

Preliminary Evaluation Plan: Virginia Tech SUCCEED Projects, Years 6-10

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Purpose

The purpose of this evaluation is to summatively describe how Virginia Tech faculty awarded SUCCEED project funds have addressed their stated goals or "work scope." SUCCEED is a NSF-funded coalition of nine southeastern engineering schools dedicated to improving undergraduate engineering education. This evaluation represents an effort to gather local campus data, rather than information from each of the nine SUCCEED schools.

Audience

The primary audience for the evaluation report includes: Dean Stephenson of the Virginia Tech College of Engineering; Dr. Timothy Anderson, Director of SUCCEED at the University of Florida; and Virginia Tech engineering faculty involved in SUCCEED projects. A secondary audience to further benefit from evaluation findings includes: Dr. Terry Wildman, Director of Virginia Tech's Center for Excellence in Undergraduate Teaching (CEUT); and Dr. Tom Wilkinson, Director of Virginia Tech's Institute for Distance and Distributed Learning (IDDL).

Decisions Influenced by the Evaluation

The results of the evaluation will describe the effect of SUCCEED project expenditures on undergraduate engineering education at Virginia Tech. Thus, primary audience members will be able to make decisions regarding the continuation or expansion of any new funds to support ongoing or emerging projects. Further, the primary audience will be able to describe results from Virginia Tech projects to help pursue new undergraduate engineering education grants from NSF or other funding agencies. The evaluation should also describe lessons learned, best practices, and common enablers or barriers to project success that will help primary and secondary audience members better implement future projects of a similar nature. Additionally, we seek

recommendations from project leaders that will allow decisions makers to judge the sustainability of appropriate projects.

Questions to be Addressed

Four categories of questions will be addressed during this summative evaluation. The four categories are derived from Stufflebeam's decision-based evaluation model entitled CIPP (context, input, process, and product) (Stufflebeam, Foley, Gephart, Guba, Hammond, Merriman, & Provus, 1971; Stufflebeam & Shrinkfield, 1985). Context questions will help to define the institutional context, identify needs of the target population and opportunities to address those needs, and determine how well project goals and outcomes have addressed stated needs. Input questions will help to define institutional capabilities as well as project strategies and designs. Process questions will help to define deficiencies in project processes or their implementation. Product questions will help to define project outcomes and judge their worth. Specific questions that comprise the interview protocol are listed in Appendix A. To answer the questions, individual interviews will be conducted with each Virginia Tech SUCCEED project leader, and products or materials developed for the projects will be reviewed.

Analysis

We will use qualitative case study analysis to process the evaluation data. In particular, we will employ a cross-case analysis strategy referred to as "interactive synthesis" (Miles & Huberman, 1994, p. 176). SUCCEED projects were divided into four focus areas: Faculty Development, Outcomes Assessment, Student Transitions, and Technology-Based Curriculum Delivery. 28 separate projects were conducted across the four focus areas, and these separate projects may be considered unique cases (see Appendix B).

First, we will generate 28 individual case synopses from interview transcripts. These case synopses will consist of a table illustrating stated project goals in one column with related project outcomes in another. Further, comments will be pulled from the transcripts and appended to each synopsis describing the *context* or needs leading to the project (i.e., needs), the *inputs* required to make the project work, the *processes* undertaken, and the resulting *products*.

Next, we will collect the case synopses for a given focus area, and compare the first case synopsis with each subsequent synopsis in that focus area to identify similarities and differences (e.g., two directors complained about limited funds, three directors described the value of Internet technology). A meta-matrix will be generated for each focus area to illustrate emerging patterns across projects in a specific focus area, or to stack "information from several cases into one big chart..." (p. 177) (*focus area patterns*). Each meta matrix should have at least four sections corresponding to the evaluation framework: contexts, inputs, processes, and products (CIPP).

Procedures

Kevin Oliver will set up and conduct interviews with Siegfried Holzer, Bev Watford, and Joe Tront, who collectively directed 13 of the 28 projects to be evaluated (see Appendix B). Cheryl Peed will set up and conduct initial interviews with the remaining individual faculty members (15 of 28 projects). Microcassette tapes containing interviews will be delivered to Kevin Oliver for transcription by outsourcing. **IMPORTANT: these tapes must be regular audio cassette tapes, not microcassette tapes, for use with transcription equipment.**

Kevin and Cheryl will ask all 16 questions in the semi-structured interview protocol to each project leader (Appendix A). Questions should be asked in order, and no question should be skipped. If a question is not applicable to a specific project, this should be stated on the

audiotape. If a project leader directed more than one project, they must be interviewed twice or more depending on the number of projects they directed.

The interviewers should take special care to probe question #4, collecting specific examples of project products, artifacts, materials, etc., whenever possible. If materials are not at a project director's disposal during the interview, the interviewers should ask where such items can be viewed, and/or take down contact names of individuals who can provide a copy of or access to this evidence. Project materials will be appended or illustrated in the evaluation report, so acquiring copies is very important.

Kevin will be responsible for the described analysis phase, generating and comparing the case synopses. A preliminary evaluation report will be written based on the faculty interviews and subsequent collection or documentation of their project materials.

Budget

Budget items include time, transcribing, and materials. Kevin's time will be charged at 25% for the months of May-August, 2001. Salary costs will be approximately \$4150. Assuming 28 project directors are interviewed for 45 minutes each, a trained transcriptionist can process these 21 hours in approximately 105 hours (five hours of transcription per one hour of tape).

Transcription rates currently run \$15 to \$22 an hour, thus the typing of evaluation comments should cost \$1575 to \$2310. Additional funds will be required to purchase equipment and cassette tapes for interviews.

Time Line

The time line for the preliminary evaluation is shown in Table 2. The elapsed time frame is approximately 4 months, beginning in May of 2001, completion in August of 2001.

scheduling participant interviews	May 2001
completion of individual interviews	by June 22, 2001
review of project products and materials	through July 13, 2001
transcription of individual interview data	from June 1 - July 13, 2001
preliminary analysis of interview data, meta matrices developed	from July 13 - July 31
preliminary evaluation report written	by August 31, 2001

Table 2. Evaluation time line.

References

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis*. Thousand Oaks, CA: Sage Publications.

Stufflebeam, D. L., Foley, W. J., Gephart, W. J., Guba, E. G., Hammond, R. L., Merriman, H. O., & Provus, M. (1971). *Educational evaluation and decision making*. Itasca, IL: Peacock.

Stufflebeam, D. L., & Shinkfield, A. J. (1985). *Systematic evaluation*. Boston: Kluwer-Nijhoff.

Appendix A: Semi-Structured Interview Protocol

Name: _____ Interviewer: _____ Date: _____

Context questions (to define institutional context, identify needs of target population and opportunities to address those needs, determine how well project goals address stated needs)

1. What were the stated goals for your SUCCEED project?
2. What were your project outcomes (e.g., Web sites, documents, materials, learning)?
3. What needs, issues, or problems did these outcomes address?
4. Where can we find examples of your outcomes (e.g., the Web site address, the CD-Rom that was developed, documentation that a workshop took place, attendance records, etc.)?

Input questions (to define institutional capabilities, project strategies and designs)

5. What was required to achieve the goals (e.g., equipment, facilities, staff)?
6. What alternative strategies for project implementation might have helped achieve the goals?
7. How did your colleagues gain awareness about your project?
8. Please describe the type of support (from your department, the college, or SUCCEED) that was most useful for you in completing your project

Process questions (to define deficiencies in the process or implementation)

9. How well have the goals been met?
10. How were SUCCEED funds allocated or spent (e.g., equipment, personnel, supplies, programming, etc.)?
11. What barriers threaten the project's success?

Product questions (to define outcomes, judge their worth)

12. Please describe the lessons learned (positive or negative) from your project.
13. Do you believe this project should continue? If yes, what are your suggestions or recommendations for sustaining this project?
14. How did the outcomes of this project impact engineering education at VT?
15. As a result of your participating with this project and SUCCEED, what impact has working on this project had on your views of teaching and learning?
16. Should we leverage the project with another program at VT or with other universities?

Appendix B: Projects to be Evaluated

#	Evaluator	Project Leader	Project Label	Project Description	Funds Awarded
1	Kevin	Siegfried	FacDev 1-1	promoting, supporting attendance of faculty development and Coalition Focus workshops	\$4000, yr.8 \$4000, yr.9
2	Kevin	Siegfried	FacDev 1-2	presenting faculty dev workshops and engineering learning community meetings, inviting outside experts	\$5000, yr.8 \$4000, yr.9
3	Kevin	Bev Watford	Outcomes 1-1	work with OA CFT to develop outcomes assessment instrument for continuous improvement	\$3000, yr.7
4	Kevin	Bev Watford	Outcomes 1-2	implement and pilot test outcomes assessment instrument, train faculty to develop/use outcomes measures	\$2000, yr.7
5	Kevin	Bev Watford	Outcomes 1-3	participate in OA/FD shared workshop, send up to 5 participants to CIR workshop or OA conferences	\$4000, yr.8 \$4000, yr.9
6	Kevin	Bev Watford	Outcomes 1-4	participate in employer feedback project: .5 GA to assist in conducting project, reports to Bev Watford	\$9000, yr.8 \$2000, yr.9
7	Kevin	Bev Watford	Outcomes 1-5	participate in portfolio project: .5 GA to assist in conducting project, reports to Bev Watford	\$9000, yr.8
8	Cheryl	G.V. Loganathan	Students 1-1	integrate engineering experiences in some sections of Emerging Scholars Program (ESP) (Math 1205)	\$20,000, yr.6 \$25,000, yr.7 \$9000, yr.8
9	Kevin	Bev Watford	Students 1-2	implement and expand support for students at risk, college success strategies, summer bridge program	\$5000, yr.7 \$15,000, yr.9
10	Cheryl	Krishman Ramu	Students 2-1	form and operate two virtual corporations: DISC and PERTS	\$25,000, yr.6 \$25,000, yr.7 \$9000, yr.8
11	Cheryl	Hugh Munson	Students 2-2	develop hands-on statics workshop, teach and assess 4 sections of ESP statics	\$25,000, yr.6 \$25,000, yr.7 \$15,000, yr.9
12	Cheryl	Sam Easterling	Students 2-3	develop pilot course in building design, integrate practicing professional	\$20,000, yr.6
13	Cheryl	Imad Al-qadi	Students 2-4	develop pilot course, multidisciplinary (CE/EE), of testing and rehabilitation design	\$20,000, yr.6 \$15,000, yr.7
14	Kevin	Bev Watford	Students 2-5	provide workshops, activities, for workplace transition, organize engineering organizations fair	\$4000, yr.6 \$4000, yr.7 \$3000, yr.8 \$3000, yr.9
15	Cheryl	Gene Haugh	Students 2-6	develop industry-derived design projects in Biological Systems Engineering	\$17,500, yr.7 \$9000, yr.8
16	Cheryl	Will Saunders	Students 2-7	electro-mechanical design and smart product projects by ME and EE teams	\$18,000, yr.8 \$17,000, yr.9

17	Cheryl	Richard Goff	Students 3-1	transform freshmen engineering course to problem-solving with hands-on lab experiences	\$20,000, yr.6 \$25,000, yr.7 \$9000, yr.8
18	Cheryl	Jeff Connor, Richard Goff	Students 3-2	introduce early design experiences, projects, to freshmen, adapt projects from SUCCEED pilots and other NSF coalitions	\$20,000, yr.8 \$15,000, yr.9
19	Cheryl	Mary Cummings	Students 3-3	develop pilot course in engineering fundamentals focused on ethics, use case studies	\$10,000, yr.9
20	Cheryl	Goff, Kampe, Knott	Students 3-4	integrate hands-on and design activities from EF SUCCEED pilot courses into EF 1015	\$20,000, yr.9
21	Cheryl	??	Tech 1-1	Web site for engineering advising	\$7000, yr.6
22	Kevin	Siegfried Holzer	Tech 1-2	create internet course, multimedia learning environment for statics and mechanics, implement with one course	\$7000, yr.6 \$8000, yr.7 \$8000, yr.8
23	Kevin	Joe Tront, Butch, Dong	Tech 1-3	form faculty teams to implement tools and techniques	\$18,000, yr.8
24	Cheryl	Robert Hendricks	Tech 1-4	student teams work with industry to develop multimedia learning modules in microelectronics	\$9000, yr.8
25	Kevin	Joe Tront	Tech 2-1	faculty attend TBCD workshops, to learn about technology tools for teaching engineering	\$8000, yr.8 \$8000, yr.9
26	Kevin	Joe Tront	Tech 2-2	round tables held to discuss best practices in internet-based instructional methods, integrate with FDI	\$9000, yr.6 \$9000, yr.7 \$5100, yr.8 \$4000, yr.9
27	Cheryl	Glenda, Jason Lockhart	Tech 2-3	faculty technology production assistance, develop baseline instructional materials	\$9900, yr.8 \$35,000, yr.9
28	Cheryl	Tim Pratt, Glenda Scales	Tech 2-4	develop modules from ECE 3614 for electronic delivery	\$10,000, yr.9