A Report to the LSU Faculty Senate by the

AD-HOC COMMITTEE TO EXAMINE INTERDISCIPLINARY AND INTERDEPARTMENTAL PROGRAMS

Submitted by

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CHARGE TO THE COMMITTEE BY THE FACULTY SENATE

Faculty Senate Resolution 07-03
TO ESTABLISH AN AD-HOC COMMITTEE TO EXAMINE INTERDISCIPLINARY AND INTERDEPARTMENTAL PROGRAMS

Co-Sponsored by Kevin L. Cope and James Stoner
Presented by James Stoner
WHEREAS scholars and teachers at major universities worldwide have frequently demonstrated the value and importance of interdisciplinary teaching and study;
WHEREAS Louisiana State University, like other major research institutions, routinely advertises its commitment to innovative, multi-discipline programs, using the diversity of its programs to attract the best students, faculty members, teachers, and researchers;
WHEREAS both the intellectual value and fundable aspects of interdisciplinary and interdepartmental programs are repeatedly shown in “marquee” programs ranging from the Honors College to the Hurricane Center to Comparative Literature;
WHEREAS the implementation of interdepartmental and interdisciplinary education lags behind both the speedy pace of pedagogical innovation and the enthusiastic rhetoric of university publications;
WHEREAS the deans, directors, and chairs who administer colleges, departments, and programs face formidable challenges staffing interdepartmental programs;
WHEREAS there is presently no mechanism to assess the overall ability of the university to establish, manage, or promote interdepartmental and interdisciplinary education;
AND WHEREAS many major universities have drawn acclaim for the ingenuity and innovativeness of their interdepartmental and interdisciplinary offerings;
THEREFORE BE IT RESOLVED that the Faculty Senate shall establish an ad-hoc committee on interdepartmental and interdisciplinary education at Louisiana State University, the purpose of which committee shall be to make recommendations as to how the problems relating to interdisciplinary study might be resolved and as to how interdisciplinary study might be advanced at our University. The committee will report its findings within six months of its inception.

DISCUSSION:
Senator Christie commented that so much stands in the way of giving faculty credit for interdisciplinary activity. McGehee said that PS36 supports joint appointments (secondary departments are consulted) but there is little addressing interdisciplinary teaching, evaluation, funding, etc. President Daly said there lots of models available, and this committee will look at these, should the resolution pass. Hugh Buckingham wanted to know what initiated this proposal, did it have to do with cluster hires? Stoner replied “No, it came from my own experience with interdisciplinary collaborations.” Senator Kurtz asked if six months (as proposed by the resolution) is too brief a time to conclude this project favorably. Senator Stoner said this was a good point, he’ll consider the suggestion that a longer time might be needed. Senator Cogburn stated that we need to look at interdisciplinary activity between the Sciences and the Humanities, not just within the Sciences or Humanities. Senator Adelaide Russo hopes the committee will get input from lots of programs that may not be well-known. Senator King asked if there is a graduate degree program for interdisciplinary topics? There are degrees in Linguistics and Comparative, Literature, for example, or in Engineering Science. Senator Stanley stated that he doesn’t think there are many barriers to interdisciplinary degrees.

ANALYSIS BY THE COMMITTEE

STATEMENT OF PROBLEM
It is the perception of some faculty, e.g., the Faculty Senate, that interdisciplinary and interdepartmental programs encompassing research and education have not flourished at LSU. The Faculty Senate created this Committee to address this issue, and to explore potential solutions. In this light, we have focused on the following questions

• Is this perception real and if so, is it systemic or just isolated?
• Why have interdisciplinary and interdepartmental research and educational programs not flourished at LSU? What are the present barriers to success?
• What can be done to allow more successful development of interdisciplinary and interdepartmental research and educational programs at LSU?

ACTIONS OF THE COMMITTEE
The Committee met numerous times over the past 9 months as a whole or in subgroups to consider the issues (Appendices 1 and 2). The Committee met with the System President Lombardi, Chancellor Martin, Interim Chancellor Jenkins, Provost Merget, Vice Chancellor for Research Keel, various deans, chairs, LSU faculty, and persons outside of the University to gain information and perspectives. The Committee agreed unanimously that interdisciplinary and interdepartmental programs encompassing
research and education have not flourished at LSU and decided to focus exclusively on the remaining questions, namely understanding the underlying causes of the paucity of success and proposing solutions. The Committee also concluded that this lack of success is not unique to LSU, but is a problem encountered at virtually all universities. Because several peer (or better) universities have previously grappled with the problem, the Committee chose to rely heavily on previous research and spend the limited time considering the application of its findings to LSU and in formulating solutions that might be applicable to our campus; we found a report penned in 1991 by the Faculty at The Ohio State University to be particularly useful (Appendix 3).

WHY INTERDISCIPLINARY AND INTERDEPARTMENTAL RESEARCH AND EDUCATIONAL PROGRAMS HAVE NOT FLOURISHED AT LSU

We reiterate that the paucity of success is not endemic to LSU, but is instead common to many institutions. We find that this lack of success is not generally the result of one single cause but instead has usually been the consequence of several factors that act singularly or in combination. These factors can be categorized in the following way:

- Structural factors, i.e., those that are caused by or result from the way the University is organized and operates. This group of factors is most important because it involves the institutional barriers to the gathering of the personnel, logistical, and space resources needed to build interdisciplinary and interdepartmental programs. Below, we offer several examples of problems caused by structural factors. We have organized them according to how they impact research and education.

Research

→ One of the more serious impediments to the development of interdisciplinary and interdepartmental programs is the complexity of the overall process leading to decision-making. For example, let us consider the creation of a research center consisting of faculty members from different parts of the University. In order to gain permission to redirect their creative energy toward new frontiers and away from their traditional insular departmental focus, collaborating faculty must convince every administrative level within their chain of command. If, for example, the main campus and the A&M College are involved, the process must involve all administrators between the faculty members and their respective chancellors. All facets of the collaboration will be subject to multiple-level negotiations involving expenditures of time, space, money, and personnel time. A breakdown at any level can potentially end the entire process. In other words, a well-considered decision by the Faculty can be overruled on administrative grounds (LSU Faculty Handbook, 1997).

→ Because it is perhaps just human nature to want to control and expand one’s turf, it is thus not surprising that Chairs and Deans have generally not been supportive of programs that they do not control. Several middle-level administrators have expressed the following sentiment, “Why should I invest my resources (space, personnel, etc.) in a program outside my realm that will
provide me with no return?” University executive management teams are generally loath to micromanage middle-level administrators by forcing unsupportive unit heads to foster or even allow participation of their faculty in “outside” programs. Again, the lack of support at any stage of the chain of command will doom any interdisciplinary research or educational program. An additional unfortunate outcome is that single investigators or groups will continue to chase their dreams by migrating to other universities or by participating with other centers where LSU plays a secondary role.

→ It is the view of some faculty that participation in extra-departmental research centers can hurt their advancement in the University. For example, it is common for faculty to “buy out” their teaching time in order to participate in research centers. Even though a given center may be located in a different organizational unit of the University, a faculty member’s performance evaluation for their center participation may continue to be handled by the Chair of their home department. This is surprising given that the Chair may have no direct observation of the behavior of the faculty member. This sometimes results in Faculty not being given sufficient credit for participation in external centers which may affect merit raises as well as tenure and promotion issues. This can be exacerbated by several other factors, e.g., lack of support of the center by the Chair or Dean, lack of understanding of goals of the center by the Chair or Dean, etc.

→ The University currently provides support to officially sanctioned interdisciplinary centers on an ad hoc basis. To obtain administrative support, e.g., personnel, purchasing, contacts, etc., centers must either pay for it internally with indirect cost return or they must appeal to a department or college to obtain such services. This leads to two problems. First, it creates additional external influences on the operation of an interdisciplinary center and its mission because all expenditures and personnel actions must now require additional approvals. There has been an on-going move on campus to place centers under the control of academic departments. Although useful in some instances, such “one size fits all” reshuffling hurts interdisciplinary centers by removing the independence of the centers. Second, a center often resorts to hiring its own administrative personnel to carry out these functions, and often with award funds. Because centers are largely funded by grants and contracts, and federal agreements require that such costs are to be borne by the grantee institution, this practice amounts to “double dipping”.

Education
→ For the most part on the LSU campus, interdisciplinary programs depend upon departments to provide the faculty and the courses necessary for their curricula. Directors of interdisciplinary programs therefore have little control over the faculty or the courses available for their programs. Departments make the decisions concerning which faculty members are hired and what courses are
taught. And these decisions do not ordinarily take into account the needs of interdisciplinary programs.

At least three types of solutions to this problem have been attempted previously at LSU: the unfunded mandate, financial reimbursement, and joint appointments. In addition to these attempted solutions, other solutions to the problem have been proposed. These include changing attitudes toward interdisciplinary education and instituting better enrollment management.

The unfunded mandate. In the College of Arts and Sciences, the Dean’s office has mandated that each department contribute a certain number of faculty each semester to teach courses for interdisciplinary programs and/or the Honors College. While this tactic makes departments aware of the needs, departments have legitimate objections to this approach. The departments have their own programs to staff and may not have extra faculty to donate elsewhere.

Financial reimbursement. The Honors College has an instruction budget, from which it pays $3000 per class. This goes either to the College that provides a faculty member or, if the faculty member teaches an overload, as additional compensation to the faculty member. This financial reimbursement, however, does not pay for the cost of replacing the faculty member. Therefore the Dean of the Honors College, Nancy Clark, does not feel that throwing more money at the problem is the answer.

Joint appointments. In recent years, the College of Arts and Sciences has increased the number of faculty who have a primary appointment in a department and a secondary appointment in an interdisciplinary program. Other joint appointments have been made as well, for example between the Department of Political Science (Arts and Sciences) and the School of Mass Communication. The positive side of this approach is that interdisciplinary programs have at least some faculty specifically dedicated to teaching in those programs.

Robin Roberts, Director of Interdisciplinary Studies in the College of Arts and Sciences, favors joint appointments as a means to promoting interdisciplinary education in that college. Dean Clark of the Honors College, however, does not favor this method for the Honors College. She thinks that such appointments are not in the best interest of the faculty, who would risk their reputation in their own fields. She favors cycling faculty into the Honors College and out again to be refreshed.

The negative side of joint appointments is that faculty with such appointments may be at greater risk in the promotion and tenure process. Faculty who teach in a secondary program may be perceived as less valuable to their home department. In addition, problems may arise if the secondary program and the home department do not agree in their evaluations of the candidate. While the primary evaluation takes place in the home department, PS-36 requires that the faculty and chair of the secondary unit submit written statements of evaluation for the candidate’s promotion and/or tenure file. Some programs, such as Women and Gender Studies, have developed formal
procedures for this evaluation. However, at least one department chair has expressed uncertainty about the procedure. It might be desirable, therefore, to revise PS-36 to include more specific instructions concerning this process.

Changing attitudes. Attitudes of deans and departments toward interdisciplinary education affect the degree to which they support it. Presumably, therefore, greater support would result if they saw such education as a priority. How to accomplish such a change of culture, however, is not clear. One suggestion for changing attitudes is to inform departments that they receive the student credit hours for courses taught in the Honors College and to weight these SCHs as graduate student credit hours rather than as undergraduate hours.

Enrollment management. Better enrollment management, including a tracking system for identifying trends of student demand for particular courses may give departments a better idea of when they can afford to release faculty to the Honors College or other interdisciplinary programs.

While some aspects of interdisciplinary education at LSU have adequate administrative oversight and budgetary support, others may not. The Honors College fares best in this regard, since it exists as a separate college with its own dean and its own budget for staff, secretarial support, supplies, and promotional efforts. In the College of Arts and Sciences, an associate dean serves as the director of interdisciplinary studies. Such administrative oversight is essential for promoting interdisciplinary programs, addressing the needs of these programs, and facilitating communication between programs and departments. The current director of interdisciplinary studies thinks that the director’s job should be made a separate full-time position. She also suggests that interdisciplinary programs need more funding since they currently depend on “soft money.” The Associate Dean for Research in the College of Engineering oversees the college’s formal interdisciplinary program, “Engineering Science.” This program is restricted to graduate students and behaves as a stand-alone entity, lacking significant support from the college’s departments.

Cultural factors, i.e., those that result from the different ways that organized groups of people at LSU go about their business. These differences manifest themselves most profoundly at the College level, with each having a different set of cultural values that reflect their mission, history, institutional constraints, and access to resources. Several campus reorganizations imposed by the Administration over the past 25 years have failed largely because cultural differences between grouped units were not recognized, planned for or were simply ignored. Although the people mixed freely and continued to collaborate on limited issues, the organizations never were amalgamated because of their diverse missions.

“Naiveté” factors, i.e., those that are due to a lack of understanding by Faculty of what is required to take a program to the next level. Let us examine the problem in a few dimensions:
The most obvious void in LSU’s institutional “CV” is a nationally competitive research center in science or engineering. Earning such a center requires more than just a good idea and a group of eager faculty. It requires a concerted effort on the part of the entire campus and frankly the entire state, all the way up to the Governor, to achieve. It requires the melding of political, administrative, and institutional elements with a visionary and enthusiastic plan of research. Above all, it requires nationally competitive faculty that can compete for extramural funding. Faculty members usually understand how to build a research program that supports their time as well as a few graduate assistants and perhaps a post-doc or two. Going to the next level (local center) and then to a competitive national center requires much greater attention to organization and understanding of the “politics of the academy” that lies beyond LSU. LSU has tried to achieve such status with several programs, including the Center for Advanced Microstructures & Devices, the Center for Computation and Technology, and the Center for Geoinformatics, for example. We asked the Center leaders for specific reasons why the organizations have fallen short of gaining full national status. These leaders cited the following issues as stumbling blocks:

- There is a continuing lack of willingness by the upper administration to prioritize, plan, and adhere to plans for the strategic allocation of university resources. Most agreed that conditions had improved from the “across the board” approach of the early eighties and early nineties, particularly in the degree of Faculty involvement, but there still has been no real move on campus to truly focus resources in certain target areas.
- The current “cluster” hire initiative is cited as another “cart before the horse” situation where new initiatives are suddenly hatched, while previously agreed upon focus areas are not served. The administration should be supporting the pre-determined focus areas established by the Faculty before turning its attention to new focus areas.

We are left with the question, where then do faculty interested in developing a plan for a national center learn these special organizational skills and obtain tactical planning support? This is clearly the role of the Vice Chancellor for Research, but unfortunately, the office of the VCRE has historically been so understaffed and under-resourced that it has only been able to provide partial support. Regardless of the causes, LSU has not competed successfully for centers on the national stage. The lesson learned by large research universities is that national centers on campus breed more national centers because the know-how of acquiring them is learned and passed on.

Other Administrative/Bureaucratic factors affecting both interdisciplinary research and education programs; i.e., those factors that result from decision-making by all
levels of Higher Education in the state from politicians, to boards, to the campus executive management team, to local middle management bureaucrats.

† The most obvious issue is that of space. Although it is trendy to claim a given center is virtual, the reality of human collaboration is that people need to interact in person in social and scientific ways. This means dedicated space. Unfortunately, space on campus has always been insufficient to meet even basic needs and is almost always 100% committed. LSU has never committed a block of space to be used for non-permanent, interdisciplinary projects. Although space is allocated by the Provost, its actual use is controlled by Deans and Chairs. If there is no cooperation, there will be no space allocated for interdisciplinary purposes unless the Provost intervenes.

SOLUTIONS:
The Committee does not believe that there is only one solution to the problems identified above. However, the Committee does not think that merely addressing a few of the symptoms will be sufficient to change the status quo. Any solution must be comprehensive and address all of the concerns identified above. It is thus not our purpose to provide THE answer but rather to lay out SOME of the competing hypotheses so we can observe how they deal with the problems. We have chosen to be bold rather than political because it is expected that this conversation will be continued by the Faculty Senate and the LSU Administration.

Answers from Administrators
As part of our effort to find solutions, we found that a series of candid discussions with former and present administrators at LSU was particularly valuable. It was our belief that these individuals could provide insights into the causes of the problems as well as providing comments on the plausibility of suggested solutions. All persons contacted, including the present Chancellor and Provost, agreed that the problem at hand exists and needs to be addressed and solved if LSU is to fulfill its promise.

Two distinct schools of thought were expressed, one believing that many of the identified problems could be overcome with administrative solutions within the existing corporate paradigm, while the other thinking that more organic change to the institution is required. For example, it was argued by advocates of the former that overhauling LSU’s budgetary process, in particular, could solve many of the problems that cause many middle-level administrators to be less than supportive of interdisciplinary activity. Because resources are currently concentrated at the top, it was thought that pushing more control downward would reduce competitive tensions and lead to greater cooperation between Deans and Chairs. While the other school agreed that such decentralization of power would be beneficial, it was noted that no amount of new resources would likely diminish the desire of campus leaders to grow their respective corners of the campus. One former administrator pointed out that most faculty members expect, if not demand, that their Chairs and Dean fight vigorously for them. Most think that the competition of ideas and the tension it brings are essential in determining future directions of the
University. It is obvious that this competition for resources will continue given the call from the Governor and the System President to increase federal research dollars, increase undergraduate, graduate, and post-doctoral student populations, and keep up with and/or exceed our peers.

The issue of how to handle promotion and tenure within an interdisciplinary environment was a recurring theme. In particular, the issue of evaluation of Faculty who have split appointments was considered a problem, especially if the home department Chair was not supportive. Most administrators claimed that the problem of unsupportive Chairs could be handled by policy directives. Chairs and deans would simply be told to support the interdisciplinary programs. However, other administrators questioned why a Dean would insist that Chairs support a policy that would diminish the overall productivity of his/her college by allowing Faculty to effectively work for other units in other Colleges. It was also pointed out that policy directives change with a turnover in Administration. Given that interdisciplinary programs are multi-year endeavors, frequent policy changes would clearly be detrimental to program development. Others argued that for Administrators to dictate to Faculty that a particular academic activity is important is beyond the purview of the Administration.

Ideas from the Committee

Below, we offer some specific ideas that could potentially dramatically improve the success of interdisciplinary and interdepartmental programs encompassing research and education on the LSU campus. It is exciting to note that both the Faculty and the Administration share similar views on the importance of this issue and on some of the solutions. It was also invigorating to hear the differences! Regardless of the path we decide to follow, change is needed and it is needed NOW! Change will require full-throated debate, experimentation, and rejecting some approaches and keeping and improving those that work. Failure should not be allowed to be an option. The Administration and the Faculty should be continually challenged with the question: “If not this approach, then what approach will work?”

The first idea is simple: the Faculty Senate should form a permanent committee to help maintain the focus on this critical topic by the University. The second recommendation is also straightforward. The Administration should affirm in the forthcoming revision of the LSU Flagship agenda that interdisciplinary research and education are critical to the conduct and success of that agenda. Presently, the only mention of “interdisciplinary” programs in the LSU Flagship agenda occurs in “Object 3”, where it is made in the context of undergraduate education. The “Agenda” makes no specific mention of graduate-level interdisciplinary/interdepartmental programs in education or research.

The third and fourth recommendations deal with the larger problem of why interdisciplinary and interdepartmental programs encompassing research and education have not flourished on campus. The recommendations are actually different approaches with one confronting the individual problems and the other attacking the problem as a whole.
We present the third recommendation as a list of action items that could be implemented in short order by the Administration of LSU. We list them in no special order along with comments:

- The Chancellor should set aside a source of funds to support initial efforts by faculty to build new nationally competitive research and educational programs. The Office of Research and Economic Development and Academic Affairs should develop programs to educate faculty wishing to build national centers in research and education.
- Consider whether PS-36 should be revised to give more specific instructions concerning the promotion and tenure evaluation of faculty with joint appointments.
- Consider establishing a standing Committee to Promote Interdisciplinary Studies, charged with bringing together faculty and administrators to discuss and identify specific practices and situations that inhibit interdisciplinary studies and develop workable plans for change that will promote interdisciplinary studies.
- Request that the Provost and Executive Vice Chancellor for Academic Affairs make a public statement in support of encouraging interdisciplinary studies and provide material support for the work of the Committee to Promote Interdisciplinary Studies.
- Request that the administration provide seed money for starting an interdisciplinary program such as is provided for learning communities.
- Request that the Provost explore the possibility of asking each unit associated with faculty joint appointments to provide a faculty mentor during the promotion and tenure process.
- Request the Provost to consider the establishment of a graduate program that would allow students to develop a one-of-a-kind interdisciplinary degree. Part of the committee thought that this might be risky for students and that it might be more successful in a university that has already embraced interdisciplinarity more strongly than has LSU.
- Request the Provost to encourage interdisciplinary programs to specifically emphasize the use of existing courses where possible and to cross-list courses with departments.
- Request the Chancellor to add an additional Associate Vice Chancellor for Research (AVCRED) to spearhead the University’s effort to gain a national center. The Office of Research and Economic Development is too under-resourced to accomplish this. This action will help maintain the institutional know-how of organizing the structural aspects of successful center proposals, including management, oversight, education and outreach.
- Request the Chancellor to add an additional Vice Provost (VPAA) to facilitate development of interdisciplinary educational programs on campus. Academic Affairs is also to under-resourced currently to accomplish this.
- Request the Systems President to reinvigorate the position held by the late Paul Gravel, Director of the LSU System Office of Federal Affairs in Washington D.C.
This person helps LSU tap into federal resources. Similarly, LSU faculty must be trained in the ways of Washington by the Office of Research.

- The Chancellor should create (hire) a national center mentoring/advocacy group to help LSU obtain a national center. The people hired should be composed of former NSF or other National Program managers, current or former national center directors, congressional staffers, and others with the know-how needed to help LSU succeed.

The fourth suggestion deals more holistically with the problem of why interdisciplinary and interdepartmental programs encompassing research and education have not flourished on campus. All of the Committee believes that any or all of the suggestions provided above will begin the process of improvement at LSU. Some (specifically, the Chair) of the Committee, however, are perhaps too impatient and believe that the barriers to the development of interdisciplinary and interdepartmental programs encompassing research and education at LSU are so institutionally in-grained that incremental changes will be insufficient. Instead of a few alterations here and there that may change as the Administration comes and goes, a bold suggestion is offered, one that if implemented could be truly transformative for the University. The proponents of this suggestion only seek to have the concept included in the future dialogue, believing that all options should be identified and evaluated on their own merits.

This suggestion is to create a new “College of Innovation” (this is a working name), an entity focusing LSU resources on the building of world-class programs in interdisciplinary and interdepartmental programs encompassing research and education. It is a bold concept and would clearly require fundamental rethinking of how LSU functions. It would, we believe, circumvent most of the structural, cultural, and bureaucratic barriers that currently exist. Such an organization within the University could only be created by a Faculty and Administration audacious enough to believe that LSU could become a great university. The upside potential of such a move could be profound and put LSU at the forefront of university innovation. Formation of a new college would be a dramatic stroke by the University by signaling LSU’s intention to become a world leader in interdisciplinary studies and innovation. The promise of such a dynamic entity would draw the interest of potential patrons and perhaps boost the Forever LSU campaign. The downside potential would be minimal given its low start-up cost and maintenance. Another key point is that the College of Innovation infrastructure and administration would never grow beyond its initial level. All credit, both scholarly and financial, would follow the researcher or educator back to their home department and college. Successfully developed centers and educational programs will be permanently located in traditional colleges.

The mission of the proposed College of Innovation (COI) would be two-fold: 1) conceive, incubate, and bring to fruition nationally competitive centers of research on the LSU campus; and 2) foster and facilitate the development of nationally recognized interdisciplinary and interdepartmental educational programs at LSU. Because of its prime constituencies, graduate students and researchers, it would make sense to place the
COI jointly under the VCRED and the Provost. The unit needs to be at the administrative level of at least that of a college in order to successfully compete on campus for resources. A higher level position could be appropriate especially if the desire was to encompass the entire LSU System.

Staffing of the College from the professorial ranks will initially be virtual, with the exception of the executive management team and supporting staff. By virtual, we mean that professorial personnel will join the College on temporary detail from home departments for intervals of one to five years. The College will be provided with sufficient permanent funds from the University to be used to “buy out” faculty time; this money would be returned to the home department. New strategic hires will be joint appointments, half in the college and half in a home department. The College will “buy out” the time of all detailed faculty involved in active programs. It would also make sense that the new cluster hiring initiatives by the University should be handled by the new College. The COI will be provided with permanent space that it will allocate temporarily to faculty groups with emerging and developing programs. Thus, the new College will reimburse existing Colleges for all personnel and will not take existing College space. In addition, citations, i.e., credit, for all publications, intellectual property, performances, etc. will be shared with the home department. By doing it in this way, all structural and bureaucratic barriers should be lowered sufficiently to foster and facilitate the development of nationally recognized interdisciplinary and interdepartmental programs at LSU.

In addition to a Dean, two Associate Deans will be needed to form the COI executive management team. Note: these positions would fill the same roles as the Associate Provost and Associate VCRED proposed on page 10. One associate dean would be devoted to research (ADR), and the other to educational activities (ADE). The roles of these new administrators would be focused on the following: ADR will serve as campus administrative lead to team with faculty to develop successful proposals to create a national research center at LSU. The College will provide administrative help, grantsmanship know-how, political mentoring, funding for faculty PI release time, space, and perhaps most importantly, assessment. The ADE will serve a similar function as campus administrative lead to team with faculty to develop successful proposals to create multidisciplinary educational programs at LSU as well as between partnering universities and others. The COI might also make a good home for many unaffiliated research centers as well as orphan educational programs on campus.

We purposely chose the formation of a “College” instead of a center, since current academic structures for research, teaching and service are centered in Academic Colleges. However, we do recognize that a “Center of Innovation” could be an alternative naming provided that it carries all the above mentioned characteristics and financial support reserved for a College.
APPENDICES

1. Appendix 1--Verbatim Report by the Sub-committee on Interdisciplinary Education at LSU

Interdisciplinary studies are increasingly essential because important teaching, learning, and research often occur across the traditional boundaries of disciplines, departments, or schools. Interdisciplinary programs offer new models of learning and research based on the merging, not separation, of intellectual fields, which goes hand in hand with the promotion of inclusiveness, cooperation, and respect across boundaries of gender, ethnicity, race, religion, and national culture. A university’s culture of diversity promotes the collaboration across intellectual horizons that create preconditions needed for future breakthroughs in knowledge. This is acknowledged in the research arena, where federal funding is increasingly earmarked for specific multi-disciplinary initiatives.

It is also increasingly acknowledged in the area of education, which is the focus of this section of the committee’s report. The following summary indicates the forms that interdisciplinary education takes at LSU, two problem areas that create barriers to interdisciplinary education, and some suggestions for addressing these problem areas and improving interdisciplinary education at LSU.

Forms of interdisciplinary education

Interdisciplinary education at LSU takes three primary forms:

- A course offered by a single instructor that employs more than one disciplinary perspective. Such a course may be offered by a single department or cross-listed by more than one department or program.
- A course taught by a team of teachers from different disciplines. Most team teaching occurs in the Honors College.
- A program integrated around a central concept, whose curriculum includes courses that explore that concept from the perspective of more than one discipline. Such programs may be intercollegiate, though most at LSU are interdepartmental within a college. In particular, the College of Arts and Sciences promotes a number of interdepartmental programs, such as Comparative Literature, International Studies, and Women’s and Gender Studies.

Although the General Studies program uses the term "interdisciplinary" to describe itself, it uses this term too loosely to be useful. Students in this program take most of their courses from three minor fields rather than one major and one minor. If this were interdisciplinary education, then every student would be doing interdisciplinary studies, because every student takes courses from more than one discipline.

Problem Area #1
Dependence of interdisciplinary programs on departments

This committee has identified two major problem areas that create barriers to interdisciplinary education. The first is the fact that, for the most part, interdisciplinary programs depend upon departments to provide the faculty and the courses necessary for its curricula. Directors of interdisciplinary programs therefore have little control over the faculty or the courses available for their programs. Departments make the decisions concerning what faculty are hired and what courses are taught. And these decisions do not ordinarily take into account the needs of interdisciplinary programs.

At least three types of solutions to this problem have been attempted at LSU: the unfunded mandate, financial reimbursement, and joint appointments. In addition to these attempted solutions, other solutions to the problem have been proposed. These include changing attitudes toward interdisciplinary education and instituting better enrollment management.

The unfunded mandate. In the College of Arts and Sciences, the Dean’s office has mandated that each department contribute a certain number of faculty each semester to teach courses for interdisciplinary programs and/or the Honors College. While this tactic makes departments aware of the needs, departments have legitimate objections to this approach. The departments have their own programs to staff and may not have extra faculty to donate elsewhere.

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The negative side of joint appointments is that faculty with such appointments may be at greater risk in the promotion and tenure process. Faculty who teach in a secondary program may be perceived as less valuable to their home department. In addition, problems may arise if the secondary program and the home department do not agree in their evaluations of the candidate. While the primary evaluation takes place in the home department, PS-36 requires that the faculty and chair of the secondary unit submit written
statements of evaluation for the candidate’s promotion and/or tenure file. Some programs, such as Women and Gender Studies, have developed formal procedures for this evaluation. However, at least one department chair has expressed uncertainty about the procedure. It might be desirable, therefore, to revise PS-36 to include more specific instructions concerning this process.

Changing attitudes. Attitudes of deans and departments toward interdisciplinary education affect the degree to which they support it. Presumably, therefore, greater support would result if they saw such education as a priority. How to accomplish such a change of culture, however, is not clear. One suggestion for changing attitudes is to inform departments that they receive the student credit hours for courses taught in the Honors College and to weight these SCHs as graduate student credit hours rather than as undergraduate hours.

Enrollment management. Better enrollment management, including a tracking system for identifying trends of student demand for particular courses may give departments a better idea of when they can afford to release faculty to the Honors College or other interdisciplinary programs.

Problem Area #2
Administrative oversight and budgetary support

The second problem area is the fact that, while some aspects of interdisciplinary education at LSU have adequate administrative oversight and budgetary support, others may not.

The Honors College fares best in this regard, since it exists as a separate college with its own dean and its own budget for staff, secretarial support, supplies, and promotional efforts.

In the College of Arts and Sciences, an associate dean serves as the director of interdisciplinary studies. Such administrative oversight is essential for promoting interdisciplinary programs, addressing the needs of these programs, and facilitating communication between programs and departments. The current director of interdisciplinary studies thinks that the director’s job should be made a separate full-time position. She also suggests that interdisciplinary programs need more funding since they currently depend on “soft money.”

One proposal to address administrative and budgetary issues is to establish a college of interdisciplinary studies, which would provide a home for both interdisciplinary research and interdisciplinary education. While this proposal would seem to merit further consideration, Provost Merget has expressed strong opposition to the idea.

Conclusions and recommendations

This committee has identified two primary needs for interdisciplinary education at LSU. The most pressing need is to ensure that faculty with joint appointments receive fair and equitable treatment in the promotion and tenure process. This issue will become more pressing as the number of joint appointments increases. A second need is to promote a
culture at LSU that values interdisciplinary education. In order to address these needs, this committee recommends that the Faculty Senate

- consider whether PS-36 should be revised to give more specific instructions concerning the promotion and tenure evaluation of faculty with joint appointments;
- consider establishing a standing Committee to Promote Interdisciplinary Studies, charged with bringing together faculty and administrators to discuss and identify specific practices and situations that inhibit interdisciplinary studies and develop workable plans for change that will promote interdisciplinary studies;
- request that the Provost and Executive Chancellor for Academic Affairs make a public statement in support of encouraging interdisciplinary studies and provide material support for the work of the Committee to Promote Interdisciplinary Studies;
- request that the administration include in the forthcoming revision of the Flagship Agenda explicit support for interdisciplinary studies.

In addition to identifying these needs, this committee has also considered a number of other suggestions for improving interdisciplinary education at LSU. These include the following:

- To request that the administration provide seed money for starting an interdisciplinary program such as is provided for learning communities.
- To have the secondary unit provide a faculty mentor during the promotion and tenure process for faculty with a joint appointment.
- To establish a graduate program that would allow graduate students to develop a one-of-a-kind interdisciplinary degree. Part of the committee thought that this might be risky for students and that it might be more successful in a university that has already embraced interdisciplinarity more strongly than has LSU.
- To encourage interdisciplinary programs to use existing courses where possible and to cross-list courses with departments. Part of the committee felt that such programs already do this.


Members Attending: Joan King, Leigh Clemons, Elaine Smyth and Delbert Burkett
Guests: Jim Stoner, Nancy Clark and Robin Roberts

The subcommittee for interdisciplinary education meet with three faculty involved with interdisciplinary programs on campus to gain insight into issues they perceived as barriers to interdisciplinary educational programs. They were also asked about practices that made interdisciplinary programs successful.
Jim Stoner
- Jim Stoner was a co-author of the Faculty Senate resolution 07-03 that created the Ad-Hoc Committee on Interdisciplinary and Interdepartmental programs. This is both an undergraduate and graduate program issue and both a research and educational issue. Some of the barriers to interdisciplinary education that were discussed include: credit inequities for interdisciplinary teaching, interdisciplinary teaching seen as burden by departments, there are teaching distribution issues, there are issues with annual and P&T evaluations which involve two departments, there is a distraction from the main discipline, there is an issue with graduate faculty status being removed if not promoted to full professor so some faculty may wait until they are full professors before participating, departments are disciplinary based and focused, and the flagship agenda does not list interdisciplinary as a focus for graduate programs.
- As a department chair, Stoner noted administrative issues involving P & T. For the P&T issue if faculty members are interdisciplinary the P&T packet must be reviewed by a person or committee of persons outside the main department or discipline of the faculty. The faculty may not be doing well in their interdisciplinary area but doing well in their home program and could be affected negatively by the letter from the outside department, or vice versa. The narrow definition of discipline within a department might create a problem for a faculty member pursuing interdisciplinary research.

Nancy Clark
- Nancy Clark is the Dean of the Honors College which coordinates and facilitates interdisciplinary education at the undergraduate level. This is an example of a successful program, although there are still some barriers to interdisciplinary education through the Honors College. Again, the P&T issue was raised as it impacts faculty. It was stated that the provost is developing a new flagship agenda with a focus on multidisciplinary research. There are issues with figuring out how to handle P&T as well as enrollment management so that administrators will know when they have faculty that can teach outside the “core.” There is also an erroneous perception that student credit hours are not properly credited to units when interdisciplinary courses are taught. In the Honors College there are no faculty, all faculty stay in their home department; it is difficult to get faculty to be involved, a joint appointment may not be good for the honors college and it was preferred that faculty cycle in and out instead. There was supposed to be a hire that was 50% under the honors college but it didn’t happen. All student credit hours go back to the departments teaching the honors courses. There is resistance from department chairs/heads to let faculty be involved with the honors program. Tracking of students in courses may help with scheduling faculty for honor courses. It was repeated that faculty with joint appointments was not a good idea due to the issue with P&T review (the possibility of putting faculty in “double jeopardy” if there is a negative situation) and faculty reputation. There is a reporting structure issue with joint appointments. The FTEs for multidisciplinary hires are staying in the provost’s office not going to departments moneywise. The departments tell the honors college to ask the provost for increased faculty lines.
for teaching honors courses. If a faculty member is teaching a regular program course for an honors course, $3,000 goes to the related college. If faculty are teaching the course as an overload the money goes to pay the faculty directly. If the course is regularly offered through the department the faculty does not get paid extra. Some courses are designated as honors specifically within programs. These courses are not interdisciplinary courses if students do not take courses outside their program. These issues are prevalent among the SEC Honors Colleges. Suggestions for solving problems: Departments need to understand that interdisciplinary education is important; make sure departments know that they get credit for the course and student enrollment; make sure that all faculty know they are welcome to participate in honors college; and weight student credit hours as graduate level credit. Throwing money at the problem may not help. Previously there was an increase in the number of tenure-track and tenured faculty involved with instructors teaching honors courses, but then instructors were taken away. Honors 2000 has 15 faculty involved. It covers the human response to a natural disaster and is a truly interdisciplinary course. There seems to be a willingness by the faculty to teach outside their programs, but departments chairs/heads may have a problem with that and it may affect teaching courses for majors. It was repeated that enrollment management programs may help.

Robin Roberts

- Robin Roberts is the Director of Interdisciplinary programs in the College of Arts and Sciences in addition to being Associate Dean in the College of Arts and Sciences. She feels the position of Director should be a full time position. A&S has 10 interdisciplinary programs.
- She sees joint appointments as protective for faculty. A&S was able to recruit high quality faculty with joint appointments, for example minority candidates. With joint appointments the faculty member gets twice the feedback annually for help. Currently PS-36 has joint appointment document required. The requirement should go further than this. For example, Women’s Studies has a parallel review process with equal weight. HRM goes by the contract for the split appointment and can override negative decisions on one side if 49/51 split. If there is a split decision sometimes the faculty is moved fully into one department. Some deals are made if there is a 75/25 split.
- There are several split appointments that are new in A&S for which departments obtained good candidates. This idea was promoted as that the departments get one half of a new faculty person funded. Also, having the A&S dean tell department chairs that interdisciplinary studies are important helped. Chairs and interdisciplinary directors meeting monthly helped. More resources are needed for directors of interdisciplinary programs so they are not working on soft money. Having a full time administrator of interdisciplinary studies at the Associate Dean level would help. Hiring people who have interdisciplinary dissertations and other credentials, such as certification, into interdisciplinary programs works well.
- Faculty members do not just do interdisciplinary programs as an overload. In A&S all department chairs are required to participate in interdisciplinary activities in the honors college. The leg work is done through the Associate Deans. These
are unfunded mandates. The university needs to think of itself as the flagship and not as separate departments. English used to help more with the interdisciplinary programs, but saw other departments did not so English pulled back. Listing interdisciplinary participation in PS-36 will help protect faculty including if there is not a joint appointment. PS-36 should have a list of amendments so that it is easier to read the changes in the document.

- The cluster hire process is going very slowly because it’s being handled at a higher level. For the cluster hires, which is a push for research and economic development, there is a lack of money for hired faculty and no infrastructure provided. A “College of Innovation” could weaken other colleges, but it would be better for interdisciplinary programs to have its own administrative home and a place grow. Faculty passion is what makes it work, so dedicated faculty within interdisciplinary college may help. Arizona State’s New College was mentioned.

2. Appendix 3--Websites of innovative interdisciplinary programs at other universities.  
http://www.cfis.ubc.ca/  
http://newcollege.asu.edu/about/  

3. Appendix 4--Report by The Ohio State University
The Ohio State University Task Force for Interdisciplinary Research and Graduate Education

Report on Recommendations for Fostering Interdisciplinary Research and Graduate Education

April 19, 1991
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EXECUTIVE SUMMARY

Interdisciplinary graduate education and research are receiving increasing discussion and attention both nationally and locally at The Ohio State University. Breakthroughs in research and scholarship in the life sciences, social sciences, humanities, and in combinations of broadly defined areas of scholarship are the result of collaboration by researchers trained in a variety of disciplines. While more traditional disciplinary scholarship is essential to the intellectual life of the university, it is increasingly apparent that the dimensions of scholarship are being stretched beyond those of existing departmental structures. A campus visitor recently remarked that "departments are becoming a place to pick up a paycheck, while scholarship increasingly crosses department boundaries."

Interdisciplinary activities have increased at Ohio State as well. Over the past five years, several interdisciplinary centers have been established, e.g., Biotechnology, Mapping, Cognitive Science, and a number of new interdisciplinary graduate programs have been proposed and/or been instituted, e.g., neuroscience, oral biology, toxicology. The history of scholarship suggests that many of these "interdisciplinary fields" will, in time, become respected disciplines.

In response to these trends, the Task Force on Interdisciplinary Research and Graduate Education was appointed by Provost Frederick E. Hutchinson, Acting Vice-President Thomas L. Sweeney, and Dean Roy A. Koenigsknecht in Spring Quarter 1990. The charge to the Task Force was to determine what constitutes interdisciplinary research and graduate education, to identify incentives and barriers to faculty, to identify methods for assessment and maintenance of quality programs, to examine alternative institutional structures for administering such programs, and to examine funding opportunities and future program needs in this area.
The Task Force began by addressing the issues of what is encompassed in the terms interdisciplinary research and graduate education. Discussions focused on defining the term interdisciplinary and identifying what it means on this campus and what activities are presently going on here at OSU. Input was gathered from faculty via a survey. The Task force met with groups and individuals on campus to gather information, discuss issues, and address potential recommendations. The groups included academic center directors, interdepartmental graduate program directors, graduate students in these programs, selected departmental chairpersons, college deans, and persons from relevant central administration. Discussion also occurred with an outside consultant.

While interdisciplinary activity seem to be increasing at Ohio State, significant barriers were apparent and may inhibit and limit faculty and student participation in new directions of scholarship. Several important issues and barriers were identified:

- faculty recognition and rewards for interdisciplinary activities
- lack of faculty time, both personal time and professional (release) time
- availability of adequate funding for interdisciplinary programs and activities
- departmental attitude toward interdisciplinary efforts
- lack of support and program flexibility in educational and research experiences for graduate students involved in interdisciplinary activities
- communication among interdisciplinary programs and departments

The Task Force also found significant areas of support for interdisciplinary work in some colleges and departments. The Graduate School and the Office of Research also have been supportive of interdisciplinary research and graduate education. The office of Academic Affairs also has expressed its support of such activities. However, in some areas of the University expressed support for interdisciplinary activities appear to not be translated into allocation of resources for such activities. We are also concerned that there are significant areas of resistance to interdisciplinary activity, where it is viewed as a haven for less rigorous, i.e., weak, research and education. While there may be sources for such
concern, they should not be a deterrent to pursuing legitimate, cutting-edge scholarship. Our principal concerns focus on (1) the perception that interdisciplinary activities are not viewed favorably in large segments of the university and (2) faculty and students are explicitly or implicitly discouraged from pursuing such activities. While there may be risk in some interdisciplinary work, there is also risk in "cutting-edge" research and scholarship. As a major public research university, The Ohio State University must be at the frontiers of research and scholarship.

The Task Force discussed a wide range of options which could be recommended as approaches to address the barriers and problems uncovered during our year long examination of the issues. Ultimately, we arrived at a set of recommendations for action which do not involve a major "overhaul" of the University organizational structure but can be accommodated in the current structure.

RECOMMENDATIONS:

Strong encouragement and endorsement for interdisciplinary research and graduate education from the upper levels of the University are necessary. This encouragement should take the form of public statements on the mission of the University and in allocations of resources to interdisciplinary research and graduate education. The Task Force proposes several recommendations for action:

1. Organizational Structure for Interdisciplinary Activities at OSU [pages 40-43]:
   - A network of faculty committees (termed Interdisciplinary Activities Committees) should be established that function in leadership, advisory, and evaluative roles.
   - Committees at the local level (e.g., College/Area Interdisciplinary Activities Committees) would be the foundations of this network and address development, encouragement, and evaluation of interdisciplinary activities. These committees would be advisory to graduate studies committees, department chairperson, and college deans.
- A University Interdisciplinary Activities Committee would address more global, university-wide issues related to interdisciplinary activities. This committee would be advisory to the Provost, the Graduate School, and the Office of Research.

2. Changes in University Policies and "Culture" [pages 44-47]:
- Appropriate changes should be made in the "Guidelines for Promotion and Tenure" documents to include consideration of interdisciplinary research and teaching activities.
- Faculty development in interdisciplinary activities should be encouraged.
- Departments and graduate programs should enhance access to educational and research experiences for graduate students in interdisciplinary programs.
- Decisions should be made on proposals from previous University committees on expanding research track appointments.
- The academic nature of research centers should be maintained.
- Support for interdisciplinary seminar series be expanded.

3. Financial Support [pages 47-54]:
- Separate allocations for interdisciplinary research and graduate programs should be established that are not part of the present departmental/college budgeting processes.
- Funds for development of major interdisciplinary research programs should be maintained.
- The Interdisciplinary Research Grant program should be expanded.
- Equitable distributions of DDRS allocations and indirect cost allocations should occur between interdisciplinary programs and participating departments.
- Separate funds to support interdisciplinary graduate student stipends and interdisciplinary graduate program operations are essential.
- Departments should be encouraged to provide support for interdisciplinary graduate programs.
- The budgeting process at the University should require departments and colleges to prioritize funding requests for interdisciplinary activities separate from departmental requests.
- Efforts to increase external funding of interdisciplinary programs should be expanded.
4. Modifications in Administrative Procedures [pages 54-56]:

- The involvement of the Graduate School, Council of Research and Graduate Studies, and its standing committees in the review and approval of interdisciplinary graduate activities should continue.
- New interdisciplinary graduate education programs should be administered by the Graduate School.
- Procedures, such as cross-listing interdisciplinary courses and "double counting" of dissertation research credit, need to be established to ensure proper credits for teaching and for graduate dissertation research.
- An interdisciplinary graduate program directors' forum should be established.
- The involvement of the Office on Research and the Research Committee in the review and approval of interdisciplinary research activities should continue.
- Academic research centers interfacing with several academic units should report to the next highest administrative level.
- Communications within interdisciplinary programs and with the University community as a whole must be improved. Centralized coordination of information (e.g., "clearinghouse") on interdisciplinary research and graduate education should be established.

We have a vision of a university which is open to and supportive of intellectual inquiry wherever it may lead. Sometimes this inquiry will fit neatly into the boundaries of established disciplines; at other times, it will cross those boundaries. Further, the nature of a given discipline itself will change, sometimes moving in the direction of what is previously considered "interdisciplinary." Our study of these issues has satisfied us that many of the revolutionary developments in knowledge occur at the "interface" between cores of separate disciplines. The Ohio State University must facilitate the work of scholars who choose to work in these arenas -- not to the detriment of those working near the core of the discipline, but in addition to those faculty and students.

The Task Force strongly endorses interdisciplinary research and graduate education activities at The Ohio State University. Hallmarks of major research universities like OSU
are strong research and graduate programs. For us to continue to compete with our peer institutions, both public and private, excellent faculty, outstanding graduate students, strong disciplinary activities, and strong interdisciplinary activities are essential. The breadth of knowledge and experiences of faculty, students, and staff at The Ohio State University provide us with the tools essential for continued growth and development of front-line disciplinary and interdisciplinary research and educational programs vital to the modern university.
The Graduate School
The Ohio State University

INTERDISCIPLINARY TASK FORCE

Robert Brueggemeier (Chairperson)
Pharmacy

Keith Bedford
Civil Engineering

Jerry Bigham
Agronomy

Johanna DeStefano
Educational Theory & Practice

Jean Gurklis
Graduate Student Representative

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History of Art

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Cell Biology, Neurobiology & Anatomy

Ted Napier
Agricultural Economy & Rural Soc.

Philip Sorensen
Law

Richard Steckel
Economics

Beverly Toomey
Social Work

Marilyn Waldman
Comprehensive Studies in Humanities

Graduate School Support Staff:

Paul D. Isaac, Associate Dean
Helena Correia, Graduate Associate
INTRODUCTION and ESTABLISHMENT OF THE TASK FORCE

Why Examine Interdisciplinary Issues?

The role of interdisciplinary research in scholarly and scientific activities has continued to increase in recent years. The topic of interdisciplinary graduate education is also receiving increased interest and attention on university campuses. Many complex research problems and questions currently being addressed require utilization and integration of concepts and methods from more than a single traditional discipline. Problem- and product-oriented research focusing on such issues as societal needs and concerns, on global competitiveness, on increasing productivity, and on new technologies require both disciplinary and interdisciplinary approaches. Similarly, graduate programs which cut across traditional disciplines and focus on interdisciplinary education are attracting outstanding students and becoming increasingly common at major universities.

A comprehensive examination of interdisciplinary issues and activities at The Ohio State University is particularly important at this time. Numerous groups of OSU faculty have been involved in the establishment and on-going activities of interdisciplinary research and/or graduate education programs over the past decade. Interest in interdisciplinary activities continue to increase locally, as evidenced by the overwhelming response to requests for seed grants to develop research programs focused on interdisciplinary, multi-investigator projects, by emergence of new academic centers involving interdisciplinary activities, and by increasing participation of faculty and students in interdisciplinary graduate programs.

Addressing interdisciplinary issues here at OSU is indeed timely as President Gee undertakes new university initiatives during his first year. The breadth and expertise of this great public research university provide critical masses of faculty and students to address important societal needs with problem-oriented research and interdisciplinary education.
Our study of the issues has convinced us that a failure to examine interdisciplinary issues at OSU will result in an inability to attract and retain excellent faculty and graduate students. Furthermore, OSU faculty would be less competitive in obtaining resources from external funding agencies, who are devoting increased resources to multi-investigator grants and projects. The University itself risks falling behind in the development of front line research and educational programs vital to the modern university.

Charge to the Task Force

The Ohio State University Task Force for Interdisciplinary Research and Graduate Education was formed by Provost Frederick E. Hutchinson, Acting Vice-President Thomas L. Sweeney, and Dean Roy A. Koenigsknecht to address issues related to interdisciplinary activities at the University. The Task Force first convened in Spring Quarter 1990, and the specific document on the establishment and charge to the task force is attached at the end of this report as Appendix 1.

The charge to the Task Force was to determine what constitutes interdisciplinary research and graduate education, to identify incentives and barriers to faculty, to identify methods for assessment and maintenance of quality programs, to examine alternative institutional structures for administering such programs, and to examine funding opportunities and future program needs in this area.

Membership of Task Force

The members of The Ohio State University Task Force for Interdisciplinary Research and Graduate Education are listed here. The Task Force is comprised of faculty members elected to the Research and Graduate Council, directors of interdisciplinary research centers or interdisciplinary graduate programs, and participants in interdisciplinary research and/or education. The Graduate School provided staff support to the Task Force.
Members of the Task Force on Interdisciplinary Research and Graduate Education

Keith Bedford Civil Engineering
Jerry Bigham Agronomy
Robert Brueggemeier (chair) Pharmacy
Johanna DeStefano Educational Theory & Practice
Jean Gurklis (grad. student) Nursing
John Huntington History of Art
Ken Jezek Byrd Polar Research Center
James King Cell Biology, Neurobiology, and Anatomy
Richard Steckel Economics
Phil Sorensen Law
Robert Tabita (*) Microbiology
Beverly Toomey Social Work
Gisella Vitt (*) German
Marilyn Waldman Comparative Studies
Paul Isaac Graduate School
Ted Napier Graduate School
Helena Correia GAA
Tom Kephart GAA

(*) served from March 1990 to September 1990

Strategy for Addressing the Issues

The strategy developed by the task force for addressing issues of interdisciplinary research and graduate education involved OSU faculty, OSU administration, and external individuals. Early committee meetings focused on discussions of interdisciplinarity and the development and implementation of a faculty survey. Questionnaires were mailed at the end of Spring Quarter 1990 to two groups of graduate faculty: (a) those identified by their Graduate Studies chairpersons as involved in interdisciplinary activity and (b) a random sample of an equal number of other graduate faculty. Of the 880 questionnaires mailed to all colleges, 331 were returned. Analysis of results of the faculty survey were instrumental in
identifying and focusing on critical issues and on incentives and barriers to interdisciplinary activities. A summary of the results of the faculty survey, the survey, and the frequency of responses to questions are included in Appendix 2.

During Autumn Quarter 1990 and early Winter Quarter 1991, the Task Force or subcommittees of the Task Force met individually and in groups with a number of faculty and administrators of the University. A visit and consultation also occurred with Dr. Julie Thompson Klein from Wayne State University, who recently published a comprehensive study of interdisciplinarity. Contacts with colleagues and administrators at other institutions helped provide additional external perspectives.

Discussions with OSU administrators from the Office of Academic Affairs, the Office of Research, and the Graduate School and meetings with a sample of college deans and department chairpersons provided perspectives from various levels of administration. Experiences in initiating and maintaining interdisciplinary research centers were shared in meetings with faculty center directors. Graduate studies chairpersons from interdepartmental graduate programs provided their perspective of the opportunities and problems associated with such graduate programs. During the past decade, several national and international conferences have examined issues related to interdisciplinary research and educational programs. This literature provided additional input to the committee. Finally, committee discussions, evaluations, and thought led to the analysis and recommendations presented in this report.

Over this past year, the Task Force extensively examined the numerous types of interdisciplinary activities and have identified incentives and barriers to involvement. The Task Force formulated specific recommendations for development and support of interdisciplinary research and graduate education.
DEFINING INTERDISCIPLINARITY

Terminology

Early discussions in committee meetings and the first "task" described in the charge to the task force focused on determining what constitutes interdisciplinary research (IDR) and interdisciplinary graduate education (IDGE).

An abundance of terms has developed over the decades to describe research and educational activities involving more than a single discipline. Definitions of interdisciplinary research have been addressed in numerous references in the literature. International conferences on interdisciplinary research\textsuperscript{1,2} provided many examples and variations on definitions of the term interdisciplinary. Dr. Klein extensively examines the definition of interdisciplinarity and its evolution.\textsuperscript{3} The different types of interdisciplinarity, the numerous labels used to describe kinds of activities, and levels of these activities are detailed in her treatise on the subject. A quote from Professor Klein is quite appropriate:

"The literature on interdisciplinarity is littered with labels and disputes about their appropriateness."

Three terms are consistently utilized to describe these research and educational activities. Those terms are interdisciplinarity, multidisciplinary, and cross-disciplinary. Even though these terms are often used interchangeably, brief "working" definitions are helpful.

**Cross-disciplinary activities:** Activities that require contributions from more than one discipline in order to complete a task.

**Multidisciplinary activities:** Activities in which different portions of the task are performed by separate units (i.e., separate disciplines). The activities are coordinated and results added to complete the task.

**Interdisciplinary activities:** Activities in which the task is performed by an integrated, single unit (i.e., center or program). The results are collectively formulated and integrated in order to complete a task.
The Task Force has approached this problem of "terminology" with a broad perspective. Our examinations of issues, barriers, and incentives to interdisciplinary research and graduate education encompassed all aspects of interdisciplinarity — from activities involving investigators from more than a single discipline (or, in certain cases, subdiscipline) to activities of an individual faculty member employing methods from more than a single discipline. Both additive and integrative activities were perceived by the Task Force to be equally important in addressing problem-focused research.

Nevertheless, it was critically important for us to determine what activities faculty members at Ohio State define as interdisciplinary. The first four questions (requiring yes/no responses) of the faculty survey provided examples of different forms of interdisciplinary activities.

<table>
<thead>
<tr>
<th>Question</th>
<th>INTERDISCIPLINARY?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yes</strong></td>
<td><strong>No</strong></td>
</tr>
<tr>
<td>1. Collaboration by 2 or more faculty members from different disciplines on any professional activity.</td>
<td>86.8%</td>
</tr>
<tr>
<td>2. Professional activities by 2 or more faculty members from different disciplines in which each person conducts his/her activities in the context of his/her own discipline in a separate but coordinated manner.</td>
<td>74.7%</td>
</tr>
<tr>
<td>3. Professional activities by 2 or more faculty members from different disciplines using an integrated approach.</td>
<td>95.9%</td>
</tr>
<tr>
<td>4. Professional activities by a single faculty member which integrates theory, research methods, and content materials from several disciplines.</td>
<td>48.9%</td>
</tr>
</tbody>
</table>

Interestingly, the first three examples were overwhelmingly identified as interdisciplinary, whereas the last example was defined as interdisciplinary by approximately 50% of the respondents.
The Task Force considered all four examples in our deliberations, and thus, the
generic term "interdisciplinary" is used throughout our discussions and this report to
encompass those activities described as cross-disciplinary, multidisciplinary, and/or
interdisciplinary. The abbreviation IDR will be utilized in this report to refer to
interdisciplinary research, and IDGE will refer to interdisciplinary graduate education.

Development of Interdisciplinarity

Even though the concept of interdisciplinarity has evolved throughout the twentieth
century, the period of the late 1960's and 1970's marked the beginning of an exponential
growth in this area. The past decade has led to further expansion and refinement of
interdisciplinary concepts. The evolution of knowledge is considered a major driving force
for development of interdisciplinary research and graduate education. Often, faculty and
researchers involved in the pursuit of new knowledge have expanded beyond traditional
disciplines and employed varied methods and skills to solve their research problems. This
pursuit of knowledge by specialists has also led to the development of multi-investigator,
collaborative approaches, providing both depth and breadth to research endeavors.

Many modern developments do not "fit" nicely into a single discipline, but rather rely
upon several. Areas such as immunopharmacology, toxicology, neurosciences, molecular
biology, environmental sciences, geochemistry, biophysics, materials science, systems
engineering, computer graphics, cognitive science, sociobiology, linguistics, social
psychology, political economy, American studies, Black studies, and women's studies are
examples where "traditional" disciplinary boundaries have disappeared. Furthermore, inter-
disciplinary thrusts may eventually evolve into unique disciplines. The most cited example is
biochemistry, which initially developed as an interdisciplinary area in the early twentieth
century and has evolved into a well-established research and educational discipline.
Women's studies and Black studies are often cited as other interdisciplinary areas that are
currently undergoing similar evolutionary development into distinct disciplines.
The pursuit of new knowledge and the complex interactions between numerous disciplines provide a stimulating arena for research and graduate education and have led to an increased awareness of interdisciplinarity. It is indeed an important time for The Ohio State University to begin a comprehensive examination of interdisciplinary issues and to enhance and develop functional approaches to interdisciplinary research and graduate education here at this institution.

MODELS OF INTERDISCIPLINARY ACTIVITIES

The nature of interdisciplinary research and educational activities at OSU and the extent to which faculty and students participate in these activities are extremely varied. At one end of the spectrum, a single faculty member is involved in research and professional activities which integrate theory, research methods, and/or content materials from several disciplines. At the other end, large research centers utilize coordinated and/or integrated approaches to solving problems and involve faculty, students, and research staff from many different disciplines.

Discussions of the numerous permutations of these interdisciplinary activities at OSU would generate volumes of material. Nevertheless, the overall organizational approaches of these activities and specific examples would be instructive. The schematic models, conceptualized by Professor Huntington, are provided on the following pages of this report to illustrate some of the general approaches to interdisciplinary research and graduate education.

Research Models: The research organizations described by the following charts are not mutually exclusive. In particular, the organization in Model One may also exist in Models Two, Three, and Four, and Models One and Two may exist within the frameworks of
Models Three and Four. While the models provided in this report are meant to suggest a clarification to the fundamental organizational structures of interdisciplinary research that exist at the Ohio State University, individuals attempting to compare an existing research activity to the models must expect to find a variety of permutations and combinations within any existing program or activity.

Graduate Study Models: In contrast, the models of interdisciplinary graduate study found at The Ohio State University are far more discrete, in part because any model must revolve around one individual -- the student involved. Thus, the graduate study models are basically parallel to Model One of the research models and all are essentially variations on a theme -- that of the individual student preparing in more than one discipline.

As a final note to the models, under no circumstances is it the committee's intention that the models provided here become limiting to the academic community at OSU. On the contrary, we present them simply as suggestive of the range of interdisciplinary activities of which we are aware. Other forms of interdisciplinary, multi-disciplinary, or trans-disciplinary approaches may also exist at Ohio State.
Model one is entirely based on an individual's approach to the subject of investigation or research problem. The individual determines the need for an interdisciplinary approach, goes about learning the methodology or accumulating the data as appropriate and combines the information into a synthesis which is disseminated via the appropriate journal or other dissemination vehicle. Rarely are others involved in the actual research although individuals in other disciplines may play a very important role in aiding the researcher with techniques or supplying necessary data.
RESEARCH MODEL ONE: EXAMPLE ONE
"INDIVIDUAL DOMINANT"
INTERDISCIPLINARY BECAUSE OF
ONE INDIVIDUAL'S APPROACH(S)
RESEARCH MODEL ONE: EXAMPLE TWO
"INDIVIDUAL DOMINANT"
INTERDISCIPLINARY BECAUSE OF ONE INDIVIDUAL'S APPROACH(S)
Model two is simply two or more individuals in separate disciplines coming together to work on a problem or subject of investigation of mutual interest. The linkage between them may range from becoming competent in another's discipline to separate subsections of a publication being written by individuals with little or no interest in the results that the other(s) have produced. The results of the study may be published either individually or jointly as the occasion and the data demand.
RESEARCH MODEL TWO: EXAMPLE ONE
"MUTUAL INTEREST DOMINANT"
INTERDISCIPLINARY BECAUSE OF TWO (OR MORE) INDIVIDUALS' APPROACH(S)
RESEARCH MODEL TWO: EXAMPLE TWO
"MUTUAL INTEREST DOMINANT"
INTERDISCIPLINARY BECAUSE OF TWO (OR MORE) INDIVIDUALS' APPROACH(S)
Model three exists where there is a clustered body of problems or subjects of interest tied together by some over-riding feature common to the whole. Each researcher or research team works on concerns inherent to his, her or its discipline and usually publishes in discipline oriented journals. Other individuals, usually from within one or more of the allied disciplines, may act as synthesizers and further disseminate results (commonly as books or reports) on the subject(s) under investigation. The linkages between the disciplines involved may range from close to nonexistent. When strong linkages do occur they may be based on the structures described in models one and two rather than as discipline-wide linkages.
Disciplinary or interdisciplinary approaches by either
groups or individuals as appropriate
(Based on models one and two)

Ice Core Research

Quaternary Research

Journal of Geophysical Research

Polar Ecology

Artic Alpine Research

Synthesizer(s)

Publication of Synthetic Report(s)

Antarctic Tectonics

Geology

Paleo Climatology

Glaciology

Journal of Glaciology

3 Paleo

RESEARCH MODEL THREE: EXAMPLE ONE
(Byrd Polar Research Center)
"PROBLEM DOMINANT"
INTERDISCIPLINARY BECAUSE OF COMMONALITY OF THE PROBLEM

Denotes Individual Researcher
RESEARCH MODEL THREE: EXAMPLE TWO
"PROBLEM DOMINANT"
INTERDISCIPLINARY BECAUSE OF COMMONALITY OF THE PROBLEM.
Model four exists when disciplines share a common technique or methodology. While the linkage because of the technique may result in cross-placement of post-docs, staff and graduate assistants in various programs using the techniques, the concerns of the disciplines with their respective subjects of investigation and problems generally remain discrete. Where linkages occur they are usually based on models one and two rather than discipline wide.
RESEARCH MODEL FOUR: EXAMPLE ONE
"METHOD DOMINANT"
INTERDISCIPLINARY BECAUSE OF A COMMON METHODOLOGICAL APPROACH

Denotes Individual Researcher
RESEARCH MODEL FOUR: EXAMPLE TWO
"METHOD DOMINANT"
INTERDISCIPLINARY BECAUSE OF
A COMMON METHODOLOGICAL APPROACH

Denotes Individual Researcher
Model one occurs when a student and an advisor (frequently with the advice and consent of the Ph.D. committee) agree that a student needs certain studies outside the degree granting academic unit's usual offering. Most often these are termed "cognate studies" and may closely parallel offerings in the home unit. Faculty from "cognate" units may serve on the Ph.D. committee and may contribute considerable time and effort to the student's program. The major distinction between this and model two is that the plan of study is informal in model one and thereby does not apply to all students within the given program while in model two the source of study is determined by the department's graduate program and applies to all students in the program.
In model two the degree granting unit's advanced degree program requires that a student take courses outside the offerings of the unit. Unlike model one the requirements for interdisciplinary study apply to all students in that particular degree program. Units in which work is required may not be "cognate" fields but simply a discipline in which a useful methodology or body of data exists.
<table>
<thead>
<tr>
<th>BARRIER</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) DEPARTMENTAL CONSTRAINTS</td>
<td>Administrative and organizational constraints created by discipline-oriented departments.</td>
</tr>
<tr>
<td>(2) FUNDING</td>
<td>Lack of sufficient and available funds and equitable distribution among departments.</td>
</tr>
<tr>
<td>(3) TIME</td>
<td>Lack of personal time and difficulty in obtaining release time from regular duties.</td>
</tr>
<tr>
<td>(4) COMMUNICATION</td>
<td>Lack of exchange of information between departments and consequent difficulty in identifying who is interested and pursuing interdisciplinary work</td>
</tr>
<tr>
<td>(5) RECOGNITION</td>
<td>Lack of esteemed recognition for interdisciplinary work and publication within individual departments</td>
</tr>
<tr>
<td>(6) REWARDS AND INCENTIVES</td>
<td>Lack of value attributed to interdisciplinary work for purpose of salary adjustments, promotion, and tenure</td>
</tr>
<tr>
<td>(7) INTERDISCIPLINARY KNOWLEDGE</td>
<td>Lack of knowledge outside of discipline</td>
</tr>
<tr>
<td>(8) LEADERSHIP</td>
<td>Lack of leadership to initiate and facilitate interdisciplinary work</td>
</tr>
<tr>
<td>(9) TURF ISSUES</td>
<td>Attitudinal constraints regarding departmental &quot;territoriality&quot;</td>
</tr>
<tr>
<td>(10) CREDIT</td>
<td>Inadequate assignment of credit hours for interdisciplinary work</td>
</tr>
</tbody>
</table>
(11) RESOURCES
Lack of space allotments and equipment

(12) COOPERATION
Lack of cooperation among disciplinary faculty in an interdisciplinary setting

(13) LOCATION
Size of the university and consequent distance between departments discourages interdisciplinary work

(14) ORGANIZATION OF THE UNIVERSITY
Institutional constraints created by university administration

(15) ENROLLMENT
Lack of student interest in interdisciplinary classes

(16) CURRICULUM
Curriculum constraints as a result of degree requirements

(17) PERMANENT CENTER
Need for permanent center dedicated to interdisciplinary research

(18) INTEREST
Lack of interest and commitment for interdisciplinary work
BARRIERS TO INTERDISCIPLINARY ACTIVITIES

Identification of incentives and barriers for faculty to engage in IDR and IDGE was a major focus of the task force. Many questions in the faculty survey addressed these issues. Meetings with deans, department chairpersons, and faculty addressed various barriers to participation, exploring both actual and perceived barriers. A more extensive survey of selected public and private universities was recently reported, and the results were comparable to those emerging from our faculty survey.

Four major factors that affect faculty involvement in IDR and IDGE were identified:
1) Recognition and rewards for faculty involvement
2) Availability of time
3) Funding for IDR and IDGE
4) Departmental/institutional issues

Other important factors identified were communication, reporting lines, location, and centralized resources.

Discussions with graduate students identified additional barriers to participation in interdepartmental programs:
1) Lack of flexibility in pursuing interdisciplinary studies
2) Insufficient coordination and/or collaborations
3) Absence of an academic "home"

Barriers for Faculty:

(a) Recognition and Rewards for Faculty Involvement

The most important issue for faculty involved in IDR and IDGE is the recognition, and resultant rewards, for their interdisciplinary research and educational activities. However, the extent of recognition and rewards for faculty efforts in IDR and IDGE varies across departments and colleges at The Ohio State University.
The principal barriers identified by faculty involved in IDR center around issues related to publications. Single-authored publications or publications from a single faculty member's research group in the "main-line" journals of a particular discipline are viewed by some departmental colleagues and administrators as the most valued publications. These considerations are an ingredient in resultant faculty rewards, such as annual salary increments, promotion, and tenure.

For faculty involved in IDR, joint publications are very common. Also, faculty involved in IDR will publish most often in relevant interdisciplinary journals, in order to obtain peer reviews of their research, to communicate to their research colleagues, and to contribute to the knowledge base of their interdisciplinary field.

Serious barriers to faculty involvement in IDR arise when the nature of interdisciplinary research and scholarly activity of the faculty member is not incorporated into the evaluation by the department and/or the tenure and promotion committee. Indeed, in such cases, participation by young faculty is discouraged until tenure has been obtained, an ironic practice in that these faculty are often in a position to make exciting and unique contributions to research and scholarship. In contrast, departments/colleges which view interdisciplinary efforts as an important part of overall faculty evaluations provide needed incentives and minimize these barriers to involvement. These departments/colleges routinely seek additional information from IDR and IDGE directors during deliberations on annual salary increments, promotion, and tenure. Finally, in other departments, interdisciplinarity is so common as to make special procedures unnecessary.

(b) Availability of Time

Another major barrier to participation by faculty in IDR and IDGE is the lack of time, both personal time and professional time. A common statement from faculty is that participation in IDR and IDGE is performed "above and beyond" the regular duties and
responsibilities for the department or academic unit. This is particularly acute when addressing teaching responsibilities. A faculty member must "carry one's own weight" in regard to the teaching of courses offered by the department. His/her involvement in IDGE is "added on top" and the faculty person is not released from the departmental teaching load. Clearly, this view is a major barrier to participation in interdisciplinary educational efforts. None of these barriers are insurmountable, as evidenced by success in some departments and colleges, but they can create significant problems for faculty in other colleges.

(c) Funding for IDR and IDGE

The availability of adequate funding for the initiation and maintenance of IDR and IDGE programs are critical issues. Funds for personnel (faculty, graduate students, researchers, administrative staff, etc.), materials and supplies, and shared equipment are essential for carrying out any program. Through the university budgeting process, colleges and departments at OSU are able to present their budgetary program needs and thus compete for discretionary funds. IDR and IDGE programs must work through cooperative departments or colleges in order secure internal funds. In times of limited new resources, tensions arise between departments and interdisciplinary programs. A blend of external funding and university support for interdisciplinary programs is therefore needed. As external funding (NSF, NIH, NEA, DOE, etc.) diminishes, more pressure is placed on internal funds.

Faculty positions:

Resources for new/replacement faculty appointments are controlled by departments and may often be utilized to strengthen the discipline. Faculty who are heavily involved in teaching are resistant to hiring faculty with interdisciplinary interests, who may be very strong in one specific area of the discipline but not available to teach more than one course.
Return on research funds:

Access for IDR and IDGE programs to indirect charges on grants and contracts is another concern of these programs. Currently, faculty release time, DDRS, CDRS, Academic Challenge, and Research Challenge funds are allocated principally through departments. This problem also arises when departments or colleges do not receive financial "credit" for the participation of a faculty member.

Graduate student support:

Support for graduate students (GTA, GRA, and GAA) is vital for graduate programs. Major barriers to faculty and staff participation in IDGE arise when these programs "compete" for available GA support within a department or college. Many disciplinary faculty, who feel that GA support is already inadequate within the department, are very resistant to "giving" a GA position to an IDGE program. This situation is further exacerbated when the availability of external funding (training grants, research funds) is diminishing. Faculty actively participating in IDGE programs are frustrated when affiliated departments/colleges do not contribute to the GA support "pool" for first year IDGE graduate students. Inadequate GA support can also affect the recruitment of outstanding prospective graduate students to the IDGE program.

Operating funds:

IDGE programs have no institutional mechanism to access funds for basic program operations, such as secretarial support, supplies, recruitment efforts, etc. The University operating budget process does not enable IDGE programs to provide specific requests.

(d) Departmental/Institutional Issues

Departments can be either strong supporters for interdisciplinary activities or can be major barriers. Strong, prominent departments are vital to the university and establish
levels of excellence in teaching and research for the discipline. Strong departments also provide a high-quality base for IDR and IDGE programs to build upon.

The departmental attitude toward interdisciplinary efforts is a major factor in the success of interdisciplinary activities. Incentives to faculty participation in IDR and IDGE exist in departments/colleges with active involvement, strong commitments, and visible support. Conversely, significant barriers are perceived to exist in those departments/colleges which have a neutral or negative attitude toward IDR and IDGE. Departmental/college attitudes contribute significantly to the other major factors — recognition and reward, time, funding — discussed earlier. In some cases, departments regard interdisciplinary programs as competitors for resources rather than as opportunities for faculty activity. Furthermore, credits for courses taught by departmental faculty outside the department are regarded as lost resources.

**Barriers for Graduate Students:**

(a) **Lack of flexibility for graduate students**

The lack of flexibility of some graduate programs in permitting students to pursue interdisciplinary studies is perceived as a serious barrier to graduate students. This barrier discourages (and in some cases prevents) students from combining diverse disciplines for the purpose of solving practical problems or furthering their knowledge base in relation to the specific areas of research interest. One example of this lack of flexibility is the difficulty of enrolling in a graduate course in another department/graduate program that has specific departmental courses as prerequisites and has no option for enrollment based on consideration of the knowledge/experiences of the graduate student. Similarly, some programs discourage graduate students from other programs from enrolling in their courses. Another example is the refusal of the department to permit its own graduate students to enroll in courses in other programs.
(b) Insufficient coordination and/or collaboration

A second major barrier cited by graduate students is insufficient coordination and/or collaboration among faculty and research laboratories within departments and across departments involved in interdisciplinary programs. This lack of coordination is particularly evident in graduate educational programs, as indicated by course duplications of similar content materials across the campus and by similarities among programs.

(c) Absence of an academic "home"

A third barrier cited by IDGE students is the absence of a "home" during their graduate careers. An important component of graduate education is interaction with other graduate students and research staff; these interactions provide valuable support and intellectual stimulation throughout the periods of coursework and research activities. Further, IDGE graduate programs often do not have a physical home which serves as a convenient meeting place for graduate students in the program.

Informal reports indicated that excellent graduate students are being and will continue to be lost from OSU and attracted to institutions where their plans for interdisciplinary studies and research would be facilitated rather than hindered.

Additional Issues

Other factors, such as communication, reporting lines, location, and centralized resources, were also identified as important barriers to interdisciplinary activities.

Inadequate communication between interdisciplinary programs and departments and/or colleges can be a serious problem. Poor communication can result in unfamiliarity with interdisciplinary activities and lead to misunderstandings of the scope, purposes, and/or functions of IDR and IDGE programs. Additionally, lack of communication makes it difficult to identify faculty interested in or actively participating in IDR and IDGE.
Communication and networking within IDR and IDGE programs is essential to encourage participation from faculty and students located across campus and to properly evaluate and reward their contributions.

A variety of reporting structures for IDR and IDGE programs exist on this campus. Research centers report to department chairpersons, to college deans, to the Vice-President for Research, to the Provost, or to the University President. Likewise, interdisciplinary graduate programs report for budgeting purposes to department chairpersons or to college deans; on the other hand, these programs report academically to Graduate Studies Committees and the Graduate School. At the present time, no single reporting structure for all IDR and IDGE programs at OSU exists. Many problems experienced by IDR and IDGE directors and faculty can be avoided when the best, logical reporting structure is identified and meets the needs of the specific programs and the University.

Finally, access to centralized research facilities and services is as important to faculty involved in IDR and IDGE programs as to department faculty. Adequate support, maintenance, and upgrading of "state-of-the-art" facilities and services is essential in a large research university for both disciplinary and interdisciplinary activities.
Excellent IDR and IDGE programs have been established here at The Ohio State University — developed and operated by committed faculty who are supported by incentives and carry on in spite of barriers discussed in the previous section. The Graduate School and Office of Research have been instrumental in initiating and supporting of these interdisciplinary research and education efforts in various ways. A review of some of these interdisciplinary programs highlights key factors in their success, identifies barriers overcome, and illustrates those barriers that remain.

**IDR Programs — University Academic Research Centers**

The most visible IDR programs that have developed here at OSU over the past few years are the University Academic Research Centers. Recently, the term "Academic Center" has been adopted to replace the generic term of research center; we will use the term "Academic Research Center" in order to be specific. The directors have recently formed a working group entitled "Interdisciplinary Research Center Directors' Forum" to initiate, promote, and support IDR. A list of the Academic Research Centers involved in the Center Directors' Forum is provided in Appendix 3.

Achieving OSU's scientific objectives demands the easy interchange of ideas and expertise between the faculty resident in the many departments and colleges of the university. The function of the Academic Research Center is to provide a common forum for that exchange between members of the OSU community interested in problems that cut across traditional academic boundaries. The Center does this by maintaining a flexible organizational posture capable of responding to compelling new research opportunities. The Center helps nurture a stimulating research environment that serves to foster a superior educational experience for all members of the University community.
The Center carries out its role by working to concentrate within its structure particular expertise and capabilities that attract a broader research talent from the general University faculty. It also acts as a focal point for attracting visiting scholars to the Campus as evidenced by the successful series on global change sponsored by several Centers and the College of Mathematical and Physical Sciences in 1990.

Attracting faculty to a Center is done partly by commonality of research objectives and partly by maintaining unique facilities complementary to those housed in academic departments. Successful facilities require an infrastructure that combines hardware and expert support staff and consequently a Center must maintain a core of interdisciplinary scientists who have a vested interest in the Center's facilities. The core staff is augmented by a flux of postdoctoral researchers, graduate students and undergraduate students who are critical in assuring the vitality of the organization. These individuals also facilitate research connections between faculty and seed the Center's, and in some cases affiliated departments, future scientific staff.

Because of the increasing importance and level of interdisciplinary research activities at OSU, Centers will, in the future, play an additional role of providing a home for interdisciplinary faculty looking for options that bridge the gaps between departments and colleges. To a limited degree, the Centers are already experimenting with these activities through limited, jointly funded appointments, co-sponsoring proposals with academic departments, offering advanced level seminars on special topics through cooperating departments, and, as in the case of the Center for Mapping, establishing one of a kind degree programs. These attempts have met with mixed success but, taken together, they are likely to spawn innovative new opportunities such as on-campus sabbaticals spent in interdisciplinary units and interdisciplinary postdoctoral researchers housed in the Center. Opportunities to develop and jointly teach new, advanced level courses may also develop where curricular monitoring mechanisms are available.
"There is a special opportunity in educating graduate students in an interdisciplinary environment. A graduate student should (in addition to amassing facts and acquiring tools) have the opportunity to see just how far his imagination can carry him in a research project, and the heart of this thesis research is usually firmly in a discipline. But if he is immersed in a multidisciplinary setting while doing this, if he is encouraged by his environment to bring other disciplines to bear on his work and to explore the implications of his results for other disciplines, he can acquire a firm base for richer contributions to science and technology in his subsequent career."

The above quotation from the paper entitled "Multidisciplinary Research and Education Programs in Universities: Making Them Work" by Robert L. Sproull and Harold H. Hall eloquently summarizes the concept of interdisciplinary graduate education. Rigorous, in-depth education and scholarship provide the solid foundation of the traditional disciplinary graduate degree. Interdisciplinary education is no exception and must have a strong foundation in the necessary disciplines. As a result, the amount of course work a student must complete may be more extensive in an interdisciplinary degree program than in a single disciplinary one, although an interdisciplinary program will often not be the sum of several disciplinary degree programs. Additionally, faculty with expertise from the component disciplines must be actively involved in the educational program.

Several options exist at The Ohio State University for IDGE opportunities. The organizational structure of the Graduate School consists of the Graduate Faculty and individual Graduate Studies Committees, which are administratively separate from departments and colleges. Such a structure permits the development of IDGE programs that are not directly linked to an individual department. "One-of-a-Kind" Graduate Programs offer another option. Graduate student and faculty participation in Academic Centers aids in the implementation of interdisciplinary graduate programs. Graduate School support, both financial and administrative, of interdisciplinary graduate programs

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should be acknowledged. The Dean of the Graduate School has provided leadership in addressing some of the problems associated with interdisciplinary activities.

*Interdisciplinary Graduate Education Programs*

Numerous IDGE programs exist at OSU, reflecting the diversity of this University in the areas of arts and humanities, education, engineering, physical sciences, and life sciences. A list of the interdisciplinary graduate programs is provided in Appendix 4.

Key factors in interdisciplinary graduate study programs in the life sciences are the core of faculty that participate in each program, the quality of graduate students currently enrolled in the various programs, and the core research knowledge, skills and techniques utilized. One of the primary barriers is the sometimes parochial view taken by cooperating colleges and departments relative to the administration of each program. One example of overcoming this barrier in the life sciences has been the Ohio State Biochemistry Program (OSBP), in which the program chairperson operates administratively under the Graduate School rather than an individual department or college.

During the past decade, interdisciplinary graduate studies programs have developed in humanities. One example is the Master of Liberal Studies Program, designed to allow students to pursue interdisciplinary programs of study based in arts and sciences. They may pursue recognized fields, such as folklore; religious studies; comparative literature; or values, science and technology, or identify more personalized topics or fields that can serve as a basis for further graduate work, new forms of employment, or personal enrichment. Although the programs are based in arts and sciences, coursework and faculty in professional fields are often involved as well. About half the coursework is done in a single department or field, the other half divided among two or more departments. Students complete the program either (a) by writing a thesis or (b) by taking an exam or pursuing a less ambitious research project. The Graduate Studies Committee is supervised by the
Division of Comparative Studies in the Humanities. A small number of involved faculty have their tenure "homes" in the Division, but most are housed in other units.

Another interdisciplinary program in arts and sciences is the master's program in Women's Studies. The field of Women's Studies is represented by faculty from a variety of disciplines, and courses in women's studies integrate perspectives and methodologies from various disciplines. The Center for Women's Studies, which appoints the Graduate Studies Committee and provides five of its members, is located in the College of Humanities, but also draws on faculty from social sciences and professional areas. The Center offers a thesis plan and a non-thesis plan, each requiring required courses in Women's Studies and elective courses in related units (e.g., history, sociology, anthropology, comparative studies).

A number of other interdisciplinary graduate programs exist or are under development here at OSU. There are several common themes which emerge in discussing problems of interdisciplinary graduate programs. Major needs for IDGE programs are financial and include funds for: (1) secretarial and administrative staff; (2) long term support from the cooperating colleges and the Provost for graduate student stipends; and (3) operating budgets. A major barrier is the lack of an administrative channel to request funds for these programs. The OSBP, in which the Graduate School coordinates financial support from several colleges, is one model for a successful program. Another model, developed by the Graduate School and participating college deans, involves establishing criteria for contributions by deans involved in life sciences IDGE programs.

"One-of-a-Kind" Graduate Programs

A Ph.D. student at Ohio State has the opportunity to develop a unique, individualized graduate program through the "One-of-a-Kind" Graduate Program (OOAK), administered through the Graduate School. This program allows a graduate student, with interdisciplinary educational needs that are not met by any formal program at OSU, to
propose an individualized program. The OOAK programs are reviewed and approved by the Curriculum Committee of the Graduate School. A proposed OOAK program must have its own integrity and focus, must represent a depth of scholarship worthy of the M.S. or Ph.D. degree, and must receive support from the participating faculty and appropriate graduate studies committees. Extensive effort is required of the student in developing and completing this program, and funding for the student is left to individual initiative. Variations in the OOAK program may be worth pursuing in order to increase flexibility in interdisciplinary graduate educational opportunities.
RECOMMENDATIONS

The Task Force strongly endorses interdisciplinary research and graduate education activities at The Ohio State University. Hallmarks of a major research university, like Ohio State, are strong research and graduate programs. For us to continue to compete with our peer institutions, both public and private, excellent faculty, outstanding graduate students, strong disciplinary activities, and strong interdisciplinary activities are essential. Strong and productive departments are also essential at Ohio State, regardless of their disciplinary and interdisciplinary emphasis. Interdisciplinary programs can build upon those strengths, and the success of IDR and IDGE programs requires active participation and support from these strong departments. Many complex research problems currently being addressed require the use and integration of concepts and methods from more than a single discipline. Graduate students and faculty are increasingly demanding access to educational programs which are not easily accommodated in traditional programs. The structure, activities, and attitudes of the University should be flexible to enable both disciplinary and interdisciplinary approaches to research and graduate education.

A significant factor inhibiting faculty and student participation in interdisciplinary research and education is a perception of a University atmosphere which is not receptive to interdisciplinary activities. This factor emerged in our meetings with faculty and was noted by several external teams involved in OSU program reviews. While we noted areas of strong support for interdisciplinary activities, the perception of unresponsiveness seems to be quite general. Thus, we believe that strong encouragement and endorsement for interdisciplinary research and graduate education from the upper levels of the University are necessary. For University faculty involved in interdisciplinary activities, a clear statement of the University’s commitment to IDR and IDGE programs is vitally important. Several barriers (such as those related to recognition and rewards) and frustrations of "running into administrative walls" while being involved in IDR/IDGE were identified by
faculty and student groups. Some of these barriers can be attributed to faculty perceptions of attitudes of the University, colleges, and/or departments. Strong commitments from central OSU administration beyond that already evidenced by the Graduate School and Office of Research would encourage those dedicated faculty and "send a message" to the entire University community of the importance of interdisciplinary programs to the its mission. President Gee’s public statements on these matters are encouraging. However, this recognition of interdisciplinary activities and problem-oriented approaches to research and education should be reflected in the overall mission and goals of the University. The "culture" and national reputation of The Ohio State University is an important factor in attracting and encouraging excellent new faculty and outstanding graduate students to join OSU. The Task Force heard reports of outstanding faculty recruited by OSU who chose to go elsewhere in part due to a "perceived" inhospitableness to interdisciplinary participation. Therefore, it is important that all levels of the University be perceived as supportive of interdisciplinary research and graduate education.

Long-Range Issues:

The Task Force discussed a wide range of options for structural changes within the University. Several approaches to addressing the issues and barriers related to interdisciplinary activities would necessitate major changes and reorganization of the University. At-large faculty appointments to a College (or the University) and changes to the strict reliance of the department as the "Tenure Initiating Unit" (TIU) would address faculty tenure and promotion issues. Inter-college departments, intra-college "interdisciplinary" departments, and a reduction in the number of colleges at OSU may minimize institutional barriers to IDR and IDGE. Another possible approach is the establishment of an institute for advanced interdisciplinary studies. Other universities have eliminated departmental graduate programs and instituted graduate programs in "research thrust areas." The Task Force does not recommend these major structural changes at this
time; nevertheless, we recommend that these major changes be examined by other university committees and administrative offices. Extensive examination, discussions, and evaluations of such structural changes should focus on enhancing the overall flexibility and receptiveness of the University to new directions in scholarship.

Organizational Structure for Interdisciplinary Activities at The Ohio State University

The Task Force feels that an organizational structure is critically needed at Ohio State for the development, encouragement, and evaluation of interdisciplinary activities. The current process operating here can be described, at best, as an ad hoc process.

Interdisciplinary Activities Committees:

The Task Force recommends establishing a new organizational structure for interdisciplinary activities. This structure would consist of a network of faculty committees (termed Interdisciplinary Activities Committees) that would function in leadership, advisory, and evaluative roles for IDR and IDGE programs and that provide critical input to departments, colleges, and upper administration on interdisciplinary matters. Issues of identifying new opportunities for IDR and IDGE, establishing criteria for assessment, and supporting and evaluating interdisciplinary activities require faculty involvement at the "grass roots" level. The organization of this network would be analogous to the interdisciplinary graduate studies committees, which are not tied to single departments.

1. College/Area Interdisciplinary Activities Committees:

These faculty committees would be the "foundations" of this network and specifically address development, encouragement, and evaluation of interdisciplinary activities. These committees would also serve as the critical advisory groups to department chairpersons and college deans on the programmatic and financial needs of the interdisciplinary programs. The committees could serve a valuable role in the tenure
and promotion process and provide evaluations of faculty interdisciplinary activities to departments and colleges. Also, recruitment of interdisciplinary faculty members to the OSU would involve the college/area Interdisciplinary Activities Committees. For example, the College of Mathematical and Physical Sciences has recently established small "working" groups that cross departmental borders and advise on interdisciplinary activities.

The appointment or selection of faculty for the College/Area Interdisciplinary Activities Committee would be determined at the college or department levels. Such faculty appointments may be made in a similar manner to faculty appointments to graduate studies committees. The chairperson of the College/Area Interdisciplinary Activities Committee (or a designate) would serve on the University committee, as described below.

2. University Interdisciplinary Activities Committee:

This faculty committee would address the more global, university-wide issues related to interdisciplinary activities. The University Interdisciplinary Activities Committee would establish agendas for action, explore and evaluate university policies and practices which affect interdisciplinary activities, recommend mechanisms for developing and funding needed IDR and IDGE programs, and be a resource for central administration on interdisciplinary matters. This university-wide committee would be responsible for carrying forward the initiatives on interdisciplinary matters recommended by this Task Force.

We envision that this university-wide committee would function as subcommittees when appropriate. These subcommittees could be formed based on general academic areas (e.g., life sciences, physical sciences, arts and humanities, etc.) or for specific tasks (e.g., funding, curriculum, personnel). As with college/area committees, membership of these subcommittees could consist of both regular members (i.e., those faculty on the
University Interdisciplinary Activities Committee) and ad hoc members, who are appointed for shorter periods of time when the subcommittee deals with specific issues (e.g., a philosopher appointed to the life sciences subcommittee when issues related to ethics are addressed).

The University Interdisciplinary Activities Committee would advise upper administration on IDR and IDGE matters. The Graduate School and the Office of Research would maintain responsibilities for graduate education and research, but would interact with this university committee for advice and recommendations. The committee would advise the Graduate School and its standing committees (e.g., Curriculum Committee) on issues related to interdisciplinary graduate education and IDGE programs. This committee would advise the Office of Research and the Research Committee on matters related in interdisciplinary research and research centers. The committee would advise the Provost and his/her office on matters related to funding and undergraduate programs. Committee members would interface in cross-college activities; one example would be the formation of a committee of faculty in life sciences.

Responsibility for convening and staffing the University Interdisciplinary Activities Committee should be assigned to a central office. The Office of Academic Affairs and the Graduate School may be the most likely candidates because of the university-wide responsibilities of these two central administrative offices for educational and research programs.
The following scheme is provided to illustrate this network of faculty Interdisciplinary Activities Committees.

**ORGANIZATIONAL STRUCTURE FOR INTERDISCIPLINARY STUDIES**

University Interdisciplinary Activities Committee
(and its subcommittees)

- chairs or representatives from college committees

College Interdisciplinary Activities Committees

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Arts</td>
<td>Engineering</td>
<td>Medicine</td>
</tr>
<tr>
<td>Biological Sci.</td>
<td>Human Ecology</td>
<td>Nursing</td>
</tr>
<tr>
<td>Business</td>
<td>Humanities</td>
<td>Optometry</td>
</tr>
<tr>
<td>Dentistry</td>
<td>Law</td>
<td>Pharmacy</td>
</tr>
</tbody>
</table>

advisory to

- Provost
- Vice-Pres. for Research
- Dean of Grad. Sch.
- Council on Research & Grad. Stud.
- University Senate

advisory to

- Deans
- Dept. chairs
- T & P comm.
- Grad. Stud. comm.

The structure of the faculty Interdisciplinary Activities Committees is intended to provide a mechanism for advocacy of interdisciplinary issues, for advice and evaluation of these activities, and for leadership in matters of interdisciplinary research and graduate education.
Changes in University Policies and "Culture"

Several of the recommendations of the Task Force are more specific to actions which would facilitate interdisciplinary activities.

1. **Changes should be made to the "Guidelines for Promotion and Tenure" documents where needed to include consideration of interdisciplinary research and teaching activities.**

   Our study indicated that faculty evaluations were judged to be more difficult for those faculty involved in interdisciplinary activities and, in some cases, resulted in the interdisciplinary portion of the dossier being ignored. In the evaluation of faculty for annual salary increments, promotion, and tenure, the "whole package" must be examined. For faculty involved in interdisciplinary activities, the dossier needs to be evaluated based upon both disciplinary and interdisciplinary criteria. Input and evaluation from IDR/IDGE programs (director, senior faculty) must be an integral part of the overall evaluation process. Furthermore, these considerations must be included during the hiring of faculty who are involved in IDR/IDGE programs and described in the original letter of offer. The proposed faculty Interdisciplinary Activities Committees may be helpful in providing guidance to department and college promotion and tenure committees.

2. **Faculty development in interdisciplinary areas should be encouraged and facilitated.**

   Faculty development is not addressed in many departments or colleges and rather is left to the ingenuity of the individuals. Faculty development opportunities (such as on-campus and off-campus workshops, research leaves, and professional leaves) provide valuable mechanisms for current OSU faculty to expand their teaching and research expertise in interdisciplinary areas. In addition, a program should be established here at OSU that enables faculty to enroll in advanced courses in other departments and take
advantage of the wealth of knowledge and experiences available on this campus. Departments should be encouraged to identify prerequisite course sequences which would enable faculty from other disciplines to develop professional competence in interdisciplinary fields. We recommend that the leave program be expanded to include on-campus leaves of various durations (from a minimum of one quarter up to two years) to facilitate this form of faculty development.

3. Departments and Graduate Programs are encouraged to explore mechanisms for increasing access to educational and research experiences for IDGE graduate students. Many barriers cited by IDGE students are related to a lack of program flexibility in educational and research experiences needed for the graduate degrees and their future scholarly careers. Solutions to these problems depend upon the educational background and experiences of the graduate student. For IDGE students from closely allied disciplines, minimal changes can be made by the department in order to enable those students to gain vital knowledge (course material, laboratory experience, etc.). Other students may require more extensive prerequisite knowledge and need coursework in disciplinary language acquisition, "skills and tool building," and/or conceptual approaches. The prerequisite sequences developed for faculty (see #2 above) would also facilitate enrollment by graduate students from other programs. Furthermore, graduate programs should encourage students to take courses outside of their own departments and should facilitate access to their own courses by graduate students from other programs. Finally, variations in the OOAK program should be pursued in order to increase flexibility in interdisciplinary educational opportunities.

4. An educational emphasis must be maintained in the University Academic Research Centers.

Faculty, graduate students, postdoctoral researchers, and research staff benefit from access to Academic Research Centers. Thus, it is critical to ensure that the academic
nature of these Centers is emphasized and fostered. Close interactions between departmental and/or interdisciplinary graduate programs and academic research centers should be maintained. The graduate program offers the graduate courses, guidance, and the strong academic base necessary for development of a graduate student into an independent scholar. The research center offers the space, environment, personnel, and support services that enrich the research experiences of the graduate student. To further enhance student participation, summer fellowship opportunities to graduate students, advanced undergraduates, and/or postdoctoral researchers should be encouraged in Academic Research Centers. Additionally, OSU faculty should be permitted to use "on-campus" professional leaves to a Center in order to enhance research activities.

5. **Decisions should be made on establishment of faculty "research track" positions.**

The topic of a "research tracks" at the Ohio State University has been debated for many years and was discussed by the Task Force. This track would consist of assistant research scientist (or assistant research professor), associate research scientist, and full research scientist. Appointments in this track would be analogous to the clinical faculty track established over the past few years. Advocates of this research track cite the advantages of a much needed career path for individuals involved in research at OSU, benefits to research activities, and formation of a more formal personnel structure and greater stability in staff of Academic Research Centers. Opponents argue that equivalent options to such appointments are already available and cite problems of status implications for different categories of faculty, movement of faculty between regular and research tracks, and potential lack of an academic commitment.

The Task Force members feel that this issue of establishment of research track appointments has received adequate examination, discussion, and debate by various groups on campus since the mid-1980's and several reports have been submitted. We
recommend that the upper-level administration make decisions on establishment of the faculty "research track" within the next year.

6. "Interdisciplinary Seminar Series" should be established and promoted.

A university atmosphere is created by more than academic degrees and research programs. Less formal opportunities for exchange of ideas are also critical. University-sponsored seminar series focusing on issues of interdisciplinary research and graduate education would bring together interested faculty from across campus. One approach would be to organize a seminar series for a particular academic quarter around an "interdisciplinary topic," e.g., global change, life sciences, environment. Examples of successful interdisciplinary seminar series currently on-going at OSU are the biochemistry and neuroscience seminars. The opportunity to hear and meet with scholars from other universities involved in interdisciplinary activities is extremely valuable. Funding is necessary for honorariums, transportation, and hotel costs. The Office of Research and the Graduate School should consider a joint program for these series.

**Funding Recommendations**

The single most common issue raised throughout the meetings of the Task Force with the various faculty groups, students, and administrators is the issue of funding. Insufficient funding for students, research, and daily operations is a universal view held by faculty "in the trenches." In recent years, the Graduate School and the Office of Research have provided support for IDGE and IDR programs. However, given their current budgets, it is not likely that these offices can expand their support to meet future IDGE and IDR needs. As stated earlier, the university budgeting process permits colleges and departments at OSU to present their budgetary program needs and thus compete for discretionary funds.
Currently, IDR and IDGE program directors must work through cooperative departments or colleges in order to secure internal funds. In times of limited new resources, tensions arise between departments and interdisciplinary programs.

Several recommendations in this area are offered by the Task Force. These recommendations have been grouped into two distinct categories. The first category of funding recommendations addresses establishing separate, non-departmental budget allocations for IDR and IDGE programs. The second category of funding recommendations focuses on enabling departments and colleges to prioritize funding requests for interdisciplinary activities separately from departmental requests.

1. Separate, non-departmental budget allocations should be established for IDR and IDGE programs.

It is essential that IDR and IDGE programs have the opportunity during the budgeting process to request funds for their programs. Such funds would enable IDR and IDGE program directors to have enough influence and responsibility to build their programs. It would also permit developing programs to obtain the "shots-in-the-arm" needed to become firmly established. These allocations must be identified as a separate source of funds from those available to departments. This would ensure that the IDR and IDGE programs are not viewed as "competing" for departmental funds.

The apparent crux of the problem is to identify the source(s) of those funds in a relatively "fixed" University budget and to "carve out" a portion for IDR and IDGE programs without reducing departmental support. However, disciplinary faculty expect a certain level of funding from their departments. It is not unreasonable that productive interdisciplinary faculty should also have comparable expectations and access to funds. Whether from departmental or other sources, faculty should have resources to support research and graduate programs in which they participate. Specific proposals for funding to interdisciplinary programs are outlined below.
A. Interdisciplinary Research

All research programs require financial support – from both external and internal sources. This is no less true for interdisciplinary research. Thus, a funding base is essential.

(1) Funds for development of IDR programs in the Office of Research should be maintained.

Over the past several years, the Office of Research has allocated a significant portion of funds available through the Research Challenge Program to research development efforts and major research starts. These funds have been very valuable in the initiation and establishment of interdisciplinary research and University Academic Centers, such as the Biotechnology Center, Supercomputer Center, and the Center for Materials Research. The Vice-President of Research, administrators and staff of the Office of Research, and the faculty Research Committee provide necessary administrative and faculty guidance in overseeing the allocations. These activities should be maintained. Furthermore, the two faculty committees -- namely, the Research Committee and the University Interdisciplinary Activities Committee -- should work closely together in identifying needs and evaluating requests.

(2) The Interdisciplinary Research Grant program should be expanded.

This program for the initiation of multi-investigator interdisciplinary research is only in its infancy, and yet has received a strong response. However, the program, which provides approximately $30,000 per year for each of the six funded proposals, is too small and funding needs to be increased. The limited number of funded proposals restricts the awards to interdepartmental research applications involving investigators from different departments or colleges. Interdisciplinary research
activities among faculty within a department or college and IDR by individual faculty are not eligible. Expansion of the program by the Office of Research will enable a greater opportunity for interdisciplinary research to be initiated here.

(3) Guidelines for equitable distribution of DDRS, CDRS, and other similar funds are needed for IDR activities.

No clear guidelines exist to ensure an equitable distribution of DDRS, CDRS, and other funds for IDR activities involving more than one department. In some cases, the decisions on DDRS allocations are made by the faculty involved in the project and, generally, the percent distribution is equitable. However, in other instances, the percent distribution is "negotiated" between faculty involved and department chairpersons and/or college deans. In still other cases, there is no choice or decision; the percent distribution is dictated. The latter two examples have the potential for abuse of the system, can result in inequities across the campus, and can lead to unnecessary faculty frustrations. Even though the amount of funds are relatively small, the "administrative message" can have a major impact. We suggest that the University Interdisciplinary Activities Committee work with the Office of Research and the Office of Academic Affairs to develop guidelines.

(4) Reexamination of indirect cost allocations is needed.

It is desirable to have a larger portion of the indirect costs received from external sponsors directed back to the generating units (departments, research centers, faculty) and be utilized to enhance the research environment of that unit. This change provides further incentives for faculty to seek and procure external funds. These funds can be utilized to support workshops, lectureships, faculty exchanges, etc. that would enhance educational and research activities of the unit and provide visibility and recognition of the research activities at regional, national, and/or international levels. It would also provide funds to units for research
program operating expenses (secretarial support, office supplies, communications, etc.) that many times cannot be included as direct costs in externally-funded budgets. Again, the University Interdisciplinary Activities Committee work with the Office of Research and the Office of Academic Affairs to develop guidelines.

(5) Efforts to identify and obtain external support for interdisciplinary activities should be expanded.

Increased activities by the OSU Research Foundation and the Development Office, such as assignment of developmental officers to IDR and IDGE programs and increased interactions with federal funding agencies, state offices, and private foundations and corporations, to obtain external support for interdisciplinary programs are warranted. Additional OSURF and Development personnel may be required for these increased activities. Efforts should focus on graduate student fellowships, faculty salary support, and research support.

B. Interdisciplinary Graduate Education

First and foremost, state support for education does not recognize the unique nature of graduate education, especially at the doctoral level. The State of Ohio must support higher education, and particularly disciplinary and interdisciplinary graduate education, to a greater degree if the State is to be competitive educationally, technologically, and culturally now and in the future. The current "credit hour-driven" funding formula does not adequately recognize the nature of mentoring of graduate students. The problem is exacerbated in IDGE programs where course credits are not tied to the graduate program itself. IDGE programs also suffer from the University budgeting process which is college and department driven, as mentioned above. Thus specific efforts are needed to provide support for IDGE programs.
(1) A separate, nondepartmental source of funds is needed to support graduate student stipends in IDGE programs.

Funds to finance stipends for first-year graduate students are particularly critical for IDGE programs. The typical mechanism for departments to support first-year graduate students is the teaching assistantship, and these are not commonly available to IDGE programs. Currently, IDGE programs must go "hat-in-hand" to departments and request GTA/GRA position(s) be allocated to the IDGE program; departmental faculty view this "competition" for GA support as decreasing an already inadequate number of GA positions. This ad hoc approach to funding first-year graduate students must be changed.

These funds for IDGE programs should be administered through the Graduate School, which has experience administering graduate student support. The Graduate School has supported IDGE programs out of its own funds and, in some cases, with the cooperation of participating colleges. However, these resources are limited and clearly insufficient to support IDGE needs. A central, nondepartmental fund should be available to support an average of three graduate students per year per IDGE program (approximate $11,000 per student). "One-of-a-Kind" students would be able to compete. Also, IDGE programs would compete for these funds based on the quality of the student applicants and the ability to demonstrate "matching" GA support from participating departments. The Graduate School should determine a procedure for allocating these funds.

(2) Colleges and departments with faculty participating in IDGE programs are expected to contribute support.

Departmental support to IDGE programs is not "lost" since departmental faculty are actively participating in these programs and are recruiting graduate students to work on research and scholarship. Departmental/college support can
include: (a) GA support to the IDGE "pool" for graduate students that have chosen the department faculty as the major advisor; (b) office space for IDGE students; (c) laboratory space and support services available to IDGE students; and (d) teaching opportunities for IDGE students. In many cases, this creates no additional hardships to those departments in which the faculty member(s) primary responsibilities already involve the IDGE program, but is, in fact, simply a recognition by the department of the faculty member's activities. The extent of funding from a particular college and/or department may depend upon the number of departmental faculty involved in the program, the number of IDGE students advised by faculty, and the importance of the IDGE program. The model being developed by the Graduate School and college deans in the life sciences may be appropriate.

(3) Funds to assist IDGE program activities are needed.

The average cost of running a graduate program is approximately $25,000 to $30,000 per year for a program of approximately 30-40 graduate students. These funds support office space, secretarial assistance, recruitment expenses, program brochures, seminar costs, etc. The Graduate School has provided some support in the past. A central, nondepartmental fund should be available for IDGE programs to request assistance, and it should be administered through the Graduate School.

2. The University budgeting process should require departments and colleges to prioritize funding requests for interdisciplinary activities separate from departmental requests.

As discussed earlier, the second category of recommendations addresses departmental and college budget requests. The regular budget process at Ohio State should recognize the need for parallel funding of "cross-college" and "cross-department" programs. Departments and colleges should be required to prioritize funding requests for interdisciplinary activities separate from departmental requests. This process would
enable departments to identify high departmental priorities and high interdisciplinary priorities separately, thus minimizing potential "competition" among those two groups of priorities. The Office of Academic Affairs should determine the details for this process.

**Modifications in Administrative Procedures**

Several publications in recent years have discussed management of interdisciplinary activities in overall terms\(^1\)\(^-\)\(^4\) and within the university environment.\(^6\)\(^,\)\(^7\) Currently at OSU, interdisciplinary research activities are administered through the Office of Research and interdisciplinary graduate education programs are administered through the Graduate School. Continuation of these administrative arrangements and the establishment of the faculty Interdisciplinary Activities Committees will facilitate development and growth of interdisciplinary activities.

**A. Interdisciplinary Graduate Education**

1. Administrative overview of IDGE programs should remain within the Graduate School and the Council for Research and Graduate Studies.

The Graduate School has taken several initiatives in interdisciplinary graduate education and has gained experience in administering such programs. IDGE development, program and course approvals, and program reviews should continue to be the responsibility of the Graduate School and the Council for Research and Graduate Studies, working through the various standing committees of the Council. Interactions of these groups with the Interdisciplinary Activities Committees should greatly improve the procedures. New activities related to IDGE funding proposed earlier should also be administered through the Graduate School and the Council.
2. New IDGE programs should be administered by the Graduate School.

Many of the problems associated with cross-college and cross-department IDGE programs can be avoided by having them administered directly by the Graduate School. Again, the Graduate School has gained experience in administering such programs. One example cited earlier is the Ohio State Biochemistry Program (OSBP), in which the program chairperson operates administratively under the Graduate School rather than an individual department or college. The funding options cited above remain relevant.

3. Procedures are needed to ensure that proper credits for teaching interdisciplinary courses are granted.

Proper assignments of credit for faculty teaching loads and student enrollments in team-taught, multidisciplinary courses are important in certain departments and colleges at OSU. While we have been assured that budgets are not directly tied to credit hours taught, the perception among faculty and department chairpersons is that they are linked. A solution used by several current programs is to cross-list the courses in the participating departments and students enroll through their prospective departments. Such a straight-forward solution should be instituted campus wide.

4. Recognition for course credits of "999: Dissertation Research" in IDGE programs should be given to both the IDGE program and the participating department.

This "double counting" is important in order to identify and quantify graduate student research activities in the IDGE program and to recognize the contribution of the participating department in providing staff, space and facilities for the dissertation research. This is also important in the case of "One-of-a-Kind" students.

5. An "IDGE program directors' forum" should be established by the Graduate School.

This forum would be analogous to that recently established for Academic Research Centers and would enable IDGE program directors to exchange ideas, share common problems and solutions, and act as a support and advocacy group.
B. Interdisciplinary Research

1. Administrative overview of IDR activities should remain within the Office of Research and the Research Committee.

The Office of Research, the Research Committee, the Council of Research and Graduate Studies, and the Graduate School should continue their responsibilities related to interdisciplinary research development, recommendations on program approvals, and program reviews.

2. Academic Research Centers interfacing with several academic units should report to the "next highest" administrative level, as appropriate.

The "next highest" level refers to the administrative level which incorporates all the units participating in the center. For example, if all participating units are departments within a single college, then the college dean and his/her office would be the "next highest" and appropriate level. The Office of Research or the Office of Academic Affairs would be appropriate for units that cross college boundaries. The Graduate School might be appropriate for units which are involved in graduate education.

3. Networking and communication within interdisciplinary research and graduate programs and between these programs and the University at large is needed.

Communication on this large campus is constantly an "up-hill" battle. Centralized coordination of interdisciplinary activities (staff, an office/"clearinghouse," electronic bulletin board, newsletters, etc.) would facilitate these programs. Simple items, such as ensuring that correct faculty/staff contacts and phone numbers for IDGE programs are in the University directories, occasionally "slip through the cracks," but such errors can lead to faculty and student frustrations. Larger communication problems, such as faculty and departments unaware of IDR or IDGE activities, can lead to major misunderstandings and unnecessary debates or delays in IDR or IDGE activities.
CONCLUSIONS

Interdisciplinary research activities and interdisciplinary graduate education are vital components of scholarship at The Ohio State University. Individual faculty members and graduate students are engaged in interdisciplinary research and education by integrating theory, research methods, and/or content materials from several disciplines. Small groups of faculty, students and staff from different disciplines are working together on scholarship and problem-oriented research by combining their unique research expertise and knowledge to synthesize new solutions. Large research centers utilize coordinated and integrated approaches to solving problems and involve faculty, students, and research staff from many different disciplines.

The single, most important element of these interdisciplinary activities is the commitment of faculty, students, and staff. This element is the core of the IDR and IDGE programs. These individuals provide both the intellectual and scholarly base of the programs and the strong disciplinary underpinnings important for the interdisciplinary activities. The faculty, students, and staff are producing research and scholarship that is "at the cutting edge." For larger interdisciplinary programs, strong leadership by a respected scholar and/or scientist is important. This individual is respected by the faculty, nationally recognized, alert to changes on the national scene, and capable of promoting and defending the IDR/IDGE program. This person is often viewed as a "local champion" of the program. Another term used is "bridge-scientist," describing an individual able to define interdisciplinary problems and facilitate communication between the participating disciplines.

Another element that is essential for success of the OSU interdisciplinary programs is University, college and departmental support. This support enhances respect for the programs both locally and nationally. Resources provided by the University and colleges are
needed for continuing operations of IDR/IDGE programs. The availability of these resources must not be competitive with departmental sources. Departmental commitments are essential in the hiring and retention of faculty involved in interdisciplinary activities, since, at Ohio State, the departments are the tenure-initiating units (TIUs). Top faculty are needed for IDR/IDGE program success, and joint faculty appointments between departments and interdisciplinary programs are critical. In addition, active participation by IDR/IDGE programs in the processes of hiring, annual review, and tenure and promotion for these joint appointments is important.

Several recommendations for action have been formulated by this Task Force for Interdisciplinary Research and Graduate Education. First, an organizational structure consisting of University Interdisciplinary Activities Committee and similar college/area committees be established. The second group of recommendations focus on attitudes, "culture," and commitment of the University to interdisciplinary research and graduate education. Support and allocations of financial resources are addressed in the third set of recommendations. The fourth group of recommendations address administrative procedures related to interdisciplinary activities.

The recommendations contained in the Task Force report are, in our view, quite reasonable. The recommendations do not involve major reorganization of the University or assume that major infusions of money are required to facilitate interdisciplinary activities, although some organizational and monetary recommendations are included. The Task Force did discuss other, more dramatic proposals (e.g., reduce the number of colleges, changes to TIUs, interdisciplinary departments, institute "area" graduate programs); however, such drastic changes would require intense examinations and debates and are unlikely to occur in the near future. The one organizational change we propose is the establishment of the faculty Interdisciplinary Activities Committees, which we view as
critical in supporting and evaluating the variety of interdisciplinary activities at OSU and in providing the framework for future growth and development.

The members of the Task Force have a vision of a university which is open to and supportive of intellectual inquiry wherever it may lead. Sometimes this inquiry will fit neatly into the boundaries of established disciplines; at other times it will cross those boundaries. Further, the nature of a given discipline itself will change, sometimes moving in the direction of what was previously considered "interdisciplinary." Our study has satisfied us that many of the revolutionary developments of knowledge occur at the "interfaces" between the cores of separate disciplines. The Ohio State University must facilitate the work of scholars who choose to work in these arenas -- not to the detriment of those working near the core of the discipline, but in addition to those faculty and students. Indeed, a climate of scholarly excitement and receptivity to interdisciplinary activities can be engendered.

The Task Force strongly endorses interdisciplinary research and graduate education activities at The Ohio State University. Hallmarks of major research universities like OSU are strong research and graduate programs. For us to continue to compete with our peer institutions, both public and private, excellent faculty, outstanding graduate students, strong disciplinary activities, and strong interdisciplinary activities are essential. The breadth of knowledge and experiences of faculty, students, and staff at The Ohio State University provide us with the tools essential for continued growth and development of front-line disciplinary and interdisciplinary research and educational programs vital to the modern university.
REFERENCES


APPENDICES

Appendix 1  Charge to the Task Force
Appendix 2  Faculty Survey
Appendix 3  Academic Centers -- Center Directors' Forum
Appendix 4  Interdisciplinary Graduate Education Programs
APPENDIX 1

The Ohio State University Task Force
for Interdisciplinary Research and Graduate Education

Interdisciplinary research and graduate education programs have
received considerable attention within American higher education in
recent years. The utility of interdisciplinary efforts has been
debated at a number of national, academic conferences and within
several funding agencies. While the exact nature of interdiscipli-
nary programs is uncertain at this time, there is a consensus of
agreement that interdisciplinary research and graduate education
programs will assume a more important role at U.S. universities.

In response to national trends and local faculty initiatives,
the Provost, the Vice President for Research and Graduate Studies,
and the Dean of the Graduate School will appoint a 12 person task
force of ten graduate faculty and two graduate students to examine
interdisciplinary research and graduate education on The Ohio State
University campus. The chairperson and at least three members of
the Task Force will be appointed from faculty members elected to
the Research and Graduate Council. The Task Force will be
requested to review the status of interdisciplinary efforts at The
Ohio State University and to make recommendations relative to the
role such programs should play in satisfying the teaching, research
and service missions of the university. Particular attention
should be focused on the academic, professional, economic and
institutional factors which facilitate and/or impede the implemen-
tation of relevant and effective interdisciplinary programs. The
Task Force will be requested to recommend how much emphasis should
be given to interdisciplinary programs at The Ohio State University
and what administrative policies are needed to enable them to
attain their full potential.

Several issues which should be examined by the Task Force are
as follows:

1. Determination of what constitutes interdisciplinary research
and graduate education;

2. Identification of incentives and disincentives for faculty
to engage in interdisciplinary research and graduate education;

3. Identification of criteria which should be used to assess
the qualitative aspects of interdisciplinary research and
graduate education programs;

4. Identification of methods to ensure that high professional
standards are maintained in interdisciplinary research and
graduate education programs;

5. Examination of alternative institutional structures for
administration of interdisciplinary research and graduate
education programs.
The Task Force will be asked to recommend procedures for examining the following issues:

1. External funding opportunities for interdisciplinary research and graduate education programs;

2. Future demand for interdisciplinary research and graduate education programs;

3. Identification of interdisciplinary programs which should be developed at The Ohio State University.

The Task Force is requested to submit a written report within 6 months of the formation of the group.
INTERDISCIPLINARY TASK FORCE QUESTIONNAIRE

Items 1 through 5 identify PROFESSIONAL ACTIVITIES in which faculty members can participate at OSU. Please indicate whether YOU would define these activities as being INTERDISCIPLINARY in nature by circling the appropriate response.

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<th>INTERDISCIPLINARY?</th>
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<tr>
<td></td>
<td>Yes</td>
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<tr>
<td>1. Collaboration by 2 or more faculty members from different disciplines on any professional activity.</td>
<td>86.8%</td>
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<td>n=282</td>
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<td>2. Professional activities by 2 or more faculty members from different disciplines in which each person conducts his/her activities in the context of his/her own discipline in a separate but coordinated manner.</td>
<td>74.7%</td>
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<td>n=239</td>
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<td>3. Professional activities by 2 or more faculty members from different disciplines using an integrated approach.</td>
<td>95.9%</td>
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<td>n=306</td>
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<td>4. Professional activities by a single faculty member which integrates theory, research methods, and content materials from several disciplines.</td>
<td>48.9%</td>
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<td>n=159</td>
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<td>5. Other (Please identify the activity):</td>
<td>62.5%</td>
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<td>n=15</td>
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Items 6 through 16 are activities defined by some as being inter-disciplinary in nature. Please identify those activities in which you have participated during your tenure at The Ohio State University by circling the appropriate response.

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<td>Yes</td>
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<td>6. Interdisciplinary class instruction.</td>
<td>60.9%</td>
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<td></td>
<td>n=196</td>
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<tr>
<td>7. Principal or Co-principal investigator of interdisciplinary project.</td>
<td>63.9%</td>
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<td>n=207</td>
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<td>8. Contributor to interdisciplinary research project but not Co-principal investigator.</td>
<td>55%</td>
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<td>n=177</td>
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<td>9. Consultant to interdisciplinary research project.</td>
<td>48%</td>
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<td>n=154</td>
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</table>
10. Advisor or Co-advisor of graduate student pursuing an interdisciplinary academic program.  
   Yes: 49.1%  
   No: 50.9%  
   n=158  
   n=164

11. Advisor or Co-advisor of graduate student pursuing an interdisciplinary thesis or dissertation topic.  
   Yes: 56.7%  
   No: 43.3%  
   n=183  
   n=140

12. Joint appointment in an academic department outside of your discipline.  
   Yes: 27.8%  
   No: 72.2%  
   n=90  
   n=234

13. Contributor to the formation of an interdisciplinary academic program.  
   Yes: 43.2%  
   No: 56.8%  
   n=139  
   n=183

14. Publication in a journal outside of your discipline.  
   Yes: 59.6%  
   No: 40.4%  
   n=193  
   n=131

15. Subscription to a journal outside of your discipline.  
   Yes: 53.3%  
   No: 46.7%  
   n=171  
   n=150

16. Other (Please identify the activity):  
   Yes: 83.3%  
   No: 16.7%  
   n=25  
   n=5
Items 17 and 18 focus on the type(s) of support you may have received from your department and/or college to facilitate your participation in INTERDISCIPLINARY ACTIVITIES during your tenure at OSU. Please indicate whether or not you: a) applied for; and b) received each type of support by circling the appropriate response.

<table>
<thead>
<tr>
<th></th>
<th>APPLIED FOR?</th>
<th>RECEIVED?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>17. Economic resources to participate in interdisciplinary research.</td>
<td>51.1%</td>
<td>48.9%</td>
</tr>
<tr>
<td></td>
<td>n=162</td>
<td>n=155</td>
</tr>
<tr>
<td>18. Faculty release time to participate in interdisciplinary class instruction.</td>
<td>16.9%</td>
<td>83.1%</td>
</tr>
<tr>
<td></td>
<td>n=54</td>
<td>n=265</td>
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</tbody>
</table>

Items 19 through 22 present a series of statements about potential BARRIERS TO AND FACILITATORS OF INTERDISCIPLINARY ACTIVITIES at OSU. Use the following scale to indicate the extent to which you agree or disagree with each statement:

1 = "Strongly Disagree";
2 = "Disagree";
3 = "Undecided";
4 = "Agree";
5 = "Strongly Agree".

19. My DEPARTMENT encourages faculty participation in:
   a. Interdisciplinary research.  (mean = 3.93; s.d. = 1.06)
   b. Interdisciplinary instruction.  (mean = 3.30; s.d. = 1.09)
   c. Interdisciplinary research only when external funding is secured to finance the effort.  (mean = 3.02; s.d. = 1.17)
   d. Interdisciplinary research which will give recognition to OSU rather than the department.  (mean = 2.76; s.d. = 0.97)
   e. Does not encourage Interdisciplinary activities.  (mean = 2.09; s.d. = 1.16)

20. My COLLEGE encourages faculty participation in:
   a. Interdisciplinary research.  (mean = 3.77; s.d. = 0.99)
   b. Interdisciplinary instruction.  (mean = 3.31; s.d. = 1.03)
   c. Interdisciplinary research only when external funding is secured to finance the effort.  (mean = 3.10; s.d. = 1.07)
   d. Interdisciplinary instruction only when external funding is secured to finance the effort.  (mean = 2.81; s.d. = 0.91)
e. Interdisciplinary research which will give recognition to OSU rather than the college.  
   (mean = 2.84; s.d. = 0.83)

f. Does not encourage Interdisciplinary activities.  
   (mean = 2.21; s.d. = 1.06)

21. Most faculty who publish in journals outside of their discipline are not rewarded as well as those who publish in discipline-oriented journals.  
   (mean = 3.44; s.d. = 1.16)

22. Most faculty receive appropriate rewards for interdepartment class instruction.  
   (mean = 2.39; s.d. = 0.98)
Items 23 through 32 list ACTION OPTIONS which could be implemented at OSU to ENCOURAGE INTERDISCIPLINARY RESEARCH. Some of these options would require university-level administrative action. Using the following scale, please rate these items in terms of the extent to which each would encourage you to participate more extensively in interdisciplinary RESEARCH at OSU:

1 = "Not Important" (NI);
2 = "Somewhat Unimportant" (SU);
3 = "Neither Important nor Unimportant" (NINU);
4 = "Somewhat Important" (SI);
5 = "Very Important" (VI).

Circle the number that best represents the importance of each possible action.

<table>
<thead>
<tr>
<th></th>
<th>NI</th>
<th>SU</th>
<th>NINU</th>
<th>SI</th>
<th>VI</th>
</tr>
</thead>
<tbody>
<tr>
<td>23. Release time for interdisciplinary research. (mean = 4.04; s.d. = 1.12)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24. Financial support from OSU sources for interdisciplinary research. (eg. Academic Affairs or Research and Graduate Studies) (mean = 4.44; s.d. = 0.74)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>25. OSU funding for research centers and institutes. (eg. Academic Affairs or Research and Graduate Studies) (mean = 4.03; s.d. = 1.03)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>26. Greater recognition of journal publications outside of faculty disciplines when tenure and promotion decisions are made. (mean = 3.95; s.d. = 1.03)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>27. Publication of external funding sources for interdisciplinary research programs. (mean = 3.79; s.d. 1.00)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>28. Publication of interdisciplinary interests of OSU faculty. (mean = 3.78; s.d. = 1.02)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>29. Greater recognition by discipline-oriented colleagues of interdisciplinary research contributions. (mean = 3.77; s.d. = 1.00)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>30. Greater emphasis placed on interdisciplinary research during annual salary adjustment decisions. (mean = 3.83; s.d. = 1.08)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>31. Establishment of an equitable distribution of indirect project costs among participating faculty members' departments. (mean = 3.99; s.d. = 0.95)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>32. University funding for research seminars to be held at OSU. (mean = 3.67; s.d. = 0.99)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>33. Other (Please identify the action):</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</tbody>
</table>
34. Please list the numbers of the **TWO MOST IMPORTANT** action options listed above which would encourage you to participate more often in interdisciplinary research.

<table>
<thead>
<tr>
<th>Action Option</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
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<td>a. Most Important:</td>
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<td></td>
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<tr>
<td>24</td>
<td>24</td>
<td>35.8%</td>
</tr>
<tr>
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<td>32</td>
<td>1.9%</td>
</tr>
<tr>
<td>33</td>
<td>33</td>
<td>1%</td>
</tr>
</tbody>
</table>

| b. Second Most Important: |       |            |
| 25            | 25    | 13.9%      |
| 23            | 23    | 12.6%      |
| 30            | 30    | 11.9%      |
| 26            | 26    | 7.7%       |
| 29            | 29    | 7.1%       |
| 31            | 31    | 6.1%       |
| 28            | 28    | 5.5%       |
| 27            | 27    | 2.9%       |
| 33            | 33    | 2.3%       |
Items 35 through 44 list several *ACTION OPTIONS* which could be implemented at OSU to encourage interdisciplinary *EDUCATIONAL PROGRAMS*. Using the following scale, please rate these items in terms of the extent to which each would encourage you to participate more extensively in interdisciplinary *EDUCATION* at OSU:

1 = "Not Important" (NI);
2 = "Somewhat Unimportant" (SU);
3 = "Neither Important nor Unimportant" (NINU);
4 = "Somewhat Important" (SI);
5 = "Very Important" (VI).

Circle the number that best represents the importance of each possible action.

35. Release time for interdisciplinary educational programs.
   (mean = 3.94; s.d. = 1.04)
   1 2 3 4 5

36. Financial support from OSU sources to initiate interdisciplinary educational programs.
   (eg. Academic Affairs or Research and Graduate Studies)
   (mean = 4.21; s.d. = 0.90)
   1 2 3 4 5

37. OSU funding for educational centers and institutes. (eg. Academic Affairs or Research and Graduate Studies)
   (mean = 3.73; s.d. = 1.12)
   1 2 3 4 5

38. Greater recognition of participation in interdisciplinary educational programs in tenure and promotion decisions.
   (mean = 4.06; s.d. = 0.98)
   1 2 3 4 5

39. Publication of interdisciplinary teaching interests of OSU faculty.
   (mean = 3.50; s.d. = 1.02)
   1 2 3 4 5

40. Greater recognition by discipline-oriented colleagues of contributions to interdisciplinary educational programs.
   (mean = 3.69; s.d. = 1.05)
   1 2 3 4 5

41. Greater emphasis placed on contributions to interdisciplinary educational programs during annual salary adjustment decisions.
   (mean = 3.93; s.d. = 1.06)
   1 2 3 4 5

42. Reorganization of OSU along ISSUES or PROBLEM AREAS rather than Discipline lines.
   (mean = 3.02; s.d. = 1.34)
   1 2 3 4 5

43. Establishment of an equitable system for crediting student hours taught to the departments of participating faculty.
   (mean = 4.02; s.d. = 0.94)
   1 2 3 4 5

44. University funding to invite speakers from their disciplines to speak to scheduled classes.
   (mean = 3.41; s.d. = 1.07)
   1 2 3 4 5

45. Other (Please identify the action):
46. Please list the numbers of the **TWO MOST IMPORTANT** action options listed above which would encourage you to participate more often in interdisciplinary educational programs.

a. Most Important: 36 (22.4%)  
   35 (18.1%)  
   38 (14.7%)  
   43 (12%)  
   42 (7.7%)  
   41 (7%)  
   37 (6.7%)  
   40 (3%)  
   44 (3%)  
   39 (2.3%)  
   45 (2%)  

b. Second Most Important: 36 (16.9%)  
   41 (13.6%)  
   35 (12.9%)  
   38 (12.9%)  
   37 (10.2%)  
   43 (9.5%)  
   40 (6.8%)  
   42 (5.8%)  
   44 (5.1%)  
   39 (4.7%)  
   45 (0.7%)  

Items 47 through 59 identify several characteristics that are sometimes associated with **STRONG INTERDISCIPLINARY** programs. Using the following scale, please rate these items in terms of your perception of what constitutes a strong interdisciplinary program:

1 = "Not Important" (NI);  
2 = "Somewhat Unimportant" (SU);  
3 = "Neither Important nor Unimportant" (NINU);  
4 = "Somewhat Important" (SI);  
5 = "Very Important" (VI).

Circle the number that best represents your feelings.

<table>
<thead>
<tr>
<th>Item</th>
<th>NI</th>
<th>SU</th>
<th>NINU</th>
<th>SI</th>
<th>VI</th>
</tr>
</thead>
</table>
| 47. Availability of external funding.  
  (mean = 4.39; s.d. = 0.78) | 1 | 2 | 3 | 4 | 5 |
| 48. Important emerging subject areas.  
  (mean = 4.40; s.d. = 0.77) | 1 | 2 | 3 | 4 | 5 |
| 49. Department affiliation for interdisciplinary faculty.  
  (mean = 3.74; s.d. = 0.92) | 1 | 2 | 3 | 4 | 5 |
| 50. Strong academic departments to attract excellent scholars.  
  (mean = 4.38; s.d. = 0.79) | 1 | 2 | 3 | 4 | 5 |
| 51. Strong leader of interdisciplinary faculty.  
  (mean = 4.35; s.d. = 0.77) | 1 | 2 | 3 | 4 | 5 |
| 52. Strong academic institutions.  
  (mean = 4.28; s.d. = 0.73) | 1 | 2 | 3 | 4 | 5 |
| 53. Shared evaluation of interdisciplinary faculty by departments and interdisciplinary faculty.  
  (mean = 3.53; s.d. = 0.89) | 1 | 2 | 3 | 4 | 5 |
| 54. Facilities for interdisciplinary faculty to jointly conduct research and teaching functions.  
  (mean = 4.03; s.d. = 0.88) | 1 | 2 | 3 | 4 | 5 |
55. Availability of interdisciplinary journals in which to publish.  
   (mean = 3.56; s.d. = 0.99)
   1  2  3  4  5

56. Involvement of client groups in the development of research and teaching agendas.  
   (mean = 3.33; s.d. = 1.01)
   1  2  3  4  5

57. Linkages to federal funding agencies.  
   (mean = 4.07; s.d. = 0.80)
   1  2  3  4  5

58. Linkages to state funding agencies.  
   (mean = 3.85; s.d. = 0.90)
   1  2  3  4  5

59. Institutional contributions to "match" external funding organizations.  
   (mean = 4.12; s.d. = 0.83)
   1  2  3  4  5

Items 60 through 63 deal with YOUR EXPERIENCE in interdisciplinary programs at OSU. Please circle the appropriate response.

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Doesn’t Apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>73.3%</td>
<td>4.3%</td>
<td>22.4%</td>
</tr>
<tr>
<td>n=236</td>
<td>n=14</td>
<td>n=72</td>
</tr>
</tbody>
</table>

61. Was your participation in interdisciplinary instruction a rewarding professional experience?  
   53.7%  5.9%  40.4%  
   n=173  n=19  n=130

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>79.1%</td>
<td>20.9%</td>
</tr>
<tr>
<td>n=253</td>
<td>n=67</td>
</tr>
</tbody>
</table>

62. Do you anticipate participating in interdisciplinary research in the near future at OSU?  
   52.2%  47.8%  
   n=165  n=151
Items 64 through 68 are for demographic purposes.

64. When did you receive your doctorate?

<table>
<thead>
<tr>
<th>Year</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

(mean = 1974; median = 1975; mode = 1978)
65. What is your present academic rank? (Circle one)

1. Professor 39.8%  n=129
2. Associate Professor 32.7%  n=106
4. Instructor 0.6%  n=2
3. Assistant Professor 26.9%  n=87
5. Postdoctoral Researcher

66. How long have you been employed at OSU in a faculty position?

<table>
<thead>
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<th>n</th>
<th>Percent</th>
</tr>
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(mean = 10; median = 10; mode = 2)
67. In what department do you hold faculty rank?

(In order to facilitate analysis, the departments listed by the respondents were aggregated into areas)

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68. What is your GRADUATE FACULTY RANK? (Circle one)

1. Level I 2. Level II 3. Level III.

6.9% 33.9% 59.2%
n=21 n=103 n=180

69. What is the most important barrier to interdisciplinary research at OSU?

(See Table)

70. What is the most important barrier to interdisciplinary education at OSU?

(See Table)

71. We would like to provide you the opportunity to express your feelings about INTERDISCIPLINARY ACTIVITIES AT OSU. Are there personal experiences with interdisciplinary activities at OSU which you would like to share with the Task Force?
Many academic institutions in the United States have been active in interdisciplinary research and educational activities. The experiences of faculty persons engaged in interdisciplinary efforts in these institutions would be of considerable benefit to the Task Force in the development of our recommendations. In the space provided below, please list any interdisciplinary programs at OTHER INSTITUTIONS that you believe we should examine. Please provide names, addresses and telephone numbers of contact persons at those institutions, if possible.
## APPENDIX 3

### Academic Centers

#### Center Directors' Forum

These Academic Centers are participants in the Center Directors' Forum recently formed here at Ohio State, and this list was obtained from that group. The list is not meant to be all inclusive, and other interdisciplinary research programs (not listed here) exist at Ohio State.

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<td>2-5063</td>
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<td></td>
<td>339 Baker System</td>
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<tr>
<td></td>
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<td>Charles F. Hermann</td>
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<td>199 West 10th Avenue and 1712 Neil Avenue</td>
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<tr>
<td></td>
<td>125 South Oval Mall</td>
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<tr>
<td><strong>National Regulatory Research Institute (NRRI)</strong></td>
<td>Douglas N. Jones</td>
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<tr>
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<tr>
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<td>James E. Meeks</td>
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<td>Randall J. Olsen</td>
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<td>Electroscience Laboratory</td>
<td>Leon Peters</td>
<td>2-7981</td>
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<tr>
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<td>2-8949</td>
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<td>2-4353</td>
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<tr>
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<td>3-5485</td>
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<td>Philip C. Sorensen</td>
<td>2-1763</td>
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<tr>
<td>Center for Special Needs Populations</td>
<td>Thomas M. Stephens</td>
<td>447-0844</td>
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<tr>
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<td>Robert C. Stieffel</td>
<td>2-2334</td>
</tr>
<tr>
<td>Center for Medieval and Renaissance Studies</td>
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<td>2-7495</td>
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Interdisciplinary Graduate Programs

These Interdisciplinary Graduate Programs are programs not tied to specific departments. Other interdisciplinary graduate programs exist at Ohio State and are housed in particular departments; such programs are not listed here.

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## BARRIERS TO INTERDISCIPLINARY RESEARCH

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Total 388

### NOTES:

1) Inter-rater reliability was calculated: * less than 80%  ** greater than 80%.

2) Total percentage may be greater than 100% due to rounding.
# BARRIERS TO INTERDISCIPLINARY EDUCATION

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Total: 371

NOTES:
1) Inter-rater reliability was calculated: * less than 80%
   ** greater than 80%.
2) Total percentage may be greater than 100% due to rounding.