday situations.

Health and well-being
Students will understand lifestyle choices that contribute to sustained health and well-being.

Ethical understanding and behaviour
Students will practise academic integrity and demonstrate ethical behaviour appropriate to citizenship in a democratic society.

Social responsibility and community engagement
Students will develop an informed concern for the larger good, appreciate social and cultural diversity, respect the values of others and act responsibly towards the environment. Students will be encouraged to make a difference in the quality of life of their communities through both political and non-political processes.
Three Models for Integration:
What is the institution’s responsibility to model and enable integration?

- Problem-based learning community
- Integrative ePortfolios
- Course-embedded Undergraduate Research
Three Models for Integration:
What is the institution’s responsibility to model and enable integration?

Problem-based learning community

Superstructure to enable faculty and students to make connections.

Integrative ePortfolios

Course-embedded Undergraduate Research
Create a context for innovation:

- top down permission
- + grass roots creativity
- + R&D mechanism (with authority to clear obstacles)

Rule #1: Every project we support has to break at least one rule.
Generate variations on our model through experimentation.

- Build on what we do well.
- Aim for small game-changing pilots.
- Open up a spirit of innovation across the campus.
  Embrace and support innovation everywhere on campus.
CREATE YOUR CORE

The 2017-2018 Core Pathway on Climate Change
Why Corepathways?

**Purposeful**
The primacy of climate change as one of the major existential threats of our era calls us to respond to its dangers with urgency and purpose. The core pathway gives you the chance to rise to this challenge together with mentors and peers.

**Interdisciplinary**
The complexity of climate change invites us to address its causes and consequences through concerted methods of inquiry. This rich collection of interdisciplinary offerings from Environmental Sciences, History, Humanities, Philosophy, and Theology will allow you to do just that.

**Self-Directed**
The core pathway offers you a space to navigate your core and elective requirements with autonomy and flexibility. Fulfill two core requirements; one core requirement and one elective requirement, or two elective requirements.
Theology:
Theology of the Environment

Philosophy:
Climate Change and Global Justice

History:
The Little Ice Age: Volcanoes and Crisis in the Premodern World

Humanities:
Literature and Environmental Crisis

Science:
Physics of Climate Change
Year One

MODULE A: SCIENCE - PLANTS, PEOPLE, AND CLIMATE

MODULE B: HUMANITIES - LITERATURE AND ENVIRONMENTAL CRISIS

MODULE C: HUMANITIES - GENRES OF THE ANTHROPOCENE

MODULE D: THEOLOGY - THE HUMAN PLACE IN THE COSMOS

Year Two

MODULE A (Y2): SCIENCE

MODULE B (Y2): PHILOSOPHY

MODULE C (Y2): THEOLOGY

MODULE D (Y2): HISTORY
Core Pathway

- Theology: 7 week modules, 1.5 credits each
- Philosophy: 7 week modules, 1.5 credits each
- Science: 7 week modules, 1.5 credits each
- History: 7 week modules, 1.5 credits each
- Humanities: 7 week modules, 1.5 credits each

Integrative Week
- Week 3: Shared case / problem as touchstone
- Week 13: Integrative Week

Virtual / Digital Commons
Core Pathway

- Theology
  - 7 week modules
  - 1.5 credits each

- Philosophy
  - 7 week modules
  - 1.5 credits each

- Science
  - 7 week modules
  - 1.5 credits each

- History
  - 7 week modules
  - 1.5 credits each

- Humanities
  - 7 week modules
  - 1.5 credits each

Integrative Week
- Week 3
- Week 13

Shared case / problem as touchstone

Virtual / Digital Commons
Three Models for Integration:
What is the institution’s responsibility to model and enable integration?

Problem-based learning community

What is this case a case of?

- Taking responsibility for scaffolding integration
- Balance between disciplinary teaching and an integrative structure
- Platform for innovation that fits current structures
“The Imprint of Integration”
Three Models for Integration:
What is the institution’s responsibility to model and enable integration?

Problem-based learning community

*Superstructure to enable faculty and students to make connections.*

Integrative ePortfolios

*Platform for students to holistically connect the parts of their education.*

Course-embedded Undergraduate Research
ePortfolio Initiatives
Make Student Learning Visible

ePortfolio initiatives support reflection, social pedagogy, and deep learning.

ePortfolios help students reflect on and connect their learning across experiences. Advancing higher order thinking and integrative learning, the connective ePortfolio helps students construct purposeful identities as learners.
Overview

Designed for educational innovators, the Catalyst site showcases field-tested ePortfolio resources for building student success, supporting outcomes assessment, and sparking institutional change.

Site Overview

Catalyst for Learning offers resources and analysis that spotlight the effective use of ePortfolio to advance student, faculty, and institutional learning. Drawing on the work of skilled leadership teams on 24 diverse campuses, Catalyst makes the case for ePortfolio with a distinctive collection of linked model practices, data on impact, and original research on

The C2L Hypothesis

Why ePortfolio?

The Catalyst Framework

Inquiry, Reflection, and Integration

Campus Stories & Profiles

- Outcomes Assessment Stories
- Professional Development Stories
- Scaling Up Stories
- Technology Stories
- Campus Profiles
What Difference does ePortfolio Make?

C2L evidence supports 3 preliminary claims

Sophisticated ePortfolio initiatives:

1. Advance Student Learning & Success
2. Make Student Learning Visible
3. Catalyze Institutional Change
ePortfolio is uniquely Learner-Centered. Reflection builds Formation, Identity Dispositions.
Addressing the Whole Student

Purposeful Self-Authorship

Formal Academic Curriculum

Connecting w/ Faculty & Students

Learning Across Disciplines

Advisement & Academic Planning

Learning Across Semesters

External Audiences

Co-Curricular & Lived Experiences

Students’ Integrative ePortfolio Practice
Claim #1: ePortfolio initiatives advance student learning & success. Helping students reflect on & connect their learning across academic, co-curricular and community-based learning experiences, sophisticated ePortfolio practices correlate with higher levels of student success, as measured by pass rates, GPA and retention.

LaGuardia CC High Pass Rates (C & up)

- ePortfolio Courses: 58.3%
- Comparison Courses: 49.4%

2009-10 Academic Year
ePortfolio was introduced into a required first semester “Mission” course in 2008-9, and student performance improved.

<table>
<thead>
<tr>
<th></th>
<th>Pre ePortfolio (2007-8)</th>
<th>Post ePortfolio 2009-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPA in Mission Course</td>
<td>B (3.213)</td>
<td>B+ (3.508)</td>
</tr>
<tr>
<td>GPA in all first semester courses</td>
<td>B- (2.933)</td>
<td>B (3.095)</td>
</tr>
</tbody>
</table>
ePortfolio integrated into Metro Health Academies, an SFSU learning community project for high-risk students

<table>
<thead>
<tr>
<th></th>
<th>Metro Academy, First Year/First Time Students</th>
<th>All SFSU First Year/First Time Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Yr Retention Rate</td>
<td>90.0%</td>
<td>79.3%</td>
</tr>
<tr>
<td>3 Yr Retention Rate</td>
<td>79.0%</td>
<td>60.0%</td>
</tr>
<tr>
<td>4 Yr Grad’n Rate</td>
<td>24.6%</td>
<td>14.9%</td>
</tr>
</tbody>
</table>
Spring to Fall Retention Rates

- No ePortfolio Courses: 52.7%
- 1 ePortfolio Course: 60.9%
- 2 ePortfolio Courses: 66.2%
- 3 ePortfolio Courses: 71.4%
<table>
<thead>
<tr>
<th>Building my ePortfolio</th>
<th>Agree/Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helped me make connections between ideas</td>
<td>75.6%</td>
</tr>
<tr>
<td>Helped me think more deeply about course content</td>
<td>64.4%</td>
</tr>
<tr>
<td>Allowed me to be more aware of my growth &amp; development as a learner</td>
<td>69.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>My (ePortfolio-enhanced) course engaged me in...</th>
<th>Quite a Bit/Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synthesizing &amp; organizing ideas, information or experiences in new ways</td>
<td>83.1%</td>
</tr>
<tr>
<td>Applying theories or concepts to practical problems or in new situations</td>
<td>77.2%</td>
</tr>
<tr>
<td>My course contributed to my knowledge, skills and personal development in understanding myself</td>
<td>78.6%</td>
</tr>
</tbody>
</table>

Core Survey, Connect to Learning Project (FIPSE, Making Connections National Resource Center, LaGuardia CC)
ePortfolio as a high-impact practice
ePortfolio as a meta high-impact practice

First Year Experience

Internships

Capstone

Undergraduate Research

Service learning
“Curated [ePortfolios] are ideal venues in which to showcase the work that results from student engagement with HIPs... they allow student work to escape the confines of a discrete educational event and formally intersect with the broader range of curricular, co-curricular and life experiences that define what it means to be liberally educated.”

Hubert, et. al., “Reflective E-Portfolios: One HIP to Rule them All,” *Peer Review* 17, no. 4 (2015).
GRADUATE PROFILE OUTCOMES

Learning to learn
Students will become active and engaged participants in their own learning through the effective use of learning and self-motivation strategies to enable them to achieve desired educational results.

Mastery of Program Competencies
Students will demonstrate the skills, knowledge and attitudes as expressed in the competencies of their program.

Communication
Students will demonstrate effective knowledge and skills in reading, writing, speaking, listening, and the presentation and delivery of information – using a variety of platforms including relevant software applications – in English and French.

Critical thinking, problem-solving skills and creativity
Students will be able to collect, organise and evaluate information from a variety of sources including electronic and web-based sources, and analyse and synthesize relevant information to draw informed conclusions and make judgments. Students will develop problem-solving skills in which they implement a strategy to answer an open-ended question or achieve a desired outcome. Students will demonstrate creative thinking by combining ideas or producing works in original ways.

Teamwork and leadership skills
Students will know how to collaborate with others, face-to-face and virtually, toward the setting of goals and priorities and implementing the means to achieve them. Students will learn to manage interpersonal relationships, resolve conflicts and assume responsibility for their own actions.

Quantitative literacy
Students will be at ease in working with, understanding and presenting numerical data using relevant software applications and possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday situations.

Health and well-being
Students will understand lifestyle choices that contribute to sustained health and well-being.

Ethical understanding and behaviour
Students will practise academic integrity and demonstrate ethical behaviour appropriate to citizenship in a democratic society.

Social responsibility and community engagement
Students will develop an informed concern for the larger good, appreciate social and cultural diversity, respect the values of others and act responsibly towards the environment. Students will be encouraged to make a difference in the quality of life of their communities through both political and non-political processes.
Three Models for Integration:
What is the institution’s responsibility to model and enable integration?

Problem-based learning community

Superstructure to enable faculty and students to make connections.

Integrative ePortfolios

Platform for students to holistically connect the parts of their education.

Course-embedded Undergraduate Research

Designing courses to be integrative of theory, practice and purpose.
Launched in 2016, the Regents Science Scholars Program provides support for first-generation college students majoring in biomedical fields.
Regents Science Scholars

Summer before the first year:
Students enroll in a rigorous residential summer bridge program

Summer between first and second year and second and third year:
Students take specially designed online modules to reinforce knowledge, while allowing students to work and be home with their families.
In three years, the number of first gen/low income students in biomedical majors has increased 5x.

>20% of the matriculating class of Biology majors are Community Scholars.
Glen Manor Feral Wine Project
Glen Manor Vineyards Case Club Event Announcement

For a few years I have wanted to try un-inoculated fermentations. Called Feral fermentations because yeast come from a multitude of sources, the vineyard, the cellar, in the air and different yeast strains get together to create new yeast strains, all of which can impact a wine in very complex and interesting ways. After a few years of small and successful trials, in 2016 I finally had the right conditions and enough nerve to explore this on a much larger scale in our red wine program. To better learn, we also performed our normal commercial yeast fermentations and now have wines of the same grape variety and planting fermented using both methods.

I would like you to taste these wines.

You are cordially invited into our cellar for our Spring Barrel Tasting, to taste and learn about these yeast trials that we conducted with our 2016 red wines. We will lead you through stations where at each stop you will taste and compare two wines exhibiting how yeast can affect a wines aroma, flavor, structure and style.
Good Morning,
I have been thinking about the design of the lab all night. And I think I have an understanding now after reading the material all over again.

My suggestion is to create an experiment with like 20 control groups and tests. I would number the different locations that the microbes are found (on grape, leave, soil, etc.) then organize them into hypothetical dishes. This way hypothetically speaking I will create multiple juices using different combinations of the microbes...This would help me keep track of them, and allow me to distinguish one group from another.

Does this seem possible? Can this lead me to understanding its flavor profile, giving Jeff the best possible taste?

All the best,
Nohad Wahab
1-4: Purcellville-Tankerville Complex, 15-25% slope
5-8: Tankerville-Purcellville Complex, 15-25% slope
9-10: Myersville Silt Loam, 2-7% slope
11-12: Philomont-Tankerville Complex, 7-15% slope
13-14: Purcellville-Tankerville Complex, 15-25% slope
15-16: Purcellville Loam, 15-25% slope
Identification Procedures

Gram Staining

Culture Morphology

Gel Electrophoresis

Polymerase Chain Reaction
Three levers for influencing student motivation

1. Value. *How important do I find this goal?*

2. Nature of the environment. *Do I feel supported or unsupported?*

3. Belief in the ability to succeed. *Do I believe I can design and follow a course of action to meet this goal?*

Epilogue as Prologue

- They are continuing to get DNA data.

- Ten students out of 30 signed on to continue working on the project (in their first semester of college).

- They are hoping to present at the semi-annual Va Vineyards Assoc technical meeting.
Integrative

Inclusive

Exclusive

Dis-integrative

Integrative
What might it mean to design for the integrative and inclusive quadrant?
Three Models for Integration:
What is the institution’s responsibility to model and enable integration?

Problem-based learning community

*Superstructure to enable faculty and students to make connections.*

Integrative ePortfolios

*Platform for students to holistically connect the parts of their education.*

Course-embedded Undergraduate Research

*Designing courses to be integrative of theory, practice and purpose.*
Signature paradigm for learning in the 21st century?

The space of ... formation, transformation and whole student development
Integration and integrity
THANK YOU!

bassr@georgetown.edu