Computational Literacy & Entrepreneurial Literacy: A Proposal for New Content in ConnectED

General Education Work Groups
Presentation to VCU Stakeholders
Spring 2023

Recent Gen Ed history at VCU

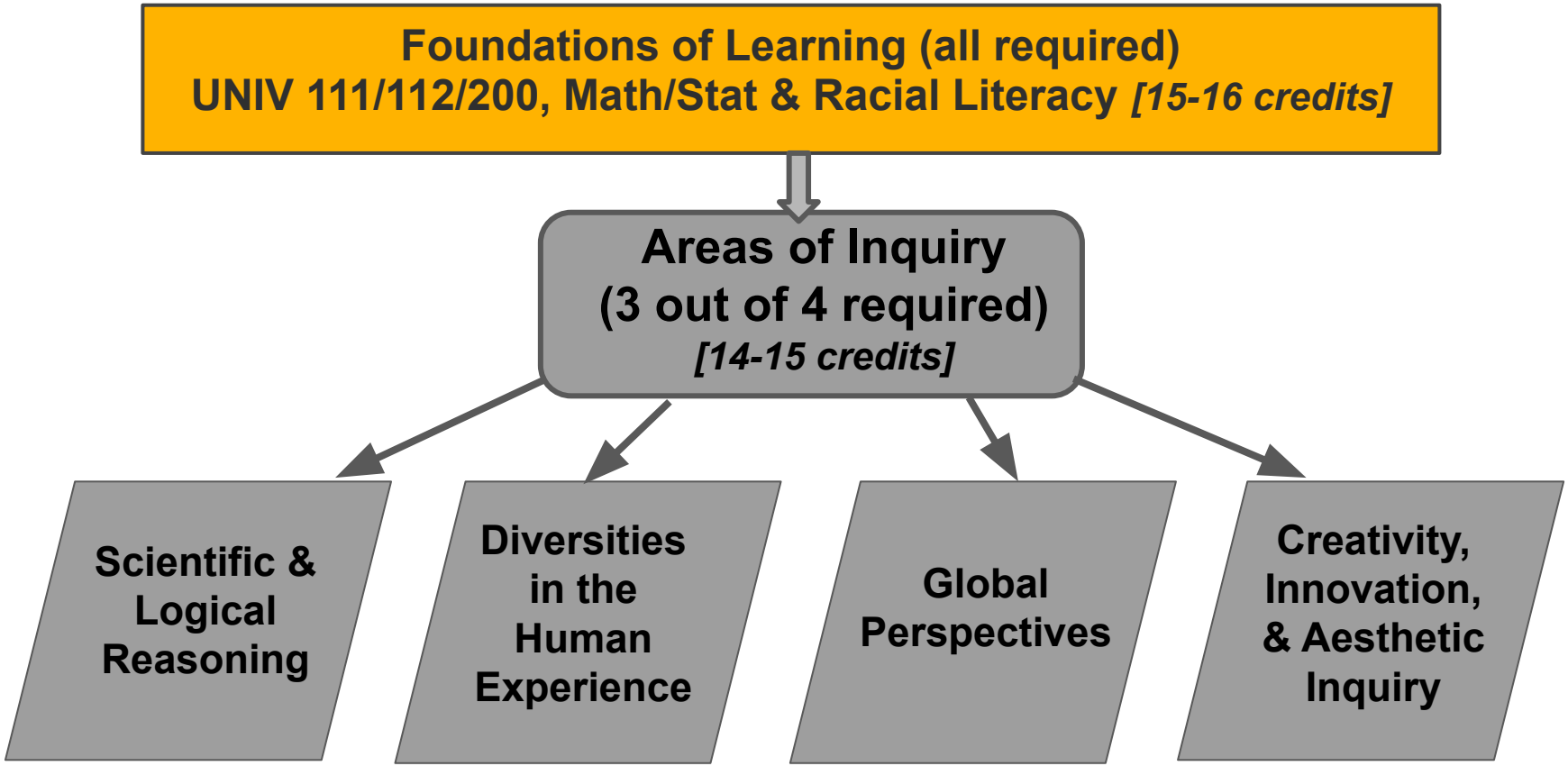
- VCU's general education program has been rebranded as ConnectED

- A new **racial literacy requirement** will go into effect for the 2023-24 academic year; total required credits remain the same

- **Two additional literacies** (computational and entrepreneurial literacy)**,** if approved, will be introduced into ConnectED in Fall 2025

- To meet that goal, **three work groups** were created:
  - Computational Literacy Work Group
  - Entrepreneurial Literacy Work Group
  - General Education Structure Work Group

ConnectED structure starting fall 2023



Where We are Now

- December 2022: Work group chairs met with Gen Ed Curriculum Committee (GECC) to present findings and answer questions

- Jan. 2023: GECC voted to advance work group reports for feedback from across the university and crafted a statement:
  - To advance reports so that units may consider definitions and role of literacies in ConnectED
  - But not to endorse (nor alter) strategies or reports offered by work groups
  - To offer guiding principles for units to consider:
    - Shared governance
    - Equity
    - Portability
    - Flexibility and choice
    - Educational impact
  - Complete GECC statement

Work Group Members

COMPUTATIONAL LITERACY

- **Elizabeth Fagan**, University College (chair)
- **Peter Aiken**, School of Business
- **Jason Bennett**, School of the Arts
- **William Korzun**, College of Health Professions
- **David Shepherd**, College of Engineering
- **Robert Wieman**, College of Humanities & Sciences
- **Benjamin Young**, Wilder School
- with contributions from **Erin White**, formerly of VCU Libraries

ENTREPRENEURIAL LITERACY

- **Matt Woolman**, School of the Arts (chair)
- **Tanya Boucicaut,** University College
- **Ross Collin**, General Education Curriculum Committee
- **Jesse Goldstein**, College of Humanities & Sciences
- **Jay Markiewicz**, School of Business
- **Bill Newmann**, College of Humanities & Sciences
- **Thea Pepperl**, College of Engineering
- **Janet Reid**, Libraries
- **Ben Teresa**, Wilder School
- **Garret Westlake**, da Vinci Center

STRUCTURE

- **Laura Gariepy**, VCU Libraries (chair)
- **Elizabeth Edmondson**, School of Education
- **Meghan Gough**, Wilder School
- **Chris Martiniano**, University College
- **Bernardo Piciché,** College of Humanities & Sciences
- **Angela Reynolds**, General Education Curriculum Committee

Suggestions for Unit Engagement

- We ask units to consider:
  - **Definitions** of computational and entrepreneurial literacy
  - **Course criteria** used to consider courses for inclusion in the ConnectED curriculum, for computational and entrepreneurial literacy
  - The **possibilities for structure** offered by the structure work group

- Please note that assessment recommendations are offered, although these will require working closely with the Gen Ed Assessment Committee for honing.

Computational Literacy

RECOMMENDATIONS

Computational Literacy Work Group Charge

The Computational Literacy Work Group will provide recommendations to General Education Curriculum Committee on:

- The definition of computational literacy
- Criteria by which courses may be developed to achieve computational literacy
- An assessment plan for the literacy in collaboration with the General Education Assessment Committee

Recommendation: Definition

At VCU, we take **computational literacy** to mean proficiency in a particular type of problem solving, where our students examine real world challenges in their fields and harness technological tools to achieve progress.

Computational literacy is the ability to use programmatic logic and algorithmic concepts to automate rote analysis and make complete calculation possible, pushing forward work in the 21st century.

Recommendation: Course Criteria

A course in any program may be considered as engaging in **computational literacy** if it meets the following **course criteria**:

- The course requires students to use technology relevant to the discipline; and
- One of the learning objectives of the course is the ability to apply programmatic logic and/or algorithmic thinking to use that technology to produce useful results.

Associated problem-solving skills that might assist in the development of courses and learning objectives:

- Design – ability to select or craft appropriate analytical process
- Computation – ability to implement the process to determine or calculate results
- Evaluation – ability to assess results and alternative approaches
- Communication – ability to explain the process from design through evaluation

Recommendation: ConnectED Assessment

Computational literacy, as a type of problem solving, maps with the ConnectED assessment of problem solving (critical and creative):

- Define complex problems, issues or questions
- Identify and seek out approaches, information, skills, and relevant resources
- Develop and propose multiple solutions (demonstrating intellectual risk-taking and tolerance for ambiguity)
- Evaluate potential solutions with awareness of contradictions, competing assumptions, and consideration of context
- Analyze the implications, consequences, and outcomes of solutions

We will work with the General Education Assessment Committee to make sure that the elements of computational literacy track well with problem solving.

Entrepreneurial Literacy

RECOMMENDATIONS

Entrepreneurial Literacy Work Group Charge

The Entrepreneurial Literacy Work Group will provide recommendations to General Education Curriculum Committee on:

- The definition of entrepreneurial literacy
- Criteria by which courses may be developed to achieve entrepreneurship literacy
- An assessment plan for the literacy in collaboration with the General Education Assessment Committee

Recommendation: Definition

Entrepreneurial literacy is the *capacity* to identify discrete social problems and unmet needs, and to develop, validate and implement institutionally sustainable solutions that bring value to populations.

Recommendation: Course Criteria

- Investigate, develop, and organize one's own human story and unique assets
- Empathize with real-world populations to identify needs
- Understand the concept of calculated risks based on sound research and relevant information
- Apply scientific methods of hypothesis testing and experimentation to develop and validate solutions for populations
- Demonstrate the place for entrepreneurial thinking in the college-to-career transition, community service, and economic development strategies, in for-profit, not-for-profit, and public sectors of the economy
- Understand and explore the VCU entrepreneurial ecosystem to engage in the many opportunities to further develop an entrepreneurial mindset and application skillset

Recommendation: ConnectED Assessment

The core of Entrepreneurial Literacy is the capacity to solve problems for populations, in sustainable ways. This dovetails with the ConnectED learning outcome of problem solving (critical and creative):

- **Define** complex problems, issues or questions
- **Identify** and seek out approaches, information, skills, and relevant resources
- **Develop and propose** multiple solutions (demonstrating intellectual risk-taking and tolerance for ambiguity)
- **Evaluate** potential solutions with awareness of contradictions, competing assumptions, and consideration of context
- **Analyze** the implications, consequences, and outcomes of solutions

We will work with the General Education Assessment Committee to make sure that the elements of Entrepreneurial Literacy track well with critical and creative problem solving.

Structure

OPTIONS

General Education Structure Work Group Charge

The General Education Structure Work Group will provide recommendations to General Education Curriculum Committee on how to:

- Determine how to best incorporate two new literacies while maintaining a broad-based general education curriculum
- Identify options and flexibilities to accommodate new literacies
- Address challenges for programs with little flexibility in their curricula

Context: Fall 2023 – changes in structure

Reminder of Fall 2023 ConnectED Structure:
Racial Literacy requirement is implemented

Foundations	Areas of Inquiry
15-16 credits; including Racial Literacy requirement (3 credits)	14-15 credits; AOI areas of fulfillment selected by student (3 of 4 AOIs)

Full ConnectED curriculum is fulfilled in **30 credits (minimum).**

This curriculum from which our options were developed.

Structure: Recommendations

Options and Flexibilities

- Category 1: Maintaining a 30-credit ConnectED
- Category 2: Increasing credits in ConnectED
- Category 3: Outside the box – going beyond ConnectED

Recommendation: Maintain 30 credit hours

OPTION	DESCRIPTION
1A	Add EL and CL to Foundations; reduce number of credits required for AOIs and increase student choice in selection thereof.
1B	Add EL and CL to Foundations; eliminate or reduce other ConnectED credits.
1C	Add EL and CL as *optional* AOIs in the ConnectED curriculum and increase student choice in AOI course selection.
1D	Nest EL and CL within existing AOIs, with modification as appropriate.
1E	Continue to offer ConnectED courses in 3-credit increments, plus “lighter” versions of similar content with fewer credits.

EL: entrepreneurial literacy | CL: computational literacy | AOI: area of inquiry

Recommendation: Increase credit hours

Option 2: Increasing ConnectED credit hours

Option 2A	Increase ConnectED to 36 credits by adding 3-credit computational literacy and entrepreneurship courses to Foundations or Areas of Inquiry coursework
Option 2B	Increase ConnectED to 32-34 credits by adding 1- or 2-credit computational literacy and entrepreneurship courses to either Foundations or Areas of Inquiry coursework

Recommendation: Outside of ConnectED

OPTION	DESCRIPTION OF WHERE CL AND EL WILL BE FULFILLED
3A	within majors
3B	within ConnectED, or within majors (similar to REAL "tagging" in which courses are designated as CL or EL courses
3C	through co-curricular experiences
3D	within majors, within ConnectED, or through co-curricular experiences (Combination of options 3A, 3B, and 3C)
3E	through extended learning opportunities appended to courses either within ConnectED or within the majors
3F	through corequisites that can be taken with appropriate courses either within ConnectED or within majors
3G	through zero-credit or low-credit online modules

EL: entrepreneurial literacy | CL: computational literacy | AOI: area of inquiry

Next Steps

Spring 2023

- University units consider and offer feedback on definitions, course criteria, and structure
- GECC and work groups review feedback, revise accordingly, close feedback loop
- GECC vote; if approved, recommendations advance forward for curriculum approval

Questions or comments?

Resources

- Literacy work group reports
- GECC Statement
- Feedback form
- ConnectED news & updates page