

The eli² Fall 2015 Update:

1) CECS Pipeline Strategy

2) eli² Customers, Thanks, Student Perspective, and Development Circles

Presented to:

Dean's Industry Advisory Board

November 2015

Presented by:

Tim Kotnour, PhD

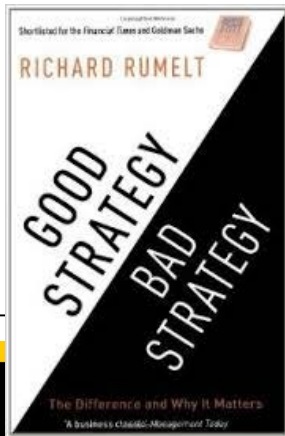
Industrial Engineering & Management Systems Department
University of Central Florida



Our “Good” Strategy...

- ..“not just ‘what’ you are trying to do. It is also ‘why’ and ‘how’ you are doing it” (p. 85)
- “is at least as much about what an organization does not do as it is about what it does” (p. 20)”.

– Richard Rumelt



Bev Asked Us to Share Our Uniqueness Story.



- ### The 11 Degree Programs— To Be Technically Sound
- 1) Aerospace Engineering (B.S.A.E.)
 - 2) Civil Engineering (B.S.C.E.)
 - 3) Computer Engineering (B.S.Cp.E.)
 - 4) Computer Science (B.S.)
 - 5) Construction Engineering (B.S.Con.E.)
 - 6) Electrical Engineering (B.S.E.E.)
 - 7) Environmental Engineering (B.S.Env.E.)
 - 8) Industrial Engineering (B.S.I.E.)
 - 9) Information Technology (B.S.)
 - 10) Mechanical Engineering (B.S.M.E.)
 - 11) Photonics Science and Engineering (B.S.P.S.E.) **** This program is offered jointly with the UCF College of Optics and Photonics.**

- ### The “Traditional” Student Success Services
- CECS Services**
- Academic Affairs
 - Academic Advisors
- UCF Services**
- Academic advising
 - Supplemental Instruction
 - SARC
 - SARC mentorship training
 - Math Lab
 - Finals Reviews in the Union
 - Peer Mentor Workshops
 - Career Services
 - Career Fairs

The Unique Co-Curriculum Opportunities

We Continue to Build the UG “All Get Some, Some Get All” Program.
(Green = Complete, Yellow = In Works, Red = Not Worked, Blue = Employability Project)

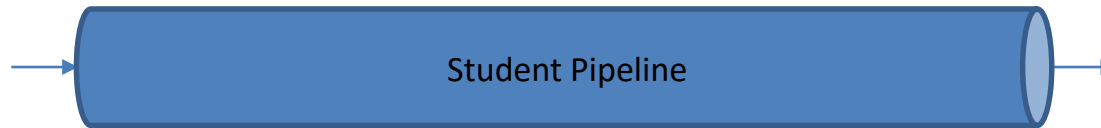
Opportunity	Foundation	Supplemental	UCF	Partner	Employability Project
1) Learn the Most from Your Engineering Courses	Advanced Engineering	Entrepreneurship	1000 Capstone Experiences	Industry Partners	Capstone Projects, Internships, Co-ops, Study Abroad
2) Expand Your Resources	Advanced Engineering	Entrepreneurship	1000 Capstone Experiences	Industry Partners	Capstone Projects, Internships, Co-ops, Study Abroad
3) Collaborate with Other Engineers & Scientists	Advanced Engineering	Entrepreneurship	1000 Capstone Experiences	Industry Partners	Capstone Projects, Internships, Co-ops, Study Abroad
4) Learn from Life Experiences	Advanced Engineering	Entrepreneurship	1000 Capstone Experiences	Industry Partners	Capstone Projects, Internships, Co-ops, Study Abroad
5) Experiment with Creating and Innovating	Advanced Engineering	Entrepreneurship	1000 Capstone Experiences	Industry Partners	Capstone Projects, Internships, Co-ops, Study Abroad
6) Gain Work Experiences	Advanced Engineering	Entrepreneurship	1000 Capstone Experiences	Industry Partners	Capstone Projects, Internships, Co-ops, Study Abroad
7) Learn from Leadership Courses	Advanced Engineering	Entrepreneurship	1000 Capstone Experiences	Industry Partners	Capstone Projects, Internships, Co-ops, Study Abroad
8) Take the Leadership Journey	Advanced Engineering	Entrepreneurship	1000 Capstone Experiences	Industry Partners	Capstone Projects, Internships, Co-ops, Study Abroad
9) Learn from Leaders—Pathway and Peer Mentors	Advanced Engineering	Entrepreneurship	1000 Capstone Experiences	Industry Partners	Capstone Projects, Internships, Co-ops, Study Abroad
10) Reflect on Personal and Your Experiences	Advanced Engineering	Entrepreneurship	1000 Capstone Experiences	Industry Partners	Capstone Projects, Internships, Co-ops, Study Abroad

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Our Corporate Partners Make This Happen

Our Why...Deliver World-Changing Solutions...Solve the “Pipeline” Challenge

1 Increase the inflow of students interested in Engineering & Computer Science



2 Decrease the leaks—Increase student retention

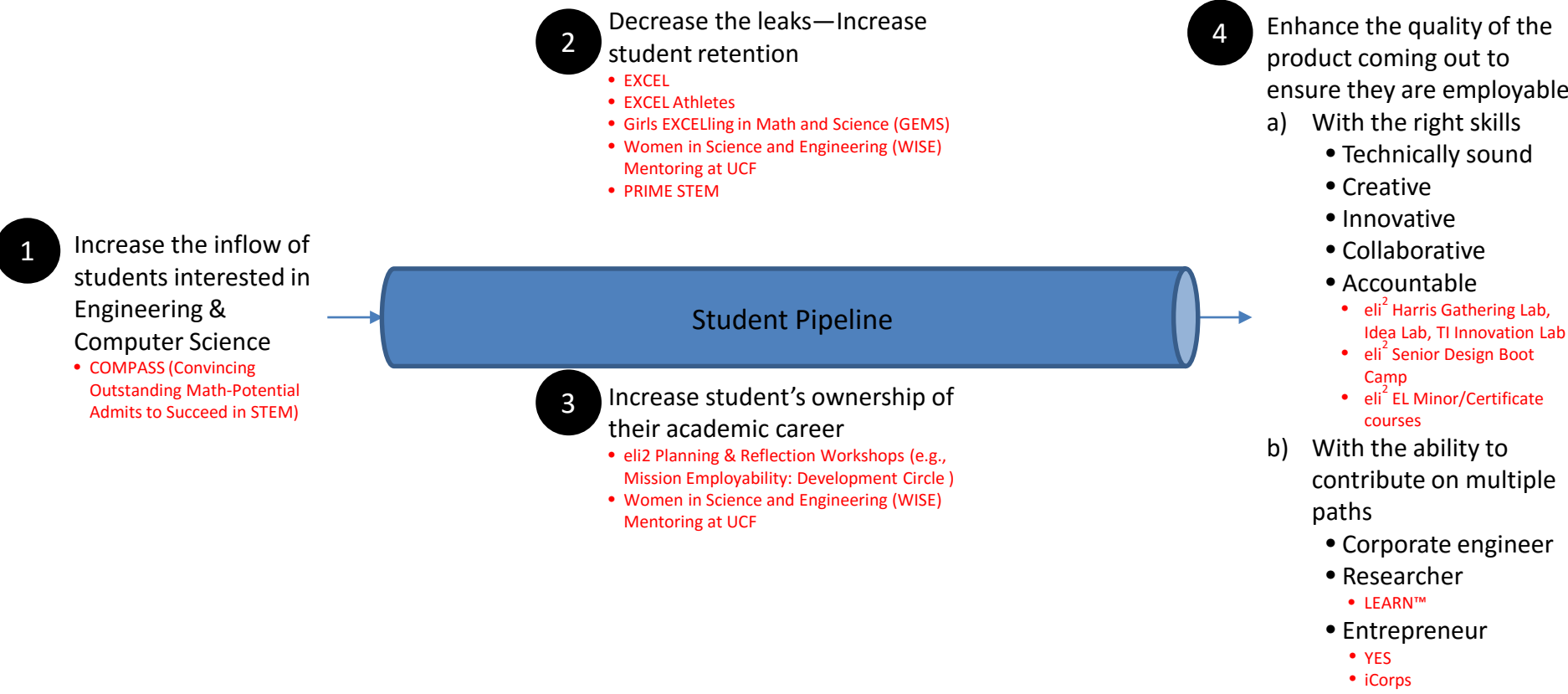
3 Increase student’s ownership of their academic career

4 Enhance the quality of the product coming out to ensure they are employable

- a) With the right skills
- Technically sound
 - Creative
 - Innovative
 - Collaborative
 - Accountable

- a) With the ability to contribute on multiple paths
- Corporate engineer
 - Researcher
 - Entrepreneur

CECS Is Understanding the Portfolio of Efforts.



We Need to Work the Portfolio & Communicate the Information to Our Students.



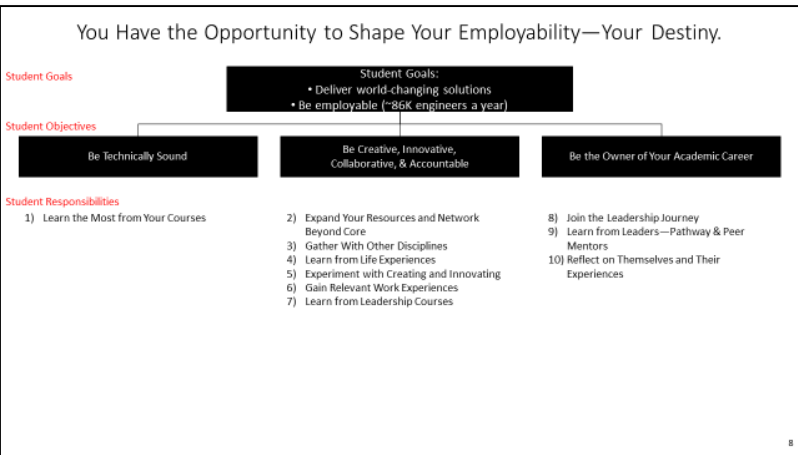
Engineering Leadership at UCF

We Are Aligning Our Efforts to Solve the "Pipeline" Problem to Employability in the Engineering & Computer Science Fields.

Program	Primary Audience	Student Objectives			Professional Path		
		Be Technically Sound	Be Creative, Innovative, Collaborative, & Accountable	Be the Owner of Your Career	Corporate Engineer	Researcher	Entrepreneur
OSWEEK (Continuing Understanding Math-Prepared: Ability to succeed in STEM)	Increase the influx						All
DESL	Increase retention in the first year						All
DESL-Adaptive Student Adviser Program	Increase retention						All
DESL-Wellbeing to Meet our Success (2016)	Increase retention						All
Women in Science and Engineering (WSE) Mentoring at UCF	Increase retention						Women
ucf Hero Building Lab, Site Lab, T1 Innovation Lab	Increase retention, social and OSA skills						All
ucf Senior Design Road Camp	Increase OSA skills						All
ucf @Home/Offshore courses	Increase OSA skills						All
ucf Planning & Reflection: Workshop 18 & Mission-Engaged: Development (2014)	Increase students' ownership						All
WES	Increase OSA skills						All
ESOP	Increase OSA skills						All
PRIME STEM	Increase retention						First generation, low-income, and/or first baccalaureate students
LEADER	Ability to pursue research						
Supplemental Instruction							
SAE & SAE membership training							
Math Lab							
First-Year Retention in the Union							
Peer Mentor Workshops							
Career Services, Career Fairs							
Blackboard Launch Pad, All Lab, Senior Lab							

You Are Not Alone on this Journey.

Program	Be Technically Sound			Be Creative, Innovative, Collaborative, & Accountable			Be the Owner of Your Career			Potential Path			
	Learn the Most from Your Courses	Expand Your Resources and Network Beyond Core	Gather With Other Disciplines	Learn from Life Experiences	Experiment with Creating and Innovating	Gain Relevant Work Experiences	Learn from Leadership Courses	Join the Leadership Journey	Learn from Leaders—Pathway & Peer Mentors	Reflect on Challenges and Your Experiences	Corporate Engineer	Researcher	Entrepreneur
DESL													
DESL-Adaptive Student Adviser Program													
DESL-Wellbeing to Meet our Success (2016)													
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Opportunities for Connecting with the Profession.

Primary Focus	Organization	Discipline	Focus
Leadership Development & Community of Professionals Across Disciplines	eli2	All	Leadership
	NSBE	All disciplines	Leadership/Professional Development
	Theta Tau	All	Professional Engineering Fraternity
	SHPE	All	Hispanic/Professional Engineers
	SWE	All	Women Engineers/Leadership
	Pi Tau Sigma	All	Prof. Engineering Fraternity
	EWB	All	Environmental/Humanity/Sustainable engineering projects
	AIAA	MAE	Design
	IEE	IE	Cont. education for IE Majors
	Lunar Knights	All	Research/mining techniques related to Earth and Space
Growing within the Technical Discipline	Hack@UCF	CS	Cyber Defense/Offense
	ASCE	CEE	Professional Development through events and competitions
	ASME	Mechanical	Prof. development, HPV competitions
	Robotics Club	All	Robotics, build advanced autonomous robots for competitions and research
	ACM	CS	scientific and educational org. dedicated to advancing applications of information technology
	Society of Environmental Engineers	CEE	Environmental Engineering
	Rapid Prototyping Club	All	
	SEDS	MAE	Exploration and development of space
	SAE	MAE	Fraternity/Automotive engineering
	IEEE	EECE	Electrical engineering



Engineering Leadership
& Innovation Institute at UCF

A community of leaders

The Journey: 



UNDERGRADUATE
STUDENTS

Self Leadership



YOUNG
PROFESSIONALS

Self Leadership
Professionalism



TEAM LEADERS &
PROJECT MANAGERS

Self Leadership
Professionalism
Team Leadership



ORGANIZATIONAL
LEADERS

Self Leadership
Professionalism
Team Leadership
Organizational Leadership

 Our Mission:

Engineers
who create,
innovate and
collaborate
to deliver
world-changing
solutions.

Lifelong Engagement.

Ben Says....Customer =





I Say Thank You...

UCF

Interns: Duke (Melissa & Mike) & WDW (Chandler)

Time

- Boeing
- Disney
- Nielsen
- Siemens
- TI

- Ben, Bev, Pat
- Tom O'Neal/UCF ORC

Dollars

- Duke Energy
- Harris Corp
- TI

- Disney
- Lockheed Martin
- Siemens
- KSC

The UCF Team



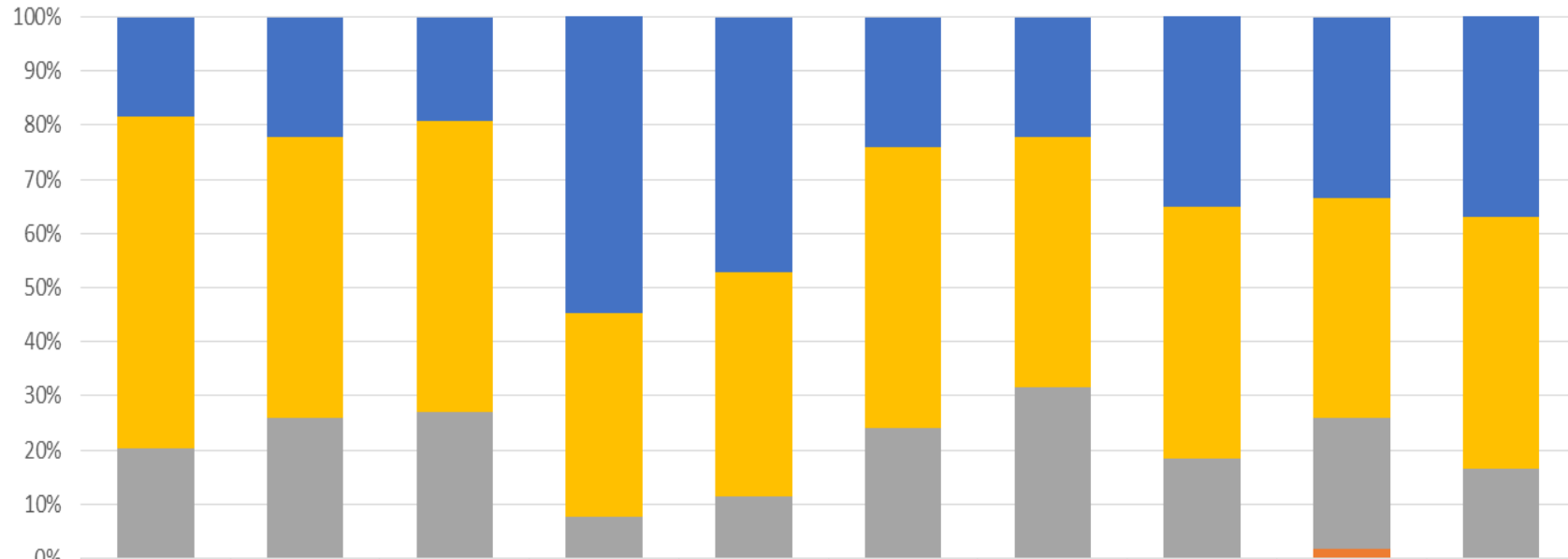
We Have the UG “All Get Some, Some Get All” Program.

Objective	Responsibility	Freshman	Sophomore	Junior	Senior
Be Technically Sound	1) Learn the Most from Your Engineering Courses	Engineering Foundations	Common Core Engineering	3000 Discipline Fundamentals	Senior Design Professional Skills—Boot Camp Core Engineering Discipline Senior Design Projects
	2) Expand Your Resources	Professional Skills Tool Box			
	3) Gather With Other Engineers & Disciplines	• Facebook Group • eli ² conference room			
	4) Learn from Life Experiences	Pre-Senior Design Experiences & Professional Skills			
	5) Experiment with Creating and Innovating	• Harris Gathering Lab • Idea Lab • Texas Instruments Innovation Lab • iCorps			
	6) Gain Work Experiences	Internships & Coops			
	7) Learn from Leadership Courses	Engineering Leadership Minor & Certificate			
		Duke Energy Leadership Seminar Series			
		Professional Development Workshops			
	Be the Owner of Your Academic Career	8) Join the leadership Journey	Roadmap & End of Year Celebration	Transfer Orientation & Roadmap	
9) Learn from Leaders—Pathway and Peer Mentors		Pathway Mentors			
10) Reflect on Yourself and Your Experiences		Planning & Reflection Session and Professional Practices Journal & Portfolio			

Our Progress—All Get Some—TI Innovation Lab Use



Build Innovation & CICA Ability



	Critically think about a product	Define the purpose the prototype	Define what you want to test with the prototype	Build a prototype	Identify the best way to build the prototype	Be creative	Be innovative	Be collaborative	Be accountable	Deliver solutions
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■ Significantly increased	18.52%	22.22%	19.23%	54.72%	47.17%	24.07%	22.22%	35.19%	33.33%	37.04%
■ Increased	61.11%	51.85%	53.85%	37.74%	41.51%	51.85%	46.30%	46.30%	40.74%	46.30%
■ Did not change	20.37%	25.93%	26.92%	7.55%	11.32%	24.07%	31.48%	18.52%	24.07%	16.67%
■ Decreased	0%	0%	0%	0%	0%	0%	0%	0%	1.85%	0%
■ Significantly decreased	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Our Progress—“All Get Some”—TI Innovation Lab Use



Valuable Resource

- It made **graduation possible**.
- An invaluable resource **that I wish were available earlier** in my academic career at UCF.

Increased Ability to Develop Prototypes and Do Hands-on Engineering

- It gave me the **confidence**, knowledge, and equipment to bring **an idea to fruition**.
- A really great opportunity to **get hands on experience** with design and building

Complete Projects

- Incredibly useful space that us students are **lucky to have**.
- The lab was the **only reason** we were able **to compete group projects as freshmen**

Complete Senior Design Projects

- **Without** this lab or the help of the people running it, my group's senior design project would have been of **much lower quality**.
- I couldn't imagine going through my final year at UCF without it.

Great Story

- The lab is usually the **first thing I show** to my friends and family visiting the school when giving informal tours.

Our Progress—“Some Get All”—We Need to Market, Prove/Scale, “Produce the Whole Product” (Ian)



Engineering Leadership
& Innovation Institute at UCF

“eli² is reaching and interacting with the "3%" of students that are driven, passionate, and hard-working.”

- Industry
 - Feed the top performers into existing intern programs
- Students – Create a meaningful community
 - Simple text email & add “App” for CECS unique events
 - Collaborate/support existing clubs
 - Cross discipline hands-on design/build project experience
 - Professional skills development (senior led)
 - Peer mentoring
 - Internships
 - Outreach/volunteering in community
- Shape overall educational experience—make it count



Strategic Issues



- Graduate Program
 - State and University are adjusting business model
 - Need to understand these implications
 - Looking to start in May
- Undergraduate Program
 - How do we create an Honor’s college like experience for our “Some Get All” group?
- Overall
 - Ensure We Do the Simple Things Well—Tighten up the Daily Operations—
 - Kate Hurt
 - An external deep dive assessment and feedback session?
 - “Lunch with Ben and Randy”
 - Maintain and expand relationships
 - Lead strategic growth





Students Have the Opportunity to Shape Their Employability—Their Destiny.

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	Be Creative, Innovative, Collaborative, Accountable	7) Learn from Leadership Courses	Engineering Leadership Minor & Certificate		
Duke Energy Leadership Seminar Series					
Professional Development Workshops					
Be the Owner of Your Academic Career	8) Join the leadership Journey	Roadmap & End of Year Celebration	Transfer Orientation & Roadmap		
	9) Learn from Leaders—Pathway and Peer Mentors	Pathway Mentors			
	10) Reflect on Yourself and Your Experiences	Planning & Reflection Session and Professional Practices Journal & Portfolio			

Impacts

- My Story
 - Aerospace Engineering
 - Transfer student
 - Seminar class
 - Leadership role
- My Fellow Student's Story
 - Internships
 - Professional careers
- Global Outcomes
 - Transferable skills
 - Broader perspective

Next Steps = Establish Community

- Professional Development Workshops
 - Leadership development
 - Creative, Innovative, Collaborative, Accountable
- Inspire Sessions
 - Demonstrate emerging technology innovations
 - Share areas needing more creativity and innovation
- “World-Changing Solutions”
 - Collaborate/support existing clubs
 - Cross discipline hands-on design/build project experience
 - Professional skills development (senior led)
 - Peer mentoring
 - Outreach/volunteering in community

Development Circles

