Building Competency Based Master's Programs

An Example of a CBE Program from Valdosta State University

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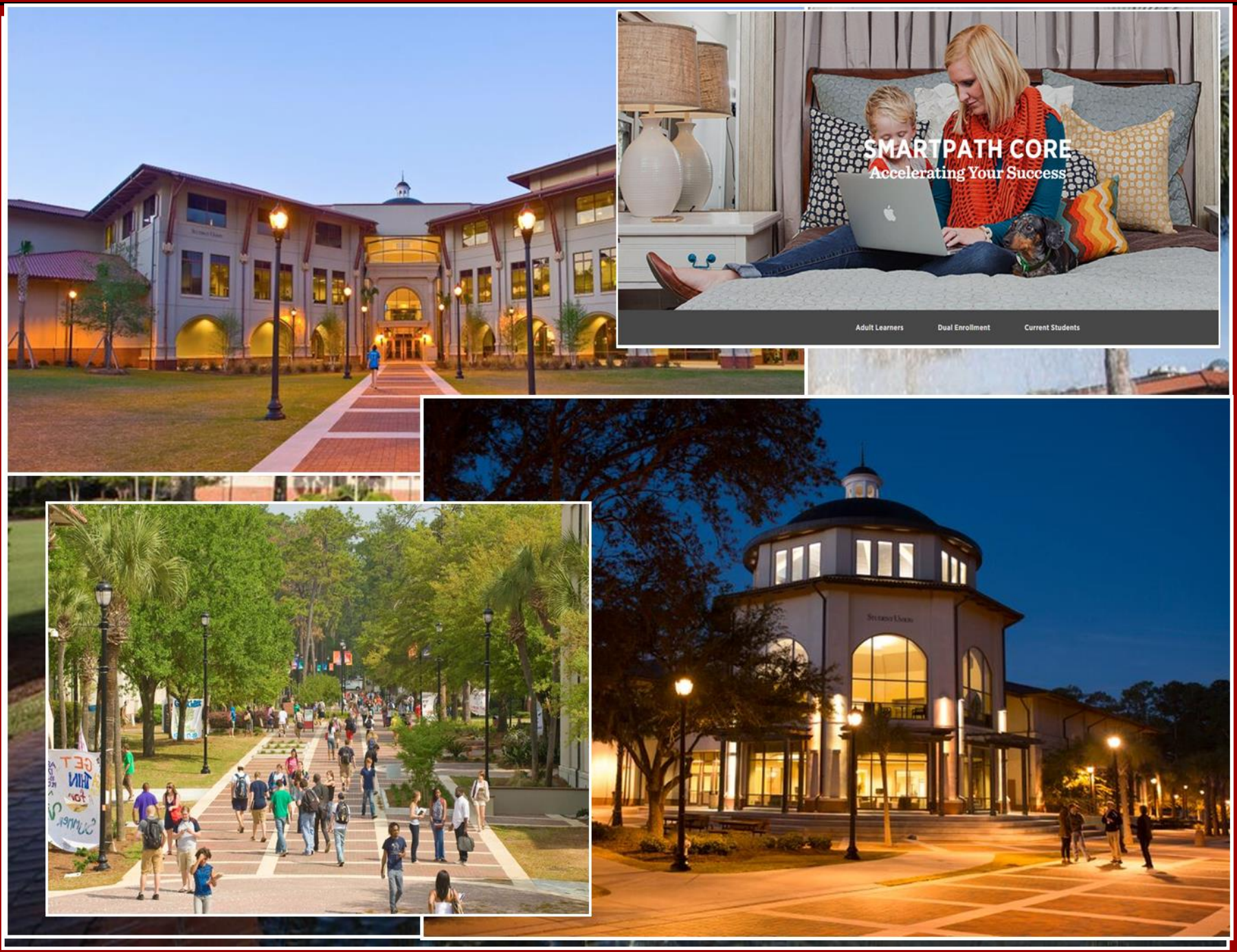
VSU, In partnership with community. . .

- Solicited by two local school districts
- An expressed need for STEM educators
- Focus on working (masters level) classroom educators
- Support from:
  - GaPSC: advanced approval
  - GaDOE: startup grant
  - CAEL: JumpStart
  - USG: LMS support



CBE is an opportunity not simply a repackaging of the status quo.

VSU's CBE Program Overview

- Online K-5 graduate level educator endorsements in Science and Math
- Authentic, project-based, rubric scored, mastery assessments
- May be cross-walked to courses
- Distributed faculty role (content experts, faculty facilitators & success coaches)
- Exclusive use of OERs

Program Tenets and Brand

Establish Fit

Align Tenets

Support Base

Modeling

Development

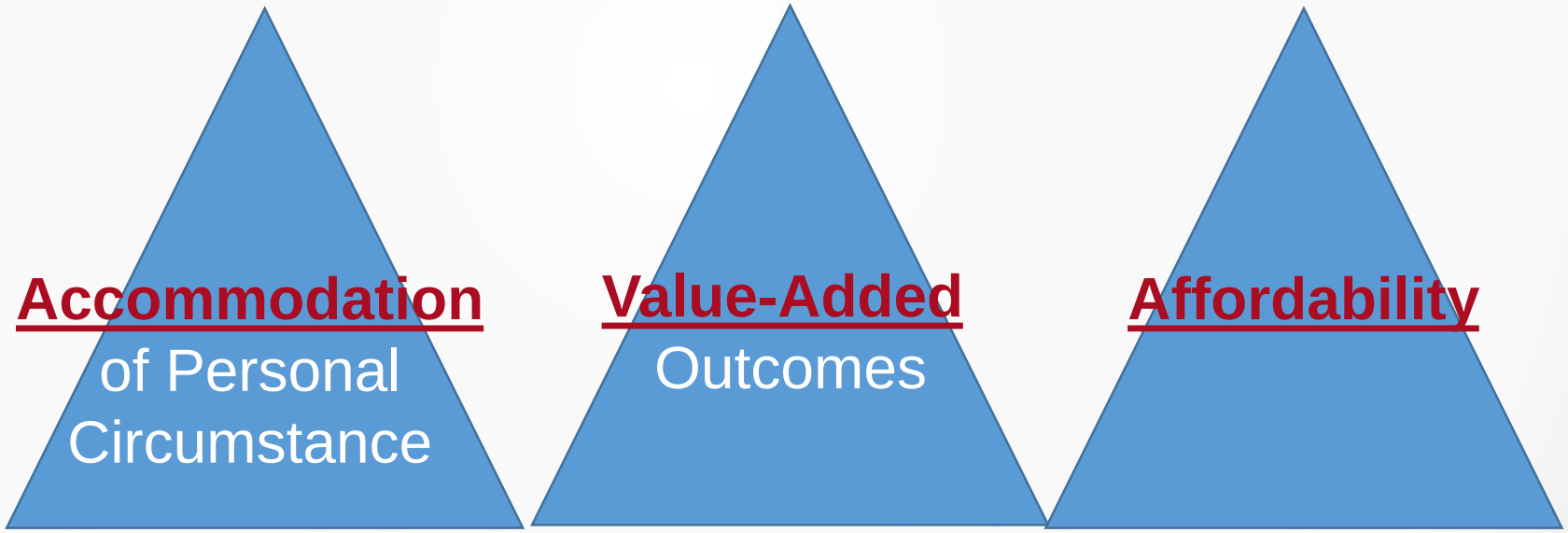
Onboarding

Activation

Next Steps

***YOU*Succeed**

VSU's Personalized Learning Option



Conceptual & Operational Program Tenets

Curricular Model

Establish Fit
Align Tenets
Support Base
Modeling
Development
Onboarding
Activation
Next Steps

A clearly defined **curricular model** ensures the:

- ***Organizational*** *and* ***Operational Architecture*** for program domains, competencies, assessments, and learning experiences

VSU's CBE Curricular Model

(Science Endorsement)

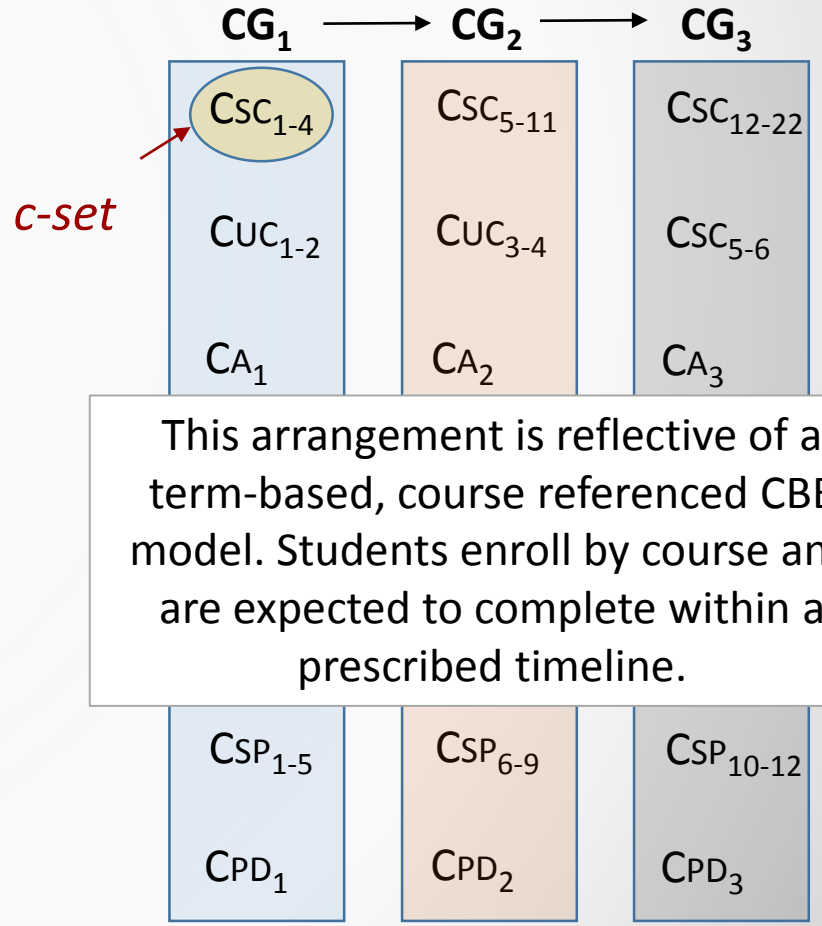
Program Outcome

Identify Program Competency Domains

Create Domain Competencies

Grouping Competencies by C-Groups (courses?)

$CDSC_1$ (*Science Content*)	CSC_1 , CSC_2 , CSC_3 … CSC_{22}
$CDUC_2$ (*Unifying Concepts*)	CUC_1 , CUC_2 , CUC_3 … CSC_6
CDA_3 (*Assessment*)	CA_1 , CA_2 , CA_3
$CDTU_4$ (*Technology Utilization*)	CTU_1 , CTU_2 , CTU_3 , CTU_4
$CDSR_5$ (*Social Relevance*)	CSR_1 , CSR_2 , CSR_3 … CSR_5
$CDSP_6$ (*Science Pedagogy*)	CSP_1 , CSP_2 , CSP_3 … CSP_{12}
$CDPD_7$ (*Professional Development*)	CPD_1 , CPD_2 , CPD_3



This arrangement is reflective of a term-based, course referenced CBE model. Students enroll by course and are expected to complete within a prescribed timeline.

VSU's CBE Curricular Model

(Science Endorsement)

Program Outcome

→ Identify Program Competency Domains → Create Domain Competencies → Grouping Competencies by C-Groups (courses?)

		CG_1	CG_2	CG_3
$CDSC_1$ (*Science Content*)	CSC_1 , CSC_2 , CSC_3 … CSC_{22}	CSC_{1-4}	CSC_{5-11}	CSC_{12-22}
$CDUC_2$ (*Unifying Concepts*)	CUC_1 , CUC_2 , CUC_3 … CSC_6	CUC_{1-2}	CUC_{3-4}	CSC_{5-6}
CDA_3 (*Assessment*)	CA_1 , CA_2 , CA_3	CA_1	CA_2	CA_3
$CDTU_4$ (*Technology Utilization*)	CTU_1 , CTU_2 , CTU_3 , CTU_4			
$CDSR_5$ (*Social Relevance*)	CSR_1 , CSR_2 , CSR_3 … CSR_5			
$CDSP_6$ (*Science Pedagogy*)	CSP_1 , CSP_2 , CSP_3 … CSP_{12}			
$CDPD_7$ (*Professional Development*)	CPD_1 , CPD_2 , CPD_3	CPD_1	CPD_2	CPD_3

This arrangement is reflective of a nonterm-based, (perhaps course cross-walked) CBE model. Students enroll by program within subscription periods and move through the competencies at a pace not regulated by course completion timelines.

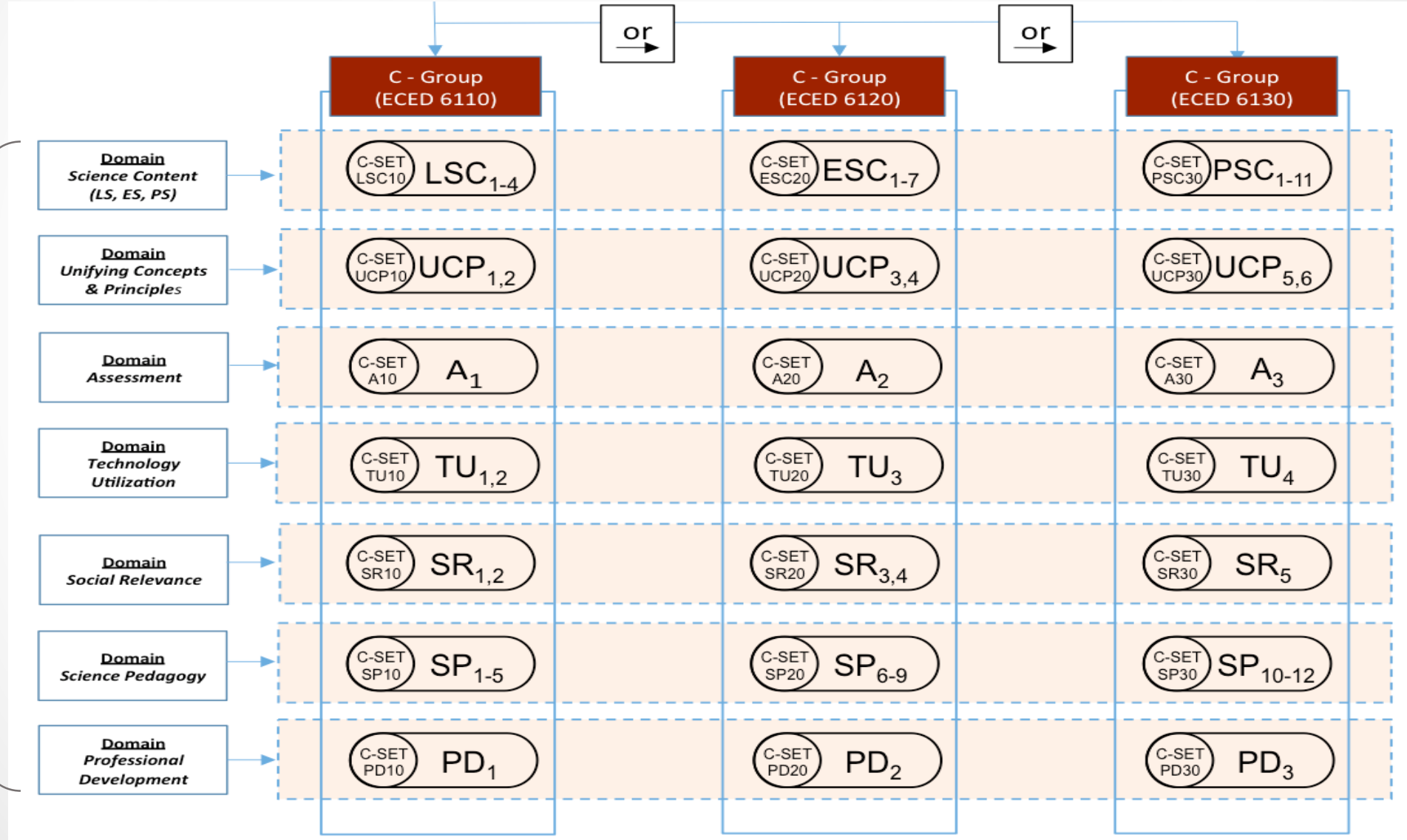
VSU's CBE Curricular Model

K-5 Teacher Certification Science Endorsement

(51 competencies; Three graduate courses, 3 credit hour equivalency per course)

Micro-credential opportunities

Allows CPL for selected domains across programs



Curricular Content Development is a Collaborative, Coordinated Process

Establish Fit

Align Tenets

Support Base

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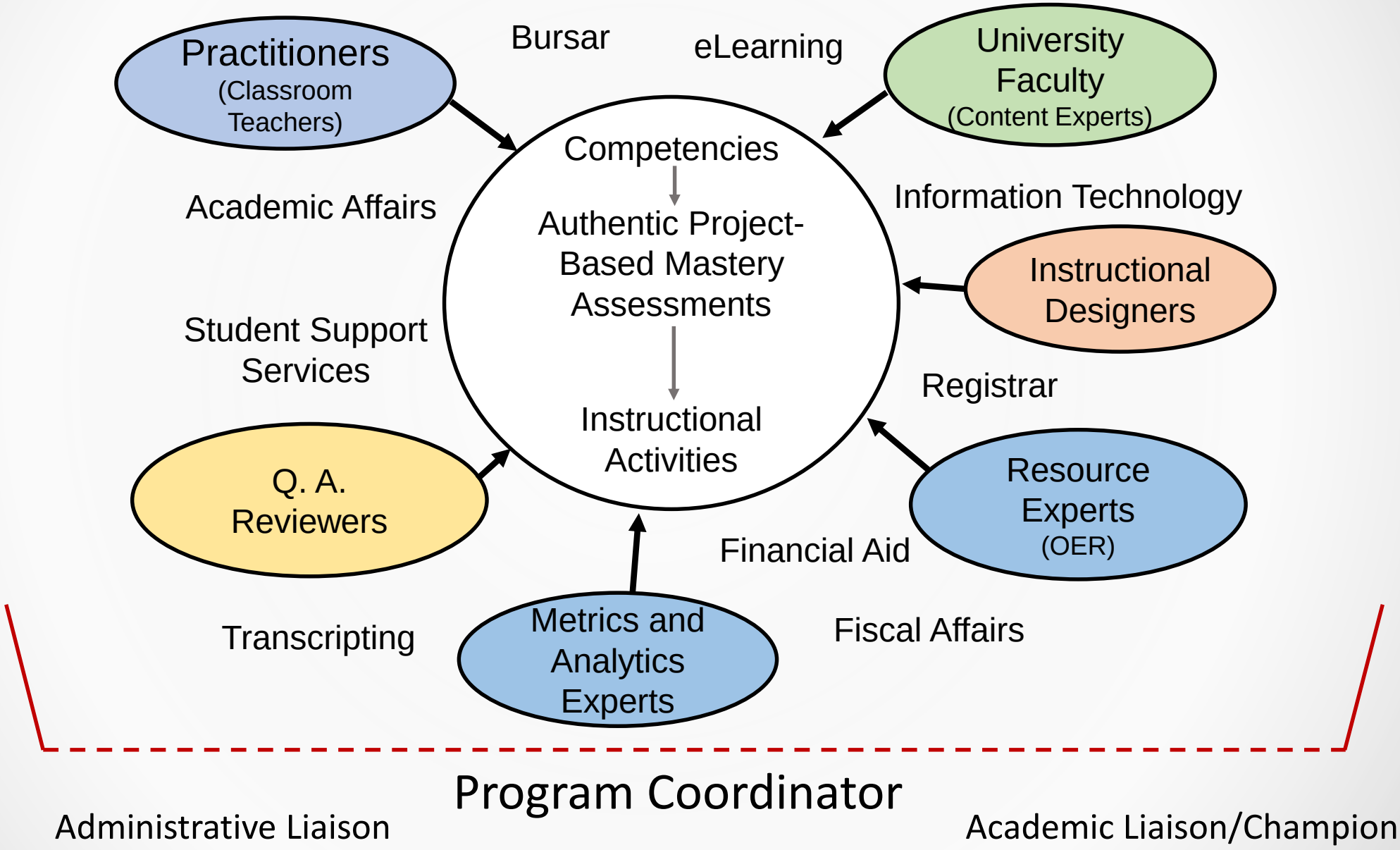
Next Steps



Use of Backward Design Development Process

Desired Result ⟶ *Evidence of Result* ⟶ *Learning Experience*

CBE Learning Module $EScTU_4$: K-5 Science Teaching Endorsement

Competency(ies)	Mastery Assessment(s)	Learning Activity(ies)
$EScTU_4$: Plan an activity to demonstrate connections between physical science and mathematics using technology.	Describe in detail an activity that you can incorporate into a lesson that connects mathematics and physical science, using technology. Include the appropriate mathematical standard and science content and characteristics of science standards. Describe how technology can be used to demonstrate the connection between physical science and mathematics. The assessment will be evaluated using the Physical Science - Competency TU4 - Assessment Rubric. You can use this rubric as a reference as you complete this assignment. Submit to the – Physical Science - Competency TU4 – Dropbox.	*In this module you will plan an activity to demonstrate the connections between science and mathematics using technology. STEM lessons always combine content areas together in one lesson just as scientists use mathematics and technology in real-world investigations. You will find the links below helpful in planning your activity.* **Required Activities** **Title: Physical science and Math Activity using technology (estimated on task time: 1 hour)** 1. Access the Georgia Performance Standards for K-5 (Read the standards and become familiar with what students should know and be able to do in each grade level for both math and physical science). In the "Characteristics of Science" section for each grade level in the science standards, you will find grade level specifics for mathematical skills and tools, and technology specific to that grade. **Science:** https://www.georgiastandards.org/Standards/Pages/BrowseStandards/ScienceStandardsK-5.aspx **Math:** https://www.georgiastandards.org/Georgia-Standards/Pages/Math-K-5.aspx 2. Read Nancy Blair's article, "Technology Integration for the New 21st Century Learner" in the January/February 2012 issue of the National Association of Elementary School Principals Journal. http://www.naesp.org/principal-januaryfebruary-2012-technology/technology-integration-new-21st-century-learner 3. Read Edutopia article: "How to Creatively Integrate Science and Math" http://www.edutopia.org/blog/integrating-math-science-creatively-ben-johnson 4. Read Education World article: Buckshaw, L. , A. & Lyon (2015), *Integrating Technology and Science.* Retrieved from http://www.educationworld.com/a_tech/tech/tech233.shtml on December 3, 2015.

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Competency LSC4 Overview

Overview Life Science Content (LSC)

Competency LSC4: Explain how adaptations, behaviors, and external features affect the survival or extinction of organisms.

In this module you will...

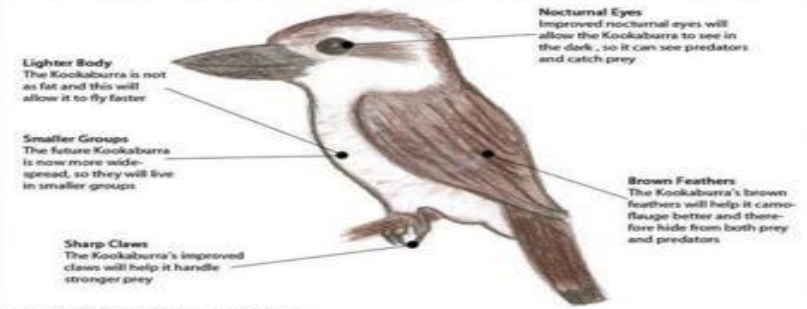


Diagram 6: Brown Kookaburra Adaptations
Source: Drawn and Labeled by Rachel

Research plant and animal adaptations for survival and how the biome influences these adaptations.

State examples of organisms that use mimicry, camouflage, and chemical substances for survival. Explain how each of these adaptions aid in survival.

Choose a plant from each of the 7 biomes, identify the biome, illustrate the plant and describe the features it uses for survival in its habitat.

Identify reasons for past massive extinctions and explain the reasons that extinctions occur. Include a discussion of the consequences of extinction.

Learning Assessments

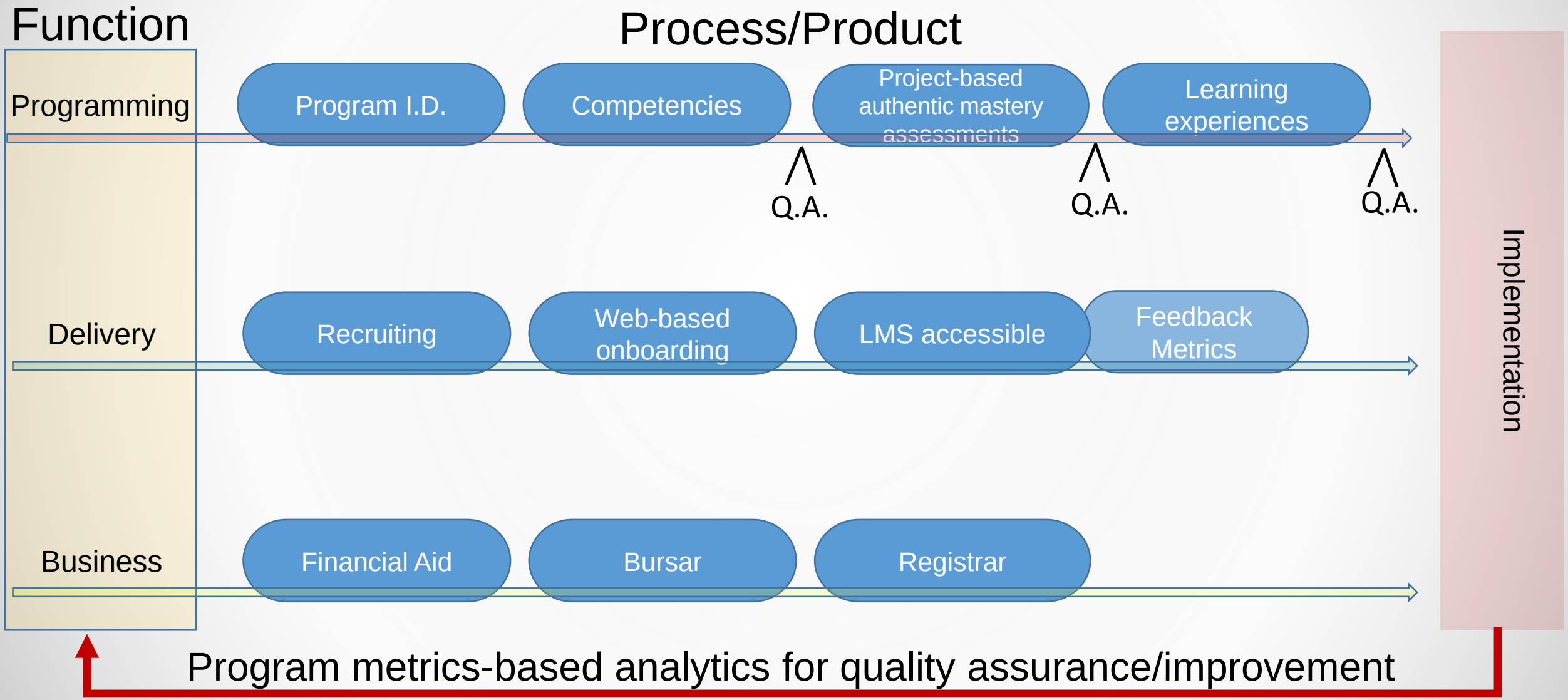
Formative Assessments

- Strategically embedded in the learning activities
- Evaluated by self-assessment, peers, Support Coach, or intelligent agent
- May be used as gateways to forward progression within a competency
- Variety of objective and subjective formats

Competency Mastery Assessment

- Project-based
- Must be implemented in an authentic setting
- Scored based on outcomes rubric
- Possible outcomes: 4=High Mastery; 3=Mastery; 2=Not yet mastered; 1=Not yet mastered

VSU's CBE Operational Model



Program Implementation Team/Faculty

Establish Fit

Align Tenets

Support Base

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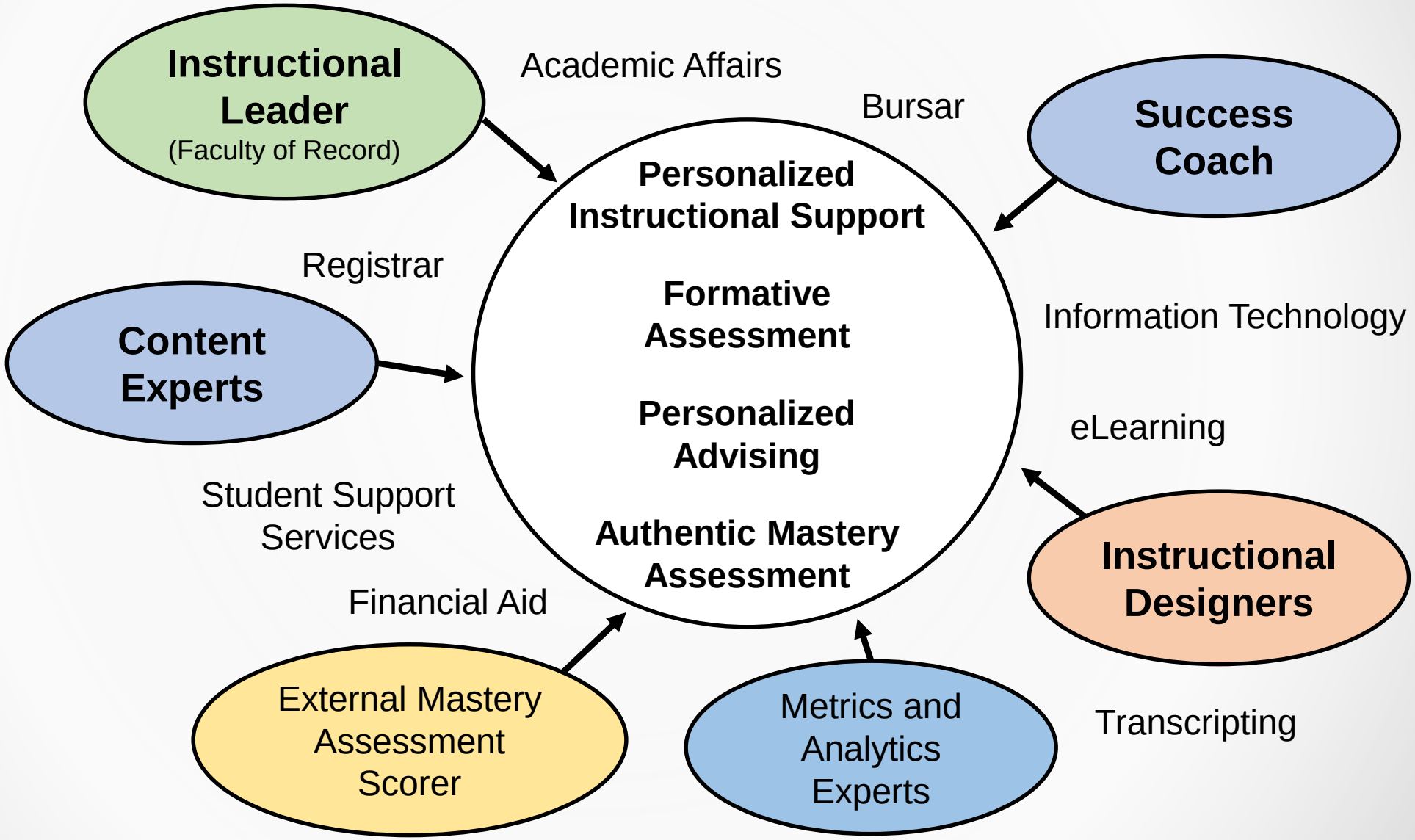
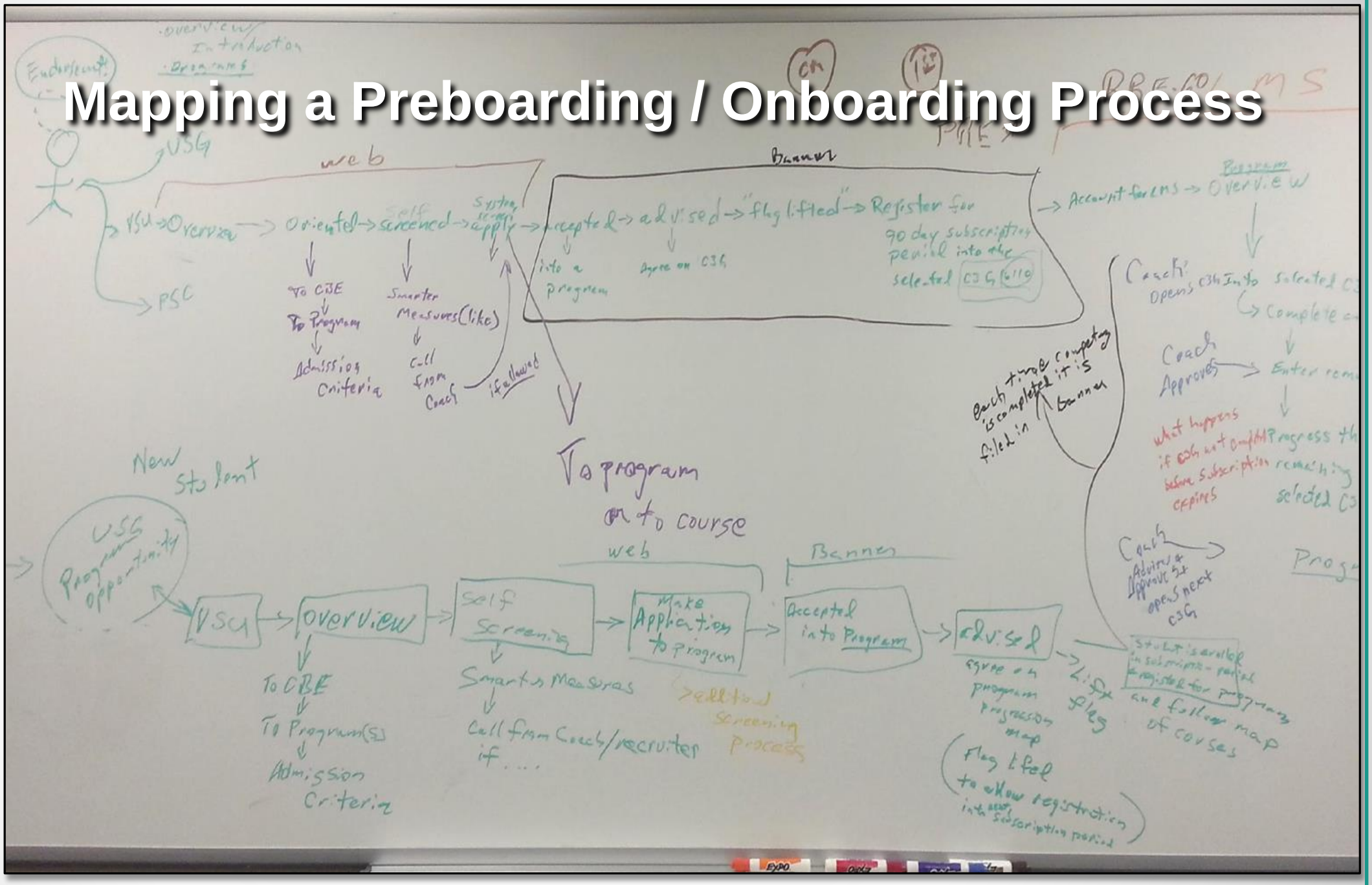
Next Steps



Mapping a Preboarding / Onboarding Process



Preboarding (screening) Process

Self-Screening Criteria *and* Assessment-based Screening

- Do you have adequate time to allocate to your educational goals?
- Can you devote time for uninterrupted study?
- Do you work well independently and are you self-motivated?
- Do you enjoy reading?
- Do you want a flexible schedule?
- Do you enjoy working on a computer?
- Are you organized?
- Do you communicate well through writing?
- Do you have a reliable computer and internet service?

- Perspective student completes online assessment
- Assessment “scored” via intelligent agent
- Results of assessment indicate suitability for CBE program participation

- Establish Fit
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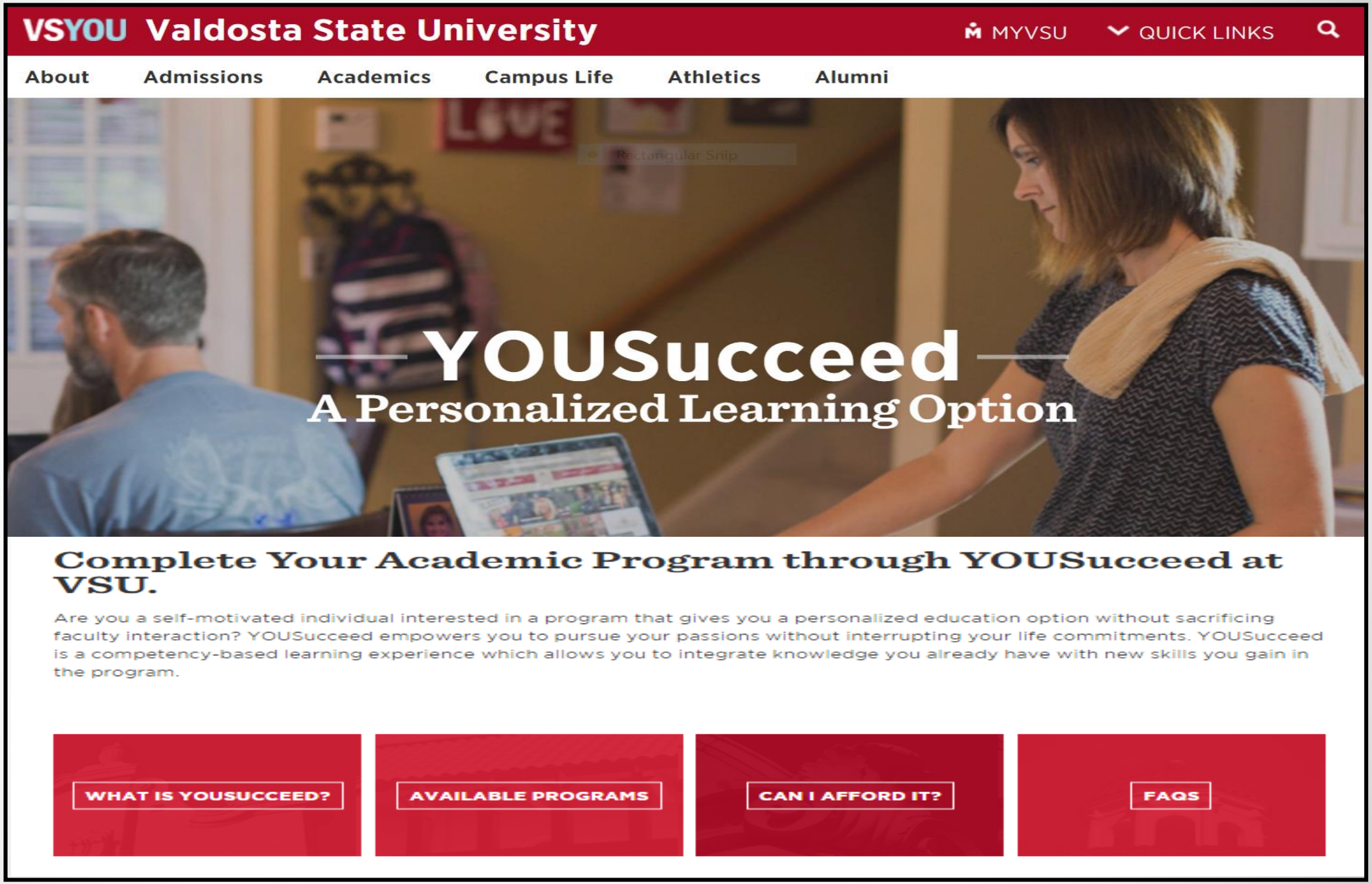

Use of Behavioral Motivators

- Establish Fit
- Align Tenets
- Support Base
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- Next Steps

Use of Behavioral Motivators

Timing	Trigger	Occurrence
First Competency completed.	Student receives a “High Mastery” or “Mastery” on a competency for the 1st time during enrollment.	Once per course.
First competency mastered at the highest level.	Student receives “High Mastery” for the 1st time on a competency in a course.	Once per course.
All competencies in a set completed.	Student receives a “Mastery” or “High Mastery” on all competencies in a competency set.	Once per C-set. Multiple times per C-group (course).
All competencies in a C-group (course) completed.	Student receives “Mastery” or “High Mastery” on all competencies in C-group (course).	Once per C-group (course).

Progression Metrics Dashboards

- Establish Fit
- Align Tenets
- Support Base
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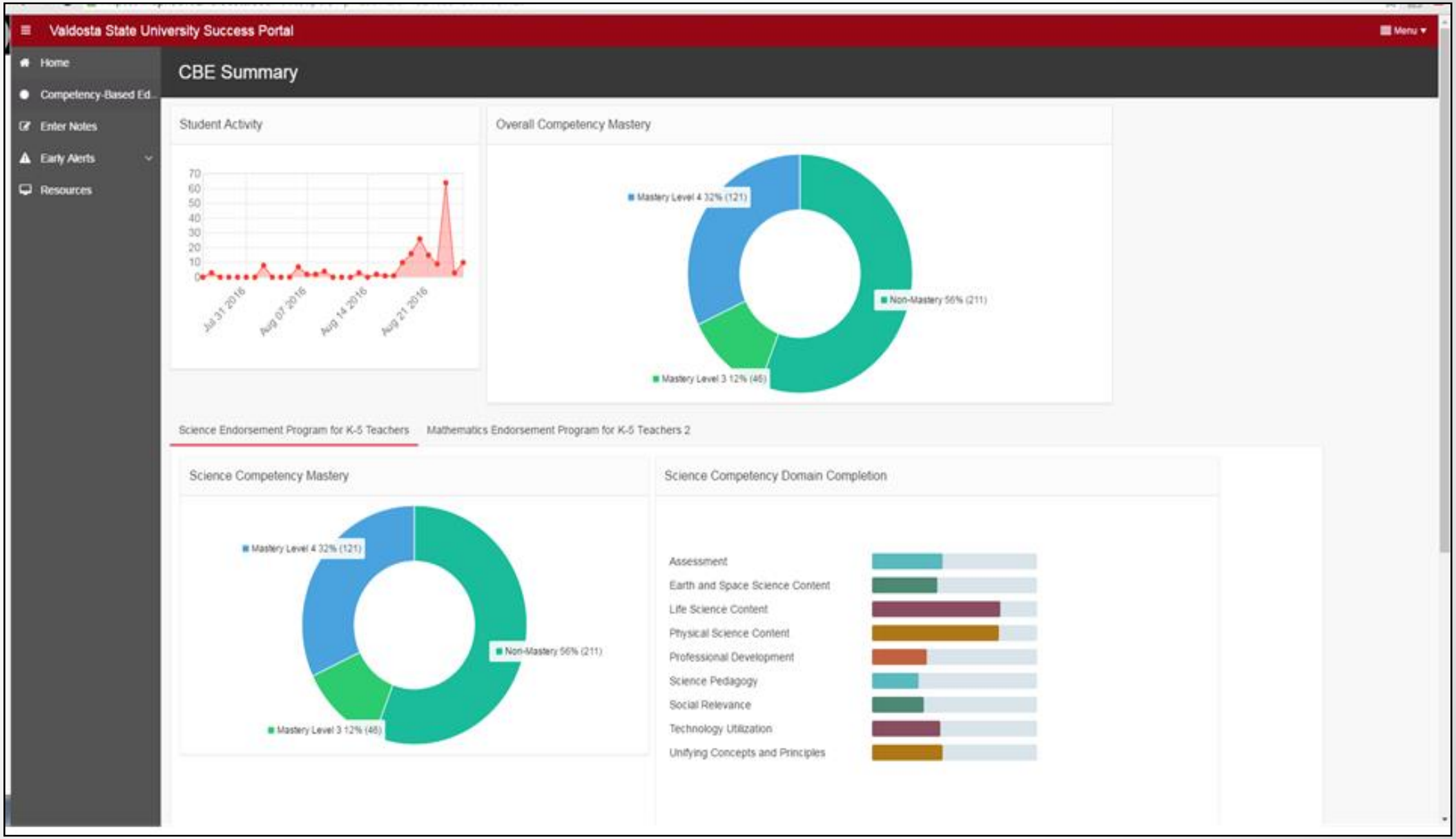
- Next Steps



Establish Fit

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Lessons Learned

- Non-term Billing can be a challenge
- Financial Aid challenges (*Regular and Substantive Interaction, SAP*)
- The importance of student preboarding /onboarding
- Administrative understanding & support is critical

Where to from here?

- Payment by student or B2B format?
- Go it alone or integrate within a system-level initiative?
- Integrate within the university or create satellite structure?
- Integration of badges/micro-credentials?

Getting started. . .

Establish Fit

Align Tenets

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Next Steps

- Identify willing Sherpas
- Discover & nurture local champions
- Collaborate with other CBE programs
  (VSU ex.: UW, NAU, WGU)
- Connect with centers of expertise
  (VSU ex.: C-BEN, CAEL, Eduventures, D2L, UPCEA, ALG)
- Define a cost/return plan (see NCHEMS model)
- Embrace the chaos monkey

Thank You

Questions / Comments?

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