

# **A STRATEGY FOR DEVELOPING AND ENHANCING INTERDISCIPLINARY RESEARCH AND GRADUATE EDUCATION AT AIN SHAMS UNIVERSITY (ASU)**

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## **Abstract**

This paper provides a detailed Strategy for developing and enhancing interdisciplinary research and graduate education at Ain Shams University (ASU), Cairo, Egypt. However, in this study, the following research questions were put into consideration: How can interdisciplinary education and research flourish while maintaining strong backgrounds in the disciplines? How can universities lower or remove barriers to faculty participation in interdisciplinary education and research and create porous, flexible, less redundant environment that facilitates the flow of ideas, people and resources across disciplinary boundaries? What are the requirements for the establishment of interdisciplinary graduate programs?

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**Keywords:** Disciplinarity, Interdisciplinarity, Multidisciplinarity, Transdisciplinarity, Interdisciplinary Research, Interdisciplinary Graduate Education

## **Introduction**

### **Why interdisciplinary research and graduate education programs?**

Interdisciplinary , transdisciplinarity and other forms of cross-disciplinary approaches have risen to prominence during recent decades as a global trend (Jacob & Hellström 2000; Hessels & van Lente 2008) . Therefore, interdisciplinary thinking and the creation of interdisciplinary programs, research groups, centers and institutes are rapidly becoming an integral features of academia, because the issues and challenges facing society has become more global and complex (Ewel 2001, National Academy of Sciences et al. 2005).

Some of the major issues faced by the society and which requires a collective effort by different disciplines working in interdisciplinary groups includes: food security, sustainable development, alternate sources of energy,

health care improvements, minimizing the effects of climate change, a sustainable environment and an understanding of complex socio environmental problems (Morse *et al.*, 2007). Policy makers and the public are increasingly demanding that scientists should inform them about the socio-economic impacts of their research. Also, making decisions for changes in policy requires the integration of scientific information and data on the social impacts (Heberlein 1988). However, a comprehensive understanding of these issues cannot be achieved solely through a disciplinary approach.

Many academic and scientific institutions now recognize the need for an interdisciplinary education to prepare future managers, scientists and leaders to solve complex socio-environmental problems (Ewel 2001, National Academy of Sciences et al. 2005). In addition, an increasing number of universities have added several programs which support interdisciplinary perspectives (Zarin et al. 2003, Rhoten, D., and A. Parker 2004). The need for interdisciplinary education results from the need for sophisticated approaches to difficult research questions, as well as the accelerating pace of change in both society and scholarship. The National Academy argues that this is “the central feature of contemporary life: continuous change” (COSEPUP 1995, p. 83), and that graduate education must reflect this reality by providing students with the tools to spread across disciplines and adapt to change. Consequently, there have been calls for increasing emphasis on interdisciplinary education for the past 30 years, but the progress has been relatively slow in most universities (e.g. Panel on Alternate Approaches to Graduate Education, 1973; Boyer 1990; Miller and Mc Cartan 1990).

The structure of the great majority of Universities in terms of Faculties and departments, reinforce the uni-disciplinary formation, especially at the undergraduate levels. **Therefore, a first step towards a necessary transformation should occur at the level of postgraduate programs orientation whenever possible, and around thematic areas instead of specific disciplines.**

As an example, a postgraduate program in Water, could call together engineers, lawyers, chemists, biologists, agronomists to achieve transdisciplinarity in each of them. Therefore, the result would not be the study on water as seen from the perspective of the engineer, or from the agronomist, or from the biologist, but as seen in an integrated manner.

**Support for interdisciplinary programs is now at the forefront of the Ain Shams University’s strategic initiatives, and is the basis for this proposal in establishing the Division of the University Interdisciplinary Programs.**

## **Literature Review**

### **Interdisciplinarity: History**

Roberta Frank (1988, cited in Klein, 1996, p. 8) places the origin of the term interdisciplinarity within the Social Science Research Council, when the term was used as a kind of 'bureaucratic shorthand' for research involving two or more professional societies. However, the first citation in *Webster's Ninth New Collegiate Dictionary* and *A Supplement to the Oxford English Dictionary* referred to December 1937 issue of the *Journal of Educational Sociology* along with the notice for Post Graduate Fellowships for the SSRC (Klein 1996, following Frank 1988). Thus, interdisciplinarity has since been promoted by several movements.

### **Disciplinarity and Interdisciplinarity**

#### **Disciplinarity**

The concept of Interdisciplinarity cannot be fully understood without first clarifying and understanding the meaning and nature of disciplinarity. However, to clarify disciplinarity appropriately, an inquiry into the nature of disciplines should be the beginning point.

The term, 'discipline' etymologically links to the Latin term, *disciplina*, meaning 'a branch of instruction or education or a department of learning or knowledge' (*Oxford English Dictionary*, 1989: 734–5).

#### **General Characteristics of Disciplines**

Aram (2004) stated that disciplines are "thought domains – quasi-stable, partially integrated, semi-autonomous intellectual conveniences – consisting of problems, theories, and methods of investigation" (p. 380). They are quasi-stable because they are continually been opened to new or revised ways of framing problems, theorizing and investigating. Consequently, they are partially integrated because they have core and peripheral elements as well as highly specialized sub-fields, semi-autonomous, and because the boundary of each discipline cannot be clearly defined.

Apostel (1972) went so far to say that "discipline does not exist. A science does not exist. There are persons and groups practicing the same science or the same discipline." (p. 147) In other words, discipline can only be defined by indicating:

1. A group of persons
2. A set of actions performed by these persons
3. A set of interactions or communications among these persons and to other persons
4. A method of regenerating the set of persons by means of certain communications of an educational nature

5. A set of historic learning methods. (p. 146)

Therefore, disciplinarity is about mono-discipline, which represents specialization in isolation.

### **Types of Interdisciplinarity**

Although the terms multidisciplinary, interdisciplinary, and transdisciplinary are often used interchangeably, we believe it is worth establishing the differences in their meanings as clearly as possible. To establish and clarify these differences, let us consider the meaning of the prefixes ‘multi’, ‘inter’, and ‘trans’, when applied to the abstract noun ‘disciplinarity’.

In the common uses of English, the prefix ‘multi’, gotten from the Latin word “multus”, means ‘many’ (‘multimillion’), ‘much’, ‘multiple’, ‘more than one’(‘multiparous’) etc. So, multidisciplinary refers to an activity associated with many, multiple or more than one existing discipline. The Latin prefix ‘inter’ means ‘among’ as in the word ‘international’, or ‘together’, ‘mutually’ or ‘reciprocally’ as in the word ‘interchange’. Hence, interdisciplinarity refers to an activity that exists among existing disciplines or in a reciprocal relationship between them. Nevertheless, just as international relationships between different countries do not imply denying each other sovereignty, interdisciplinarity would not negate the independence of each discipline. The Latin prefix ‘trans’ means ‘across’, ‘beyond’ (as in ‘transoceanic’ or in ‘transilient’), ‘transcending’ (as in ‘transubstantiation’), ‘through’ (as in ‘transpiration’) and ‘change’ (for instance, as in ‘transliterate’). Following these meanings, transdisciplinarity is concerned with transcending the disciplines, going across and through the different disciplines as well as beyond each individual discipline.

In a penetrating analysis, Max-Neef (2005) identified that a person may have studied simultaneously or in sequence, more than one area of knowledge without making any connections between them. Also, one may for example, become competent in Chemistry, Sociology and Linguistics, without generating any cooperation between the disciplines. Nowadays, multidisciplinary teams of researchers or technicians are common and frequent. However, their team members carry out their analyses separately, as seen from the perspective of their individual disciplines, with the final result being a series of papers pasted together, without any integrating synthesis. Pluridisciplinarity implies cooperation between disciplines, without coordination. This normally happens between compatible areas of knowledge on a common hierarchical level. Examples could be the combination of physics, chemistry and geology, or history, sociology and language. Hence, the study of each one of them reinforces the understanding of the others.

Summarizing a body of ‘classic’ writings on interdisciplinarity, Klein and Newell (1998: 3) define interdisciplinary studies as a process of answering a question, solving a problem, or addressing a topic too broad or complex to be dealt with adequately by a single discipline or profession. Interdisciplinary draws on disciplinary perspectives and integrates their insights through construction of a more comprehensive perspective.

The conclusion of an entire book about interdisciplinarity is worth repeating here based on the definitions:

Interdisciplinarity has been variously defined in this century: as a methodology, a concept, a process, a way of thinking, a philosophy and a reflexive ideology. It has been linked with attempts to expose the dangers of fragmentation, to reestablish old connections, to explore emerging relations and to create new subjects which are adequate to handle our practical and conceptual needs. However, cutting across all these theories is one recurring idea. Interdisciplinarity is a means of solving problems and answering questions that cannot be satisfactorily addressed using single methods or approaches. Whether the context is a short-range instrumentality or a long-range reconceptualization of epistemology, the concept represents an important attempt to define and establish a common ground (Klein, Julie Thompson, 1996, p. 196).

### **Key Differences between Interdisciplinarity, Multidisciplinarity, Transdisciplinarity**

A key difference between the terms multidisciplinary and *interdisciplinarity* is that interdisciplinarity refers to an integrative process or relationship, whereas multidisciplinary is drawn independently from several disciplines. Therefore, it is simply an additive process. Interdisciplinary courses have been defined as "the work that scholars do together in two or more disciplines, sub-disciplines or professions, by bringing together and to some extent synthesizing their perspectives" (Davis 1995, p. 5). In this paper, the focus is on the interdisciplinary approach **which is characterized by flexibility, innovation and the creation of new constructs for dealing with complex issues** (Stone et al. 2009).

Bernard C. K. Choi and Anita W. P. Pak made an exhaustive literature review concerning the use of these three words. Thus, their results seem to be compatible with the Latin roots of the prefixes:

Multidisciplinary draws from the knowledge in different disciplines but stays within their boundaries. Interdisciplinarity analyzes, synthesizes and harmonizes links between disciplines into a coordinated and coherent whole. Transdisciplinarity integrates the natural, social and health sciences in a humanities context, and transcends their traditional boundaries. Additionally, the common words for multidisciplinary, interdisciplinary and

transdisciplinary are additive, interactive and holistic respectively (Choi and Pak 2006, 351).

Consequently, they recommend the following definitions:

- Multidisciplinarity draws on knowledge from different disciplines but stays within the boundaries of those fields.
- Interdisciplinarity analyzes, synthesizes and harmonizes links between disciplines into a coordinated and coherent whole.
- Transdisciplinarity integrates the natural, social and health sciences in a humanities context, and in doing so transcends each of their traditional boundaries. (Choi and Pak 2006, 359)

In this study, a well-grounded recommendation would be followed, and "interdisciplinary" would be used in referring to areas of educational research, knowledge, or theory which combines two or more disciplines.

### **What is Interdisciplinary Graduate Education?**

Interdisciplinary graduate education crosses the boundaries of traditional university departments and colleges. Programs may be structured in many ways depending on curricular goals: (1) degree-granting graduate programs; (2) individualized interdisciplinary graduate programs; (3) certificate-granting options in existing disciplinary graduate programs; or (4) intensive individual courses that teach skills of value to graduate students across a wide variety of disciplines. Therefore, the availability of diverse interdisciplinary doctoral experiences is very important if a university is to provide a flexible range of options to attract students with diverse backgrounds and goals (Washington State University, 2008, p. 9).

### **What is Interdisciplinary Research?**

The National Academy of Sciences defined interdisciplinary research (IDR) as “one of the most productive and inspiring of human pursuits—one that provides a format for conversations and connections that lead to new knowledge” (National Academies, 2005). It links and integrates theoretical frameworks from two or more disciplines and employs methods and skills from them.

By definition, interdisciplinary work extends across the boundaries of traditional disciplinary efforts to create new areas of knowledge. Many areas that are considered interdisciplinary today will become the “traditional” disciplines of tomorrow. Also, the field of biochemistry, which grew from the traditional disciplines of biology and chemistry, is now uniformly presented as a unique and well-defined individual discipline. In other words, the best, strongest and most relevant interdisciplinary fields of study today will become the disciplines of tomorrow. By its definition, strong interdisciplinary programs position the university as a leader in research and

graduate education. Hence, students in strong interdisciplinary graduate education programs are prepared to investigate complex problems from the perspective of multiple fields of study (Washington State University, 2008, p. 9).

### **Method of Research**

This work is based on a case study of Ain Shams University which has been a unique university in Egypt. In learning about this specific case, questionnaires and interviews were organized, and the official and legal documentation was studied to determine the suitable strategy for developing and enhancing interdisciplinary research and graduate education at Ain Shams University.

### **Development of a Suggested Strategy for Developing and Enhancing Interdisciplinary Research and Graduate Education at Ain Shams University**

The University of Ain Shams has been accorded a high priority in the pursuit of Developing and Enhancing Interdisciplinary Research and Graduate Education. Therefore, to tackle this, it has to implement the following suggested strategy:

- I. Review the range and nature of the current interdisciplinary research and graduate education programs across the university and provide guidance as on how these might be enhanced.
- II. Challenges facing the growth of interdisciplinary research and graduate education at ASU.
- III. Articulate a vision and Objectives on how ASU's interdisciplinary Research and Graduate Education Programs can be enhanced significantly in the next decade and also the development of new programs.
- IV. Institutional Requirements for developing and enhancing interdisciplinary research and graduate education at ASU.
- V. Recommend guidelines for the development, structure, governance and evaluation of existing and new interdisciplinary research and graduate education programs.
- VI. Identify mechanisms which ensure that the faculty receives appropriate credit for participation in interdisciplinary research and graduate education programs.
- VII. Resolving practical issues.

### **Interdisciplinarity at Ain Shams University**

Where is the University of Shams located in the large and varied world of interdisciplinarity?

Consequently, with the acknowledgment of the fact that most of what goes on at Ain Shams University, as elsewhere is multidisciplinary, the University is barely visible in some areas. Ain Shams University is a newcomer to interdisciplinarity. Only in the last five years has it begun to offer more than a handful of programs. However, more than half of them began only in 2009, 2010 and 2013.

### **Challenges facing the growth of interdisciplinary graduate education at ASU**

Despite various steps in addressing certain longstanding concerns over the last five years, interdisciplinarity at the ASU continues to face the following challenges:

1. Lack of strategic focus in the development and growth of programs.
2. There are no readily accessible models or guidelines for governance, and administrative structure of interdisciplinary graduate education programs.
3. There are no resources allocated to nurture the development of nascent interdisciplinary graduate programs or to reward the continued success of established programs.
4. When programs develop strictly from faculty initiatives, there is no targeted development of programs that are in alignment with strategic university priorities
5. The culture of interdisciplinary teaching and learning is not well developed at ASU.
6. Interfaculty programs are administered by committees, and their academic governance is bounded by policies applicable to traditional disciplines.
7. Faculty recruitment is initiated by departments/faculties. Interdisciplinary programs cannot make professorial hiring decisions. Joint faculty/program appointments are not addressed by ASU administrative procedures and resource allocation policies.
8. Faculty members with appointments and responsibilities in more than one department face a more complex promotion path and a higher service load.
9. Faculty involved in interdisciplinary teaching and research are rightly concerned about the weight given to these contributions during reappointment and promotion processes.
10. Difficulties in accurately assessing faculty effort in interdisciplinary programs.



11. Concern regarding the impact of interdisciplinary graduate programs on national rankings of programs which have traditionally been departmentally based.
12. Departmental and college reluctance to allocate substantive faculty time in the support of interdisciplinary programs.
13. Insufficient numbers and quality of graduate training grants.
14. Cost-sharing and funding structures for interdisciplinary programs are not well developed at ASU in terms of academic and non-academic lines and budgets.
15. Most facilities and research spaces are administered by deans and departmental chairs.
16. There are few common facilities for cross-faculty interaction at ASU.
17. An external complication in the development of interdisciplinary programs involves the Lebanese Ministry of Higher Education degree registration requirements, which are tailored to traditional disciplines and requires that faculties/schools grant degrees.

### **Overcoming Challenges**

#### **1. Facilitating Strategies and Mechanisms for Interdisciplinarity**

#### **2. Organizational Structure, Administration and Policies**

- Alternative administrative structures
- Program-level control of budget and infrastructure
- Paper lines with designated responsibilities
- Procedures for course and program approval as well as research management
- Policies for hiring, promotion, salary and merit
- Policies for research and teaching evaluation, program review and learning assessment
- Openness to innovation and tolerance for risk
- Alignment of interdisciplinarity with strategic plan themes
- Inventory of activities, structures and interests

#### **3. Leadership, Advocacy and Stewardship**

- Top administrative support at the level of president, provost and deans
- Central oversight body for interdisciplinary research and education
- A central interdisciplinary website
- Annual forum for directors of programs, centers and institutes
- Strong and experienced leaders
- Unit-level advisory boards of internal and external stakeholders

#### **4. Funding**

- Baseline funding for interdisciplinary and Interdisciplinary units

- Dedicated tenure-track faculty lines and stable appointments in programs and centers
- Cross-department budgeting mechanisms
- Flexible resources at the department level
- Seed funding through internal special initiatives and regular programs
- Systematic Interdisciplinary identification of external sources
- Equitable credit allocations for team teaching, and indirect cost recovery on external grants
- Alignment of interdisciplinarity with capital campaigns at both campus and unit levels

### **5. Infrastructure Support**

- Dedicated space for INTERDISCIPLINARYS and INTERDISCIPLINARYR units
- Pooling and sharing of space, facilities and equipment
- INTERDISCIPLINARY design principles for new buildings and remodeling projects
- Communication system for collaboration and information flow
- Release time for program and project development in teaching and research
- Faculty development programming (including graduate students and postgraduate fellows)
- Resource banking of interdisciplinarity resources and literatures

### **6. Recognition**

- Visibility on central interdisciplinarity website
- Visibility in the public face of a campus (e.g., materials, advising and recruiting system)
- Counting service for committee work, mentoring and thesis/dissertation advising
- Awards and honors in existing system and new interdisciplinarity - specific competitions
- Inclusion of interdisciplinarity in all annual and unit papers
- Interdisciplinarity unit-level publications: online newsletter, journal etc.

### **7. ASU Mission and Objectives**

#### **ASU Mission**

ASU's mission is to promote interdisciplinary engagement in Research and Graduate Education Programs as a shared enterprise involving ASU faculties and research units. These collaborative engagements will permit faculty members and graduate students to cross traditional

disciplinary boundaries in order to advance research and scholarship, acquire knowledge and generate new insights.

ASU will provide a responsive environment for graduate education and research by focusing on scholarship in areas not addressed through existing departmental structures, and by connecting graduate students from a variety of backgrounds with the resources which they need to achieve diverse career goals.

**The objectives of ASU are:**

- a. To create an environment that fosters interdisciplinary approaches to graduate education and research.
- b. To improve administrative and financial support for interdisciplinary research and graduate education programs.
- c. To strengthen existing interdisciplinary research and graduate education programs, and to support the creation of new ones.
- d. To support the involvement of University centers, institutes, and museums in research and outreach activities.

**Institutional Requirements for developing and enhancing interdisciplinary research and graduate education at ASU**

**First and foremost, strong interdisciplinary graduate programs cannot exist without a base of strong and rigorous disciplinary programs.**

**Change the institutional culture at ASU to value, and encourage efforts that develop and enhance interdisciplinary research and graduate education.** The necessary change in culture and vision for the future of research and graduate education at ASU must be clearly and persistently articulated by every level of university administration at every opportunity. In addition, part of this message must be a clear commitment to the support of interdisciplinary research and graduate education without compromising support for quality research and graduate education.

**Articulate from the highest levels of the university a clear vision that supports strategic enhancement of quality interdisciplinary research and graduate education.**

The university administration at every level has to embrace a clear vision that supports strategic enhancement of quality interdisciplinary research and graduate education with enthusiasm. However, they should also ensure effective communication across all parts of the campus. A sharply defined vision statement must be drafted and articulated using available marketing expertise.

**Ensure that every step in the process of achieving this vision is transparent and clearly communicated.**

At the heart of most interpersonal and professional conflicts, there are usually difficulties encountered with the quantity or quality of communication. Certainly, in an academic environment, the failure to adequately communicate the progress of change to individuals directly or indirectly affected by that change is an almost certain recipe for conflict and failure. If a shared vision is to be developed, communicated, and adopted across a widely diverse group of people, it is incumbent upon the ASU to keep those people informed.

**Implement policies of performance-based budgeting for all colleges across the university.**

The University can “align its budget in order to further specific strategic intentions. Motivating change is greatly facilitated when there are tangible rewards for that change. Therefore, this may take various forms including: (1) salary release money awarded to departments in exchange for faculty time committed to directing or teaching in interdisciplinary graduate programs; (2) salary supplements for faculty who take on administrative work in such programs without giving up substantial portions of their other academic commitments; (3) teaching or research assistantship support; (4) funds for administrative support staff; or (5) funding and support for marketing and recruitment of graduate students.

**Change the annual review and the promotion processes across the university to include consideration and credit for efforts in support of interdisciplinary research and graduate education.**

In the final analysis, faculty performance was measured by the annual review process, culminating in decisions related to promotion, and salary adjustments. Therefore, if faculty commits a significant proportion of their time in pursuing interdisciplinary research and graduate education, they would run the very real risk of having those efforts unrecognized by their “home” department and college during their annual review. In addition, a number of possible solutions to this dilemma might depend on changing the perception of the value of this work to the university as a whole, or changing the way promotion and salary adjustments are been considered.

**Ensure that all academic units include appropriate recognition of quality and strategic interdisciplinary efforts during faculty annual review and promotion assessments.**

The real or perceived lack of “credit” for faculty efforts is one of the most frequently cited reasons for reluctance in participating or encouraging participation in interdisciplinary research and graduate education, and also, its importance must not be underestimated.

**Empower colleges to participate in the administration of degree granting interdisciplinary graduate education programs which crosses college boundaries.**

When individual are empowered with self-determination for programs that directly impact their research, there is a powerful incentive to strive for excellence. This culture of self-determination for interdisciplinary graduate education programs can become a major impediment to the effective governance of interdisciplinary programs. However, this interdisciplinary program requires disparate groups of faculty to function as a single unit. At the end, the success or failure of these programs depend on establishing a structure of governance that can effectively navigate the minefields of individual, departmental, and disciplinary personalities, policies and preferences.

**Change the central culture of the ADU from that of an administrative unit that monitors compliance to that of an administrative unit that provides leadership in interdisciplinary research and graduate education issues across the university.**

Consequently, the rate of societal change and its accompanying complex challenges, demand an educational system that is agile enough to meet societal needs without sacrificing quality and rigor. Coordination of complex, evolving interdisciplinary research and graduate education while concomitantly assuring quality and rigor can only occur if the ADU with real resources plays a more active role in assisting faculty efforts in these directions.

**Implement a system of ongoing strategic and consequential review that identifies the benchmarks of success for each interdisciplinary graduate program.**

It is important to initiate periodic and consequential reviews specifically for graduate programs with the purpose of monitoring progress towards previously agreed measures of achievement, paying particular attention to external benchmarks and taking corrective action as required, including discontinuing programs that are habitually unproductive. All interdisciplinary (and disciplinary) graduate programs across the campus should be engaged in regular strategic strategy with the goal of papering specific, measurable and achievable goals.

**Develop flexible guidelines for the administration of interdisciplinary degree granting graduate programs through the university.**

The type of cultural change that is described in this strategy will be difficult for many faculty, department chairs and deans at ASU, because of

our strong history of self-governance at all levels of program development and administration. Effective changes cannot be made if faculty, departments and colleges are forced to participate. They must be enthusiastic about the long term vision and they must recognize immediate benefits to change. Nevertheless, this will require strategic allocation of resources in return for participation. If successful, these administrative policies may be extended to include traditional graduate programs that operate a single administrative budgetary unit with the result that effective critical mass for stronger disciplinary graduate programs is also created.

By encouraging graduate programs to develop specific criteria for the approval of graduate faculty regardless of their home department or college, the university could quickly and easily develop a mechanism to greatly enhance interdisciplinary collaboration across the university. Such a system would, for example, enable an appropriately qualified faculty member in the College of Medicine to apply and receive full graduate faculty privileges within a graduate program in the College of Sciences. Furthermore, because each individual graduate program would develop and maintain appropriate criteria for granting graduate faculty status within their program, appropriate rigor and academic standards would be maintained. As a result, individual faculty may have full graduate faculty status within more than one graduate training program. However, they would be able to select the best program for each student on the basis of the student's background, prior educational or work experiences, research interests and career goals. The inclusion of more diverse faculty within each graduate program would enrich the graduate program itself by and insights from well qualified faculty of diverse backgrounds. In addition, they would encourage interdisciplinary research and graduate education without the direct involvement of a certain college during the administration of those programs. Thus, this type of "open door" graduate faculty policy would be especially beneficial for faculty currently housed in academic units that do not currently have approved graduate programs.

**Identify funding mechanisms to guarantee one year of university support for all graduate students accepted into major interdisciplinary graduate degree programs.**

The paucity of available funds for central support of students enrolled in interdisciplinary graduate programs greatly limits the recruiting power and flexibility of these programs. As a result, the university in partnership with the colleges and departments must develop strategies that will guarantee at least one year of financial support to all students in major interdisciplinary graduate programs.

**Foster and support experimentation in novel styles and approaches to interdisciplinary graduate education.**

Developing interdisciplinary degree-granting programs is not the only way to encourage interdisciplinary graduate education. There are many ways to enhance the opportunity for students in discipline-based degree programs to expand their horizons and gain experience and expertise that will complement their disciplinary training. For example, the faculty from the College of Business might lead a summer program in entrepreneurship which attracts graduate students from science, engineering and the liberal arts. Also, the faculty from the School of Communication and the Department of English might design a project-based course that teaches students in all fields of paper how to communicate effectively with the public and the media. Therefore, these types of experiences are clearly of value in building basic skills among participating graduate students. In order to succeed, they must be of value to the content experts who prepares and delivers the course material. This will mean negotiating on the memoranda of understanding between participating departments, colleges and the university that clearly delineate agreements related to time commitments. Also, this would result to asset exchange between units and/or the university in direct reimbursement for efforts in support of interdisciplinary training. In addition, encouraging the participation of post-docs in these activities can further enhance a culture of collaboration across all of the university. However, fostering experimentation in these approaches is important if ASU is to provide a full spectrum of opportunities for interdisciplinary experience. Furthermore, recognition and reward for these efforts would reinforce the culture of interdisciplinary graduate education across the campus.

**Provide appropriate assistance to faculty seeking to develop new or enhanced existing interdisciplinary research and graduate education.**

Faculty interested in developing cross-departmental and cross-college educational collaborations consistently reported difficulties in navigating the labyrinth of requirements for establishing new programs. Thus, defining and advertising the mechanisms for support will stimulate the faculty to seek assistance earlier in the process. In addition, it would result to further efforts of establishing a collaborative culture that values interdisciplinary research and graduate education.

**Designate a unit within ASU to advise and assist in developing and maintaining interdisciplinary research and graduate education.**

The increased responsibility for program development and review described in this strategy requires access to new human and financial resources. This unit will provide administrative support for the faculty to

navigate the labyrinth of requirements in developing and maintaining interdisciplinary research and graduate education within the university, and also provide the necessary administrative support.

**Develop interdisciplinary research and graduate education programs that are in accordance with university strategic priorities.**

Because it is prohibitively expensive for the university to cultivate strengths in every areas of the study, it is important that the university should leverage its resources strategically in supporting areas of research excellence. However, strong departmental based programs in the areas have potentials for expansion into interdisciplinary programs. This potential should be explored to identify the strengths and weaknesses of an interdisciplinary approach. Also, similar dialogue with faculty engaged in research in emergent areas should be encouraged. Moreover, it is possible that strengthening graduate education by establishing a strong interdisciplinary program might catalyze the growth of an emergent program into a recognized “peak” of research excellence.

**Identify faculty interested in developing novel interdisciplinary programs and needed assistance.**

It will be a painful process for the university to shift from a culture of egalitarian support of all programs to one of selectively supporting programs in areas of emphasis. It is important that faculty in areas of the “peaks” should recognize the fact that they remain important to the overall mission of the university, and that opportunities exist to develop new “peaks”. Therefore, voluntary innovative efforts for developing collaborative graduate programs should be encouraged and developed to an extent that resources are allowed, especially in the support of initial program development and in the provision of assistance in quests for external funding support. In some cases, it may be strategically advantageous to combine smaller programs into interdisciplinary degree granting units that will create the critical mass that is essential for excellence.

**Develop support mechanisms within the university to enhance the quantity and quality of training across the university.**

Acquiring more training is recognized as an important component in developing and enhancing interdisciplinary research and graduate education.



## **Administrative structure for developing and enhancing interdisciplinary research and graduate education programs at ain shams university**

### **Director**

The Vice president of research and graduate studies will recommend the appointment of the ASU director to the president of the university. However, this is done after consultations with the faculty and deans involved in the relevant programs in accordance with the University's policy for the appointment of directors/chairs of academic units. The director will be responsible for the administration and academic development of interdisciplinary research and graduate education programs. In addition, the ASU director will be evaluated by the Vice president of research and graduate studies in accordance with the University's policy for the evaluation of the directors/chairs of academic units.

### **Interdisciplinary Program Coordinating Committees (IPCCs)**

Current University practice is that each faculty member contributing to an interdisciplinary program belongs to a home department/faculty for administrative purposes. Interdisciplinary programs are commonly governed by an Interdisciplinary Program Coordinating Committee (IPCC), whose members are appointed by the deans to represent the departments/tracks of the faculties/schools which contributed to the program. Also, the chair of each committee was appointed by the president through the recommendation of the vice president of research and graduate studies.

IPCC chairs will continue to be appointed by the president. Committees will normally be composed of four interdisciplinary faculty drawn from at least two different faculties/schools and different departments. In addition, appointments will be for the term of three years which is renewable.

The IPCC, through its chair, will initiate all curricular changes to the program. Changes which may affect any participating faculty/school must be communicated through the ASU director to the relevant faculty's Graduate Studies Committee (GSC) for its input. Faculty representatives on IPCCs are expected to attend their faculty's GSC meeting when curricular issues related to the program are discussed. Thus, curricular changes approved by the IPCC are recommended to the Board of Graduate Studies for approval.

Much like other academic units, IPCCs will have autonomy over their program's academic decisions. They will work with program faculty and the ASU director, and with the support of the Graduate Council, to develop/reform program bylaws and policy/graduate student guides/handbooks. Consequently, IPCCs will recommend the conferral of their respective degrees to the ASU director with the support/vote of the core and shared full-time faculty involved in their programs.

### **IPCC Chairs**

IPCC chairs will be responsible for their program's administration. The compensation of IPCC chairs will be similar to that received by departmental chairs.

IPCC chairs will receive all information pertinent to their programs (such as course schedules, names of instructors, total support and Instructor Course Evaluations) through the ASU director, who will coordinate with the deans of the participating faculties/schools. The chairs will report to the ASU director any deficiencies in course offerings due to a lack of total support one year in advance in order to seek support for necessary part-time or full-time hires.

### **ASU Administrative, Advisory, Interdisciplinary Research and Graduate Education Programs Committees**

The ASU Administrative Committee will be composed of chairs of Interdisciplinary Programs Coordinating Committees. The Advisory Committee will be composed of three faculty members of professorial rank elected by the participating IPCC members in accordance with ASU faculty bylaws. The administrative committee will advise the ASU director and be responsible for the division's strategic planning and its assessment and continuous improvement activities. The Advisory Committee will advise the ASU director on issues related to appointments, reappointments and promotions in accordance with ASU faculty bylaws. Likewise, the ASU will also form its graduate studies and research committees in accordance to the Unified Faculty Bylaws.

### **Admissions**

The faculty of an interdisciplinary program operates in a manner analogous to that of a departmentally based graduate program, and it directly controls the admission process. Typically, student applications are reviewed by individual faculty members, recommendations for acceptance or rejection are made by them, and an Executive Committee elected by the program's faculty makes the final recommendation to the Graduate School regarding the admission process.

### **Conclusion**

A detailed Strategy for developing and enhancing interdisciplinary research and graduate education at Ain Shams University (ASU), Cairo, Egypt was defined. The strategy showed how interdisciplinary education and research flourish, and how the university lower or remove barriers to faculty participation in interdisciplinary education and research and create porous, flexible, less redundant environment that facilitates the flow of ideas, people

and resources across disciplinary boundaries. Therefore, the requirements for the establishment of interdisciplinary graduate programs were identified.

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