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Establishing and Nurturing Cooperative Research and Development Projects



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In a major automobile manufacturer's world headquarter's conference room, back in 1967, I received a lesson in life. My doctoral advisor (with a hefty federal grant to back him up) and I peered confidently at several corporate executives across the walnut surface. It seemed as though we had barely exchanged greetings and we were hit head-on with the frigid question... "What's in it for us?" We were prepared to tell what we were doing, why it was important, how we could cooperate, and specifically what we wanted from the company. We were not ready to answer the question as to what was in it for them. The question deflated my altruism and a realization set in that we had not analyzed the needs and goals of the company and had little awareness of their resources.

It is precisely these two points, *goal analysis* and *resource analysis* that are at the heart of establishing and nurturing cooperative research and development projects.

Status of the Literature

Much has been written about research and development grantsmanship, proposal writing, project planning, project management, and project evaluation. There will be no attempt to address these important issues other than to acknowledge them and to note that there are many fine publications on these topics (Davis & Parker, 1979; Evarts, 1964; Gantt, 1961; Hawkrige, Campeau, & Trickett, 1970; Miller, 1974; Popham, 1972; White, 1975).

The literature on establishing and nurturing cooperative research and development projects is limited, segmented, and obscure. For example, much of the information about cooperative research between industries is suppressed because of concerns about antitrust action. A recent publication about private sector cooperation research and development provides insight to the legalities from the view of the private sector (Radtke & Ponikvar, 1984). In contrast to the legalistic and defensive concerns about cooperative efforts, Ouchi calls for a full dose of cooperative effort as a means of revitalizing society and its institutions (1984).

The reservations from the public sector

appear to be more focused on process issues rather than legal issues (*Collaboration*, 1983). These process issues often emerge as methods of pressing ones ideas on others (Nirenberg, 1984) to agonizing over the connection of research and practice (Swanson, 1984; Shoemaker, 1984; Passmore, 1984). The topics developed in this treatise are even more fundamental. They are more like the courtship leading to marriage than the use of a marriage manual to spice-up or perfect an existing commitment. No one needs reminding that bad marriages — among couples and agencies are consecrated daily. Minimizing or avoiding painful courtships and partnerships is the ultimate purpose of goal and resource analysis.

The corporate board room experience many years ago taught me that analysis must precede commitment when it comes to cooperative ventures. And, in particular it taught me that an analysis of my goals *and* those of the agency I represented, along with those of the person *and* agencies that I anticipated approaching, was fundamental. Furthermore, I've come to realize that cooperative research and development projects established without an analysis of resources usually end up as failures.

Model

A general model (Figure 1) for establishing cooperative research and development projects was developed. Within it, analysis precedes commitment. Moreover, this analysis is of both goals and resources. Within goal analysis, there is a need for analyzing the goals of both agencies and the key people from both agencies. As for resources, realistic assessments of the available personnel, capital, and financial assets should be made as well as those needed to accomplish the potential cooperative research and development project. Once this analysis is complete, reasonable cooperative research and development goals can be formulated, presented, and reviewed. Thus, the commitment phase can be entered into with eyes open and negotiations aimed at mutual benefits. The analysis will also lend objectivity and clarity to the commitment

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accommodations to the research and development goals that were formed following the analysis of goals and resources (Table 1). The commitments were hammered out before the proposal preparation and refined while the proposal was being finalized. The proposal was submitted and funded for three years with federal funds. While Gantt Charting (Gantt, 1961) and Program Evaluation and Review Technique (Evarts, 1964; Miller, 1974) methods were crucial in managing the cooperative research and development activity once approved, the front-end articulation of the analysis, goals, and commitments provided the foundation for a successful cooperative research and development effort.

Summary

To develop and test ideas in the professional marketplace is usually an exhilarating experience — void of ivory tower isolation and trench fighting blindness. Cooperative research and development efforts often span the theory to practice gap that threatens to undermine any profession. Furthermore, gains in combined resources increases the odds of success. More than the resources, and prerequisite to the resources is the need for a common goal. Clearly, a shared goal and increased resources are the key benefits of cooperative research and development projects.

Table 1
Establishing Cooperative Research and Development:
Cooperative K-6 Career Education Project

<u>Model</u>	<u>University</u>	<u>Public School</u>
A. ANALYSIS		
1. Goals		
a. Key persons	a-1 conduct and publish educational research a-2 support career and technology education graduate program	a-1 implement K-6 career education program a-2 innovate in the classroom
b. Agencies	b-1 produces student credit hours b-2 obtain funded research b-3 provide service to the public	b-1 good community relations b-2 remain progressive b-3 provide a sound basic education and yet respond to needs of all children
2. Resources:		
a. Personnel	a-1 research, evaluation, and curriculum development skills among faculty a-2 diverse skills among graduate students a-3 overworked secretarial pool a-4 400 undergraduates in department	a-1 teaching and classroom management skills among faculty a-2 diverse K-6 student body a-3 overworked secretary
b. Capital	b-1 new multi-million dollar technology building with R&D, media, and laboratory facilities b-2 extensive university resources available at reasonable rates (eg. printing, computation service)	b-1 K-6 building with little (if any) unused space
c. Financial	c-1 very limited dollars available to seed R&D projects	c-1 non available
B. RESEARCH AND DEVELOPMENT GOAL		
1. Ideas		
a. Develop and validate a K-6 career education curriculum.		
b. Solicit external funds and enough to do it right.		

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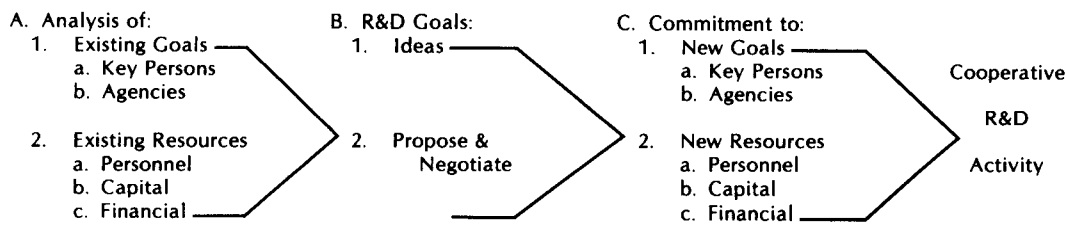


Figure 1: General Model for Establishing Cooperative Research and Development Projects

phase and, thus, support a healthy partnership.

At the analysis phase of the model there are specific dimensions that can be viewed before or during the face-to-face meeting. Included are stand-alone mission statements or variations of such statements within brochures or manuals. Budgets can serve as a reality check for true constraints on idealized goals. Plans of work along with reward and accountability systems are additional inputs into goal analysis. Interview and observation data with key persons are also essential for clarity in sorting out what people say versus what they do.

Once rapport has been developed with key persons from a potential cooperating agency, candid bottom-line assessments of available resources should be made. Pre-meeting sluthing or prior exposures to the agency under consideration may provide intelligent clues for in guiding sensitive resources discussions. Visiting each other's home-base and/or operations is also essential. These visits are analagous to mating dances — a great deal of show, but no real action. The core of this mating process is summarized by the general model for establishing and nurturing cooperative research and development projects (Figure 1) and the emphasis is clearly on the analysis phase.

As a way of expanding on the concepts of this model, a case study from an actual cooperative research and development experience is included.

Case Study; K-6 Career Education

A university professor had the duty of teaching a senior/graduate course in K-6 career and technology education. Three highly motivated elementary teachers from a local school district who enrolled in the class sought to fully implement the career and technology education content in their elementary school following the completion of the course. The teachers had a sup-

portive administration, a school district with a progressive self-concept, and an unusually collegial group of K-6 teachers with which to work. A cooperative venture between the University and the school district was suggested.

On the surface, the situation did not appear to have the markings of a significant partnership. But, given the congeniality of the key persons from the local education agency, it was apparent that potential cooperative efforts should at least be explored. The analysis phase was dominated with glowing goal statements that would prove costly to implement. Also, the analysis revealed that neither agency had the finances to support the goals being discussed and, yet, had a base of resources. The analysis of the goals and resources are summarized in Section A of Table 1. While the analysis was still going on, the idea of cooperatively soliciting external funds was agreed upon as a primary strategy (see section "B" of Table 1). This idea led to some grantmanship before the university-public school commitment was formally solicited. Questions like who had money available?; What were the application procedures?; and What were the odds of being funded?; were asked.

The potential funding agency and its rules automatically established a number of constraints in conceptualizing a cooperative research and development project. In this case federal funds earmarked for local education agencies were targeted. The idea further evolved that if all went well, the public school would receive the grant and the university would receive a major sub-contract. Furthermore, within the project the university personnel would propose to develop a theoretically sound and operationally practical activity-based K-6 career education curriculum. In addition, the project would provide empirical evidence as to the effectiveness of the products.

The commitments made were realistic

Table 1 Continued

2. Propose and Negotiate		
a. We need each other's base of resources to do it right.		
b. Getting a big grant usually doesn't take any more work than getting a small grant.		
c. Commit to being both theoretically sound and practical curriculum development.		
d. Commit to a R&D team approach.		
C. COMMITMENT		
1. Goals		
a. Key persons	a-1 professor will write proposal to ESEA Title III	a-1 lead classroom teacher will assist with proposal to ESEA Title III
	a-2 graduate students will assist with proposal to potentially gain the co-director position	
b. Agencies	b-1 will endorse proposal b-2 will provide secretarial-office support for proposal	b-1 will provide secretarial-office support for proposal
2. Resources		
a. Personnel	a-1 co-director will be doctoral student on fellowship	a-1 co-director will be the lead classroom teacher
(all budgeted in proposal)	a-2 professor will be chief consultant	a-2 one teacher per grade to critique and pilot test curricula on consultant basis
	a-3 graduate research assistants will serve as curriculum developers	a-3 50% time secretary will be hired for project
		a-4 curriculum will be tested in classrooms of two elementary schools
b. Capital	b-1 two R&D rooms provided for the project personnel b-2 provide 4 desks, chairs, file cabinets, and work tables	b-1 provide project office space in the elementary school b-2 provide desk, chair and file cabinet
		b-3 additional office furniture and equipment needs to be purchased
c. Financial	c-1 none requested from University c-2 may be direct or indirect gains for University	c-1 none requested from public school c-2 may be direct or indirect gains for public school

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