

SWOT MATRIX

The SWOT matrix is a simple tool for beginning a systematic analysis of your program. SWOT stands for **Strengths, Weaknesses, Opportunities and Threats**; strengths and weaknesses are considered internal influences while opportunities and threats are considered external. The procedure originated in the business world as a tool for organizational management (Learned et al., 1965), but has become useful in many other fields.

We used our SWOT posters as a way to give us a snapshot of the state of Washington STEM teacher preparation. You have a template to begin this work on the next page.

Important things to keep in mind for an effective SWOT analysis:

- Start with a specific program objective. The more specific, the better - it's hard to define threats to "improving our program" for example, but it can be easier to define threats to "implementing the scientific and engineering practices in the Next Generation Science Standards" or "effectively graduating teachers who can implement the crosscutting concepts that unify the study of science and engineering," or "increasing educational equity so that STEM teachers represent and reflect the diversity in Washington State's". You may decide to complete several SWOT analyses for different program objectives.
- Involve everyone in the process. Different people have different perceptions and viewpoints. For example, what you consider an opportunity might be considered a threat by others. To get input from as many people as you can, you might ask your team members to fill out the matrix individually and then come together in a team meeting, perhaps using a gallery walk. Alternatively, fill out the matrix as a group. The technique you use will depend on the nature of your team and program, but the key idea is to establish an environment in which everyone involved feels free to offer their point of view.
- Give your team time for discussion. While the analysis tools look simple, the process involved in compiling ideas, discussing the results, and strategizing for the future takes time.
- After you have filled in the matrix, you can **rank** the strengths, weaknesses, opportunities, and threats within it.

You may notice:

Matches between strengths and opportunities.

Vulnerabilities where weaknesses correlate with threats.

Ideas for converting threats to opportunities or weaknesses into strengths.

SWOT analysis

Be Specific about the Objective you are analyzing:

For example: "Objective: Our graduates unify engineering and science in their classrooms through cross-cutting concepts"

NOT something like: "Objective: Our graduates are awesome and get jobs."

| | HELPFUL TO ACHIEVING THE OBJECTIVE | HARMFUL TO ACHIEVING THE OBJECTIVE |
|--|---|--|
| INTERNAL ORIGIN (ATTRIBUTES OF THE ORGANIZATION) | <p style="text-align: center;">STRENGTHS</p> <p>What is particularly effective about our program for students, faculty, graduate students, school districts, and children as relates to the specific objective?</p> <p>What resources do we have for our program (personnel, space, equipment)?</p> | <p style="text-align: center;">WEAKNESSES</p> <p>Where is our program ineffective in addressing this specific objective?</p> <p>What resources do we need, but lack?</p> <p>What annoys, frustrates, or disappoints our students? colleagues? university? schools? children? (As relates to this objective.)</p> |
| EXTERNAL ORIGIN (ATTRIBUTES OF THE ENVIRONMENT) | <p style="text-align: center;">OPPORTUNITIES</p> <p>Are we hiring new faculty?</p> <p>Are there new strategic plans or initiatives in the institution or state or country that we can jump on (Next Gen. Science Standards? Common Core?)</p> <p>Is enrollment changing (increasing, reaching a different group of students, etc.)?</p> <p>Is the institution interested in new educational opportunities (such as inter-department collaborations to promote CompSci or Eng Education)?</p> | <p style="text-align: center;">THREATS</p> <p>Is enrollment falling? Changing? Why?</p> <p>Are budgets being cut?</p> <p>What are other programs doing that we aren't? (and is this an opportunity to learn and adapt rather than a threat?)</p> <p>Are key faculty retiring? (and is this an opportunity <i>and</i> a threat?)</p> |

Spend a few minutes writing down initial ideas, then share with colleagues at your table.

What commonalities do you see?

What differences? Do you see opportunities to leverage each others’ strengths?

First, identify the Objective you are analyzing:

| | | |
|---|---------------------------------------|---------------------------------------|
| | HELPFUL TO ACHIEVING THE OBJECTIVE | HARMFUL TO ACHIEVING THE OBJECTIVE |
| INTERNAL ORIGIN (ATTRIBUTES OF THE ORGANIZATION) | STRENGTHS | WEAKNESSES |
| EXTERNAL ORIGIN (ATTRIBUTES OF THE ENVIRONMENT) | OPPORTUNITIES | THREATS |

Take the Next Steps with your SWOT analysis

The next steps start to make the transition from analysis to action. Consider the following questions:

- Do you need to revise your objective(s) based on your analysis?
- What evidence do you need to gather to make your case for change?
- Who are your potential allies and what can you do to bring them on board?
- Who are your potential collaborators and what do they bring to the table?
- Who are the key administrators you need to approach, and what are your strategies?
- What is your timeline for implementation?
- How will you know you've been successful?

References and Resources

Interdisciplinary Teaching: Designing for Success - resources from InTeGrate on strategies for designing successful interdisciplinary courses

Learned, Edmund P., Christiansen, C. Roland, Andrews, Kenneth, and Guth, William D. Business Policy: Text and Cases. 1969.

written by Anne Egger (Central Washington University) and Molly Kent (Science Education Resource Center, Carleton College), drawing on discussions and contributions from the 2014 Getting the Most Out of your Introductory Courses workshop, and edited by Roxane Ronca (Western Washington University) to meet the needs of the Washington STEM Teacher Preparation Workshop and the AACU STEM conferences, Seattle 2015, and Boston 2016