Student Success Through Evidence-based Pedagogies

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INTRO

This is a project to help STEM faculty implement evidence-based teaching practices in undergraduate courses at an urban research university with a mission of access.

METHODS

Grounded in Henderson et al (2011)'s model of STEM pedagogical change, the project used mixed methods to assess and refine interventions over time.

RESULTS

For sustainability we transitioned from large-budget faculty fellows projects, to a faculty learning community model with more modest costs, and a larger focus on community building and peer observations[2]. For the undergraduate STEM Learning Assistant program[3] we developed more diverse funding, and stability through a pedagogy course that offers service-learning credit instead of pay. The group of faculty and staff that started by sharing ideas for TA training, transitioned to sharing ideas about remote labs and restricted on-campus labs during the pandemic.

DISCUSSION

We started with well-funded projects, and developed sustainable versions that were tailored to our context. This included finding intangible motivations, like community support; and diverse funding including partners in multiple units in the university and credit for students.

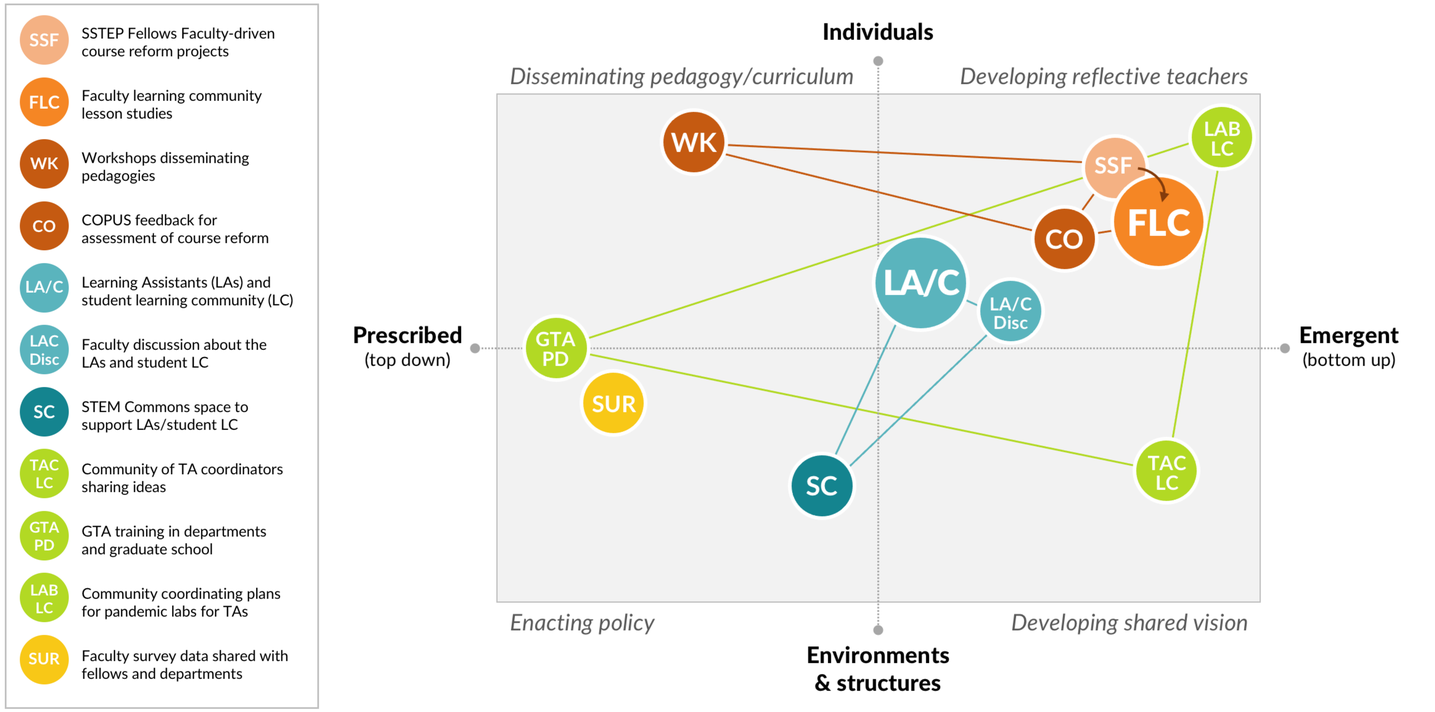
We do not know whether other institutions could start with the model we ended with, without going through the readiness for change developed with the well-funded elements.

Goals

1. Support faculty team-initiated course development projects
2. Provide an undergraduate STEM Learning Assistant Program
3. Train Graduate Teaching Assistants (GTAs)
4. Share data on faculty teaching attitudes and practices
5. Connect with community colleges

Model of Interventions

The graphic below identifies the key interventions included in the project and maps their conceptual relationships based on Henderson et al. (2011)'s model of STEM pedagogical change.



DETAILS

Numbers Influenced			
	Faculty	TAs/LAs	Students
1. SSF	34	19	4,500
1. FLC	14	-	11,500
2. LA/C	41	235	25,000
3. TA/LAB	29	70	10,000

Progress in engaging the local community colleges has been limited but successful. One of the fellows' projects demonstrated the efficacy of reaching out in areas where we have local capacity and a tight curricular connection with the community college.

REFERENCES

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4. Smith, M. K., Jones, F. H., Gilbert, S. L., & Wieman, C. E. (2013). *CBE—Life Sciences Education*, 12(4), 618-627.

ACKNOWLEDGEMENTS

Funding from NSF award # 1524878. Andrew Feig was the original PI on the project, and Mathew Ouellett was a founding co-PI. Additional funding was provided by the Wayne State University Office of the Provost, College of Liberal Arts and Sciences, College of Engineering, and STEM Departments.