

2006-1698: DEFINITION, MISSION, AND REVITALIZATION OF COOPERATIVE EDUCATION PROGRAMS

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Definition, Mission, and Revitalization of Cooperative Education Programs

Abstract

The Purdue University Cooperative Education Program recently completed an evaluation which included reviewing programs at its peer institution group and other top ranked Cooperative Education schools. This due diligence process also included the examination of data from participating students, participating employers, non-participating employers, and qualified, but non-participating students at Purdue. Market Analysis as defined by White¹ was used as a basis to conduct the review, and those results have been presented elsewhere. This paper will cover how the information developed during the due diligence process was utilized to modify the Co-Op Program at Purdue and set the stage for its revitalization. Although over a dozen items were found to be significant, the key influencing factor for the future success of the program was determined to be the student participation rate. Potential modifications to raise the level of participation needed to be designed so that they reduced student entry barriers to the program without decreasing the academic quality of the experience. The governing committee for Cooperative Engineering Education at Purdue returned to basic key elements of the Co-Op experience to identify what factors were considered critical to the success of the program. From these elements, basic definitions of Co-Op, internship and Professional Practice emerged. It was decided that henceforth Purdue would promote Professional Practice, a term which includes both the internship and Co-Op experiences. A revised mission statement for the program was developed that incorporated the University's strategic goals and broadened the scope of our assignment. Following the completion of the evaluation process, new programs were designed which fit the new definitions, mission statement, and student needs. This paper will discuss the compromises and adaptations required on the part of the university to develop new work experience programs. This information should be useful to other practitioners preparing to undergo a similar evaluation and revision process at their own institutions.

Introduction

The current issues facing Cooperative Education are not unique to any one particular institution. Nationally, there has been a slow, but steady decline in collegiate participation in Co-Op. This trend was present in the data for Purdue, and in fact, the Purdue trend was somewhat accelerated above the national rate of decline. This was felt by the Purdue administration to be unacceptable, and a self-assessment study was undertaken to examine the situation and propose remedial changes during 2004. The study and its findings were related in an earlier paper by Stwalley².

The self-assessment study included a review of the current system in place at Purdue. Individual meetings were conducted with Engineering and Technology Co-Op Coordinators, Engineering Department Heads, members of the Engineering Dean's cabinet, employer partners, non-participating potential employer partners, Co-Op students, qualified but non-participating students, national Co-Op figures, and members of the Indiana Commission for Higher Education. Surveys of industrial partners and students, both in the participating and non-participating categories, were conducted to get a broader view of the feelings of these groups. Several

significant influencing factors were identified during the study. In a somewhat unusual move for an academic organization, market analysis as defined by Suarez³, Vesper⁴, and White¹ for business enterprises was used as a framework to review the results and develop an action plan that takes advantage of the Purdue system's strengths and minimizes or eliminates its deficiencies.

The resulting strategic plan combined elements from the self analysis with the Purdue Strategic Plan and the Strategic Plan for the College of Engineering. This was important, because in aligning the revitalization with the overall Purdue and College of Engineering plans, we achieved automatic administrative buy-in. The institutional commitment to change was necessary, since the Cooperative Education Program at Purdue has significant tradition and inertia associated with it. It was crucial to sell the proposal to the faculty, and having a managerial mandate to reform the program made the changes more palatable. The reforms described in this paper were approved by both the Engineering and Technology faculties at Purdue during the Fall semester of 2005.

The balance of this paper will provide details on the reform plan crafted for the Purdue program. The next segment will describe the definitions applicable to experiential education as seen by the Purdue faculty. The following section will review the resulting mission statement and key initiatives of the revitalization plan for the Purdue program. The final piece of the main body will describe the specifics of the new Purdue Professional Practice Program. The paper will conclude with our current progress toward implementing these changes.

Definitions

The first significant issue that the faculty committee governing Cooperative Education in Engineering at Purdue had to contend with was the lack of consistency in terms and definitions on campus and indeed throughout the field. Co-Op means many different things to different people, and there are at least three other groups on campus using "Co-Op" in their names that have nothing to do with Cooperative Education. The term "experiential education" has become popular in recent years, and while it certainly includes Cooperative Education, it also takes in many forms of practical experience which are definitely not Co-Op or even work related. As we examined the growing forms of practical experiences available at Purdue, it seemed to make sense to utilize the original mission of the university to classify the types of experiences. Purdue is one of the first Land Grant universities, with engagement, research, and traditional academic goals. Students at Purdue can gain practical experience in service learning projects through EPICS, research projects through employment in on-going laboratory projects with faculty, and work experience through employment with various university partner organizations. It was determined that we would use the term "experiential education" to describe this larger spectrum of practical experience.

Unfortunately, Co-Op does not adequately describe all of the types of traditional work experience available to students. Cooperative Education is the grandfather of all practical education programs, but it now has numerous children. Internships have grown tremendously in popularity over the last twenty years, and while many people are willing to co-mingle internships with Co-Op's, we felt that there were distinctive differences. It was critical that we find a

terminology that adequately described both types of practical work experience programs. A review of the literature and other leading Co-Op institutions convinced us that the term “Professional Practice” was the best choice for a general, inclusive description of traditional practical work experience.

There were significant challenges on campus before the adoption of this term could become finalized. Some people felt that the use of the word “Practice” implied a field within the College of Technology (at Purdue University, Engineering and Technology are separate Colleges). Additional concern was voiced, as our distance and continuing education program had just re-named itself Engineering Professional Education. In both cases a coordinated campaign of persuasion and education was able to subdue the objections. Following Williams⁵, we have defined “Professional Practice” as the utilization or application of academic training within a professional setting. In reality, this definition applies to all disciplines and is not explicitly tied to any one profession.

It became even more difficult to agree upon what were the defining characteristics of a Co-Op experience. After considerable discussion, we returned to our roots and our original definition of Co-Op. At Purdue, we have always maintained that a Cooperative Education experience should provide students with the opportunity to utilize their specific academic skills within a professional environment, should give students a chance to be mentored by an experienced practitioner within the field, and should allow students to progress in job responsibility as performance and ability become apparent. We found no compelling reason to change the underlying expectations associated with the Co-Op experience. The consensus of our governing committee was that the unique element of Co-Op was contained within the third element. A true Co-Op experience requires that students be given enough tenure with an organization that their abilities and skills become apparent and that they can be then given additional responsibility commensurate with those capabilities. The first two elements were felt to be the defining premises of Professional Practice. Adding the third element qualified that particular Professional Practice experience as a Co-Op experience.

From a practical point of view, it now became necessary to determine the length of time necessary for a work experience program to be considered a Co-Op experience. The feeling of the committee was that a minimum of one year of full time equivalent work experience was needed to provide the opportunity for growth within the students’ responsibilities. Therefore, the Purdue definition of a Co-Op program is that the experience must be a Professional Practice opportunity in which the student completes at least one year of full time work with a single employer. All experiences which total less than one year or involve multiple employers are considered Internships. The committee further felt that for the Internship experience to be of academic value to the student, it needed to include some type of defined project work in which the student was allowed to participate and evaluate. In this regard, the project nature of the Internship experience is taking the place of the growth aspect of the Co-Op experience. Having basic definitions and expectations established, it now became possible to determine the mission and charge of the newly defined Professional Practice Program.

Mission

Mission statements are designed to be the foremost concept that guides an organization. Far from being a trivial exercise, the mission statement is a simple guideline or framework from which to judge all subsequent activities. An activity either contributes to the long term well-being of an organization or it does not. The following mission statement was developed to guide the new Professional Practice Program at Purdue:

“The primary mission of the Professional Practice Program at Purdue University shall be to facilitate the experiential, practical education of students within the traditional learning component of the institution’s strategic triad. Additionally, the program shall further on-going research within the field of Professional Practice and assist the traditional academic units with engagement through the enhanced contact with employer host organizations.”

After the completion of a mission statement, the development of a revitalization program based upon those principles is the next step. The strategic plan for improving Cooperative Education at Purdue was derived from the findings of the initial investigation, the Purdue Five Year Strategic Plan, the College of Engineering Strategic Plan, and the combined input of the Faculty Coordinators from the Colleges of Engineering and Technology. The following key initiatives were proposed as a means to accomplish the mission and meet the stated goal of increasing the overall participation rate in some form of Professional Practice:

- 1) Utilize and promote a broader definition of “Practice” that includes Co-Op and other forms of appropriate and directed work experience;
- 2) Provide improved support, recognition, and resources for the departmental component of the program;
- 3) Enhance the academic element of the program by adding instruction covering topics that relate to the functional utilization of professional skills within the working environment;
- 4) Facilitate new and continuing research within the field of Practice that initially emphasizes the outcomes-based learning portion of the experience;
- 5) Facilitate and improve the contact between the Purdue professional schools and their industrial partners; and
- 6) Improve the marketing and promotion of the program to students, faculty, and industrial partners.

These initiatives were specifically designed to enhance and protect the existing positive aspects of the Purdue program, while minimizing and correcting the present deficiencies. The current administration was well aware of the many concerns created by this broadening of focus and fairly sweeping reorganization. However, it did not undertake these initiatives without a valid rationale. There were three principle reasons that made these initiatives and changes critical to the future of Cooperative Education at Purdue.

The current Co-Op program was being outflanked in competition for students. There were numerous new programs that addressed a portion, but not all, of the original Cooperative Education definition. Without a change in scope, the current program could not hope to survive

as anything other than a shadow of its former self. Moving toward a more general definition allowed the preservation of the current Co-Op program in a relatively unchanged manner, but provided access to additional students through increased Professional Practice offerings. By utilizing expanded definitions and enhanced offerings, the total number of students receiving some form of practical experience at Purdue should rise.

The creation of a new and unique Professional Practice identity will facilitate the introduction of academic “Co-Op” classes and the enhancement of the academic reputation of the Purdue program. There is a general desire amongst the current students for an on-campus seminar and discussion class following the work sessions, like those presently offered in some of our individual departments. Another opportunity made easier under a new identity is the introduction of on-assignment web-based classes in Business Culture, Organizational Structure, Business Communications, Project Management, and Ethics. These courses will be structured to emphasize certain key actions and skill sets identified through the Iowa State University model of Mickelson, et al ^{6,7,8} as feeding directly into the competencies of the ABET Criterion III (a-k) outcomes assessment matrix. The unique identity will assist in defining the field of “Practice”, and it will help facilitate scholarly activity within the field.

An enhanced academic reputation, a unique identity, and an elevated profile will allow us to compete more aggressively for resources in the university environment. If we are serious about getting students more practical experience, then we will need the resources to pay for faculty coordinators, support staff, and administrative personnel within the various departments. It will be crucial to the future success of the program that faculty coordinators be given release for the tasks they perform. We need to be able to add staff with special talents. The governing committee has already strongly suggested that the next employee hired by the central office be a marketing and promotion specialist. We need more space for the central office. Our potential expansion into new space within a new building was cancelled after the needs of other organizations with more visibility expanded. To handle more students and become a preeminent academic program, we need more resources. Any incremental step along the way that raises the visibility of the organization, such as the creation of a unique Professional Practice identity, will be useful in the competition for resources.

The new mission statement provides guidance for the program. The key initiatives foretell how we plan to focus our efforts, and the local on-campus rationale explains why we are taking the approach we have selected. Together, these elements might be said to constitute our dogma of change at Purdue. We believe these are the things we need to do and the way we need to do them. We also believe that there exists a tremendous opportunity to expand the benefits of Professional Practice to our students, if we successfully manage the change in our operational philosophy. It is important for us to accept that the world has changed and that we need to be flexible in our approach to our programs and their administration. Very clearly, the failure to change and be flexible has contributed to the on-going gradual decline in the Purdue program. It would be nearly impossible to gather conclusive evidence to support this conclusion on a general basis, but it makes a great deal of sense to assume that in the slow-to-change academic environment, the failure to be flexible and adapt to the times is probably wide-spread.

Flexibility and the Revitalization of the Purdue Program

If the Purdue program is to stop its present decline and grow, it will need to analyze and utilize the information it collected during the self-study. Two items were readily apparent from the market analysis. The first was the perceived lack of flexibility regarding the current, traditional Purdue five session Co-Op program, and the second was the tremendous growth of internships as a means of gaining directed work experience. In revitalizing the Purdue Co-Op Program, it was necessary to incorporate alternative work schedules that included the internship possibility as an option. Director Stwalley and the governing committee designed and proposed to the faculty several new alternative schedule programs to address the perceived deficiencies of the traditional Co-Op Program. Considered together, these new programs are an integrated, comprehensive set of alternative work schedules designed to add flexibility and cover the full range of practical work experience schedules for both students and employers. Care has been taken to keep the present five session program as the flagship experience for students. The GPA cut-off for the five session Co-Op program will remain at the top half level (2.8 / 4.0), and the new programs will have lower requirements. The committee decided to define Co-Op experiences as those with total on-the-job tenures of 12 months or longer. By this definition, three of the new Professional Practice programs are Co-Ops, and two are internships.

A new three session program, Advanced Technical Experience Program (ATEP), beginning in the junior year was approved by the faculty and is expected to be extremely popular. The central administrative office will accredit the various potential employers' programs just like the present Co-Op system to insure quality and provide faculty oversight. This program will be similar to the current Co-Op program, except it will begin a year later and run for two fewer sessions. Several employers have been requesting students with more academic training prior to the start of their work experience programs, so this will clearly meet those needs. This program will be better suited for international students, since they presently perceive that they have work visa difficulties completing the five session programs. It will provide a nice intermediate commitment opportunity between the five session program and internships. The GPA cut-off for this program has been lowered to the top two-thirds level (2.6 / 4.0). This enlarges the pool of potential applicants, but adds maturity and advanced academic standing to make-up for the drop in grade requirement.

A parallel program, Advanced Leadership Experience Program (ALEP), has also been approved by the faculty for giving students organizational management background, so they can deal with conflict management, providing the public with technical information, and strategic planning. This program will be identical to the ATEP in schedule, but place the students in work assignments with a different emphasis. Our employer host organizations have recently been inquiring about the possibility of these types of experiences, and the potential of this program seems to have captured the present students' interests, particularly those in leadership roles on campus already. We intend to use a separate employer accreditation procedure for this program, and we anticipate that our initial leadership Co-Ops will be engineers and technologists that ultimately intend to pursue administrative and managerial careers.

A single continuous year long experience, the Concentrated Cooperative Education Program (C²), is expected to benefit smaller departments and companies. One of the consistent

difficulties our smaller academic units face is the necessity to teach all required sophomore and junior courses both semesters of the academic year. One of the complaints that our employer partners seem to express is that a semester is not long enough for a student to complete a project of significance. Many European institutions and firms do Co-Op in what they call the “sandwich” schedule: three years of schooling, a year of professional experience, followed by a capstone year of school. The Concentrated Co-Op program is designed to emulate that sequence, and it will provide our newer academic units with a means to get involved in Co-Op that they can support, prior to being able to afford the every semester overhead of the traditional alternating Co-Op program. Students who choose this concentrated option will step-out of the traditional curriculum following their junior year, complete a year’s worth of practical training, and then return to campus for their senior year. We expect this to appeal to smaller research and development firms, and our intention is to use the same employer accreditation procedure as for the ATEP. Student requirements will be the same as for the ATEP and ALEP: upper two thirds academic standing.

It is anticipated that these new Co-Op programs will have much in common with the present five session Co-Op program in that they will provide directed, relevant, and progressive experience for our students that is applicable to their future careers. Under the classification scheme we developed, they are all considered Co-Op Programs, and our intention is to establish and administer the programs similarly. All students completing the programs will receive a certification from the university upon graduation stating that they have completed a registered Purdue Cooperative Education experience, and the host organization for the experience will be transcript recorded.

An Intensive Internship (I²) program consisting of a back-to-back spring / summer or summer / fall session has also been approved by the faculty. This experience will be very similar to the Concentrated Co-Op Program, except shorter. Several of our academic departments were already sponsoring programs which fell under this definition. This offering will provide a certificate for the experience and provide central administrative office assistance in developing more of the opportunities. Most of the students utilizing this form of practicum have gotten behind or out of sequence from the standard plan of study and need specific senior courses unavailable every term. This program will allow them to effectively utilize their remaining academic time and complete some form of professional work experience. The Intensive Internship work experience provides a significant benefit to the student and the potential for an industrial based capstone senior project.

A certified Internship program has been approved by the faculty that will provide students with an internship certificate following two or three summer sessions with accredited employers. The sessions could be with different employers. Our plan is for the central administrative office to work closely with the Purdue Center for Career Opportunities and the Purdue Technical Assistance Program to quickly accredit new employers affiliated with their programs and allow students to take a larger role in administering their own programs. Our intention would be to minimize the accreditation procedure for Internship employers, by simply collecting basic information, getting the host to acknowledge our basic principles, and agreeing to the project nature of the Internship. All internships in our program will need to be paid positions, and any student in good academic standing would be eligible for the experiences. By

providing a certificate granting program for the internship experience, the Purdue College of Engineering and the Purdue College of Technology will be able to cover the full spectrum of Professional Practice opportunities available to students and provide the benefits of the central administrative office organization and activities to the full engineering and technology student body.

By having a full range of programs, Purdue will be better situated to meet the needs of all students. Increasing the participation rate of our students in some form of directed undergraduate work experience will unquestionably enhance the aggregate quality of the Purdue educational experience and our institutional reputation. These modifications to the College of Engineering and the College of Technology's Cooperative Education program are designed to transform it into a Professional Practice future. These changes fit the directives described in the Purdue Strategic Plan, and, once fully implemented, they give the university a world class, preeminent undergraduate Professional Practice program.

Close

Throughout the entire Co-Op revitalization process, roadblocks have appeared, sometimes from the least likely sources. It is crucial that anyone attempting to change a long running academic program realize that developing a model or plan for change is only about one quarter of the battle. Performing the surveys, analyzing the data through a market analysis framework, and even crafting the change plan is simple compared to selling the plan to the faculty and the various committees which need to approve the modifications. It is important that the upper administration support the general vision for change initially. Without this support, the modification plans will not progress through the institutional bureaucracy. It is also critical that the primary faculty committee charged with the administrative oversight of the program achieve consensus on the changes. This is vital, since these committee members will need to sell the changes to their colleagues. Agents of change will fight numerous battles to bring about different modes of operation, but without these two elements in place, the outcome of the campaign will never be in doubt. There will be no change.

Even with administrative support and active oversight committee promotion, the outcome is not guaranteed. It is important to be flexible, since in the university environment, no plan remains static. Each level of approval that a modification plan must pass through places its own imprint or twist upon the result. Explaining and justifying those later changes to groups which have previously given their blessing to an earlier version of the plan can be a tedious, and sometimes, an iterative undertaking. It goes without saying that much negotiation is required to navigate the academic change path. The final necessary element for successful change is persistence on the part of the primary agent. The principle needs to display a fierce determination and directness of purpose to reach the end result. Without these traits, the natural tendencies of the organization to resist change will overwhelm the momentum to change, and status quo will prevail.

In summary, to initiate change in a long established academic program, it is critical to have initial administrative support. Data must be collected from all stakeholders, including the potential ones that are unreached under the current system. When analyzing the data, it is

important to be fair, unbiased, and ask: “What is this information telling me?” When crafting a change plan, attempt to salvage the good elements of your existing program and incorporate the needed modifications that are required to eliminate the bad. At Purdue, it was found that the keys to resolving our Co-Op enrollment difficulties lay in the lack of flexibility on the institution’s part to the needs of students and our host organizations. Transformation began by developing new definitions and a revised mission statement that allowed for flexibility in our approach to undergraduate professional work experience. The new Co-Op and Internship programs approved by the faculty allow far more variation and flexibility than our previous, single, traditional Co-Op program. We stayed persistent upon our chosen path, because we knew it was right for our students. We have renamed ourselves, successfully sold the new programs to the overall institution, and now, are beginning the process of implementing the new era of Professional Practice at Purdue. The journey has been long and hard, but we anticipate that the results from a few years down the road will show that the struggle was well worth it.

References

- 1) White, Richard M., Jr., The Entrepreneur’s Manual, (Radnor, Pennsylvania: Chilton, 1977).
- 2) Stwalley III, R.M., “Survival and Success in Co-Op Programs Through Market Analysis and Core Values”, Proceedings of the 2006 Cooperative Education and Internship Association Annual Meeting, (CEIA, 2006).
- 3) Suarez, Benjamin D., Seven Steps to Freedom II, (Canton, Ohio: Hanford Press, 1993).
- 4) Vesper, Karl H., New Venture Experience, (Seattle, Washington: Vector Books, 1994).
- 5) Williams, R., “Education for the Profession Formerly Known as Engineering”, Chronicle of Higher Education, Volume L, Number 3, 24 January 2003, p. B12-B13.
- 6) Mickelson, S.K., Hanneman, L.F., & Brumm, T., “Validation of Workplace Competencies Sufficient to Measure ABET Outcomes”, Proceedings of the 2002 American Society for Engineering Education Annual Conference & Exposition, (ASEE, 2001).
- 7) Mickelson, S.K., Hanneman, L.F., Prignitz, L.K., & Lehman, M., “Constituent-Created, Competency-Based, ABET-Aligned Assessment Tools for the Engineering Experiential Education Workplace”, Proceedings of the 2002 ABET Annual Meeting – National Conference on Outcomes Assessment for Program Improvement, (ABET, 2002).
- 8) Mickelson, S.K., Hanneman, L.F., Brumm, T.J., & Steward, B.L., “Using Engineering Competency Feedback to Assess Agricultural Engineering Curriculum”, Proceedings of the 2003 American Society for Engineering Education Annual Conference & Exposition (ASEE, 2003).