

Interdisciplinary Researches in Iran

“Interdisciplinary studies” are academic studies seeking to synthesize comprehensive views, interconnections, and resolve the problems which cannot be effectively explained and solved from a single disciplinary perspective.^[1]

Rather than disciplinary approaches, the interdisciplinary studies are encouraged for problem solving in the 21st century.^[2] A look at the recent research activities reveals how many of today’s “hot research topics” are interdisciplinary: nanotechnology, genomics and proteomics, bioinformatics, neuroscience, medical imaging, etc. There can be no question about the productivity and effectiveness of research teams formed of partners with diverse expertise.^[2,3] Since interdisciplinary research teams integrate information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines, they can produce new knowledge.

It is now increasingly evident that the research productivity in Iran is moving closer to further interdisciplinary studies. Many of the significant researches from the research centers and institutes of Iran are interdisciplinary in approach. During the last decade, there has been increasing interest in the value of the concept and practice of interdisciplinary research and teaching of interdisciplinary studies in Iran. Moreover, it has been encouraged that grant proposals be defined more as interdisciplinary collaborative projects than single discipline ones. However, in most faculties of Iran, it is not usual to study or publish on interdisciplinary research.

It seems that there are some barriers to work interdisciplinary in our country. The most important obstacles and challenges faced by interdisciplinary activities can be divided into “professional”, “organizational,” and “cultural” obstacles.^[4]

Despite agreement on the need for interdisciplinary research, training the knowledge and skills necessary for researchers to work across disciplinary boundaries have been largely ignored. So, it is essential to train scientists capable of evaluating and producing information from multiple sources in order to extract consistent solutions. Furthermore, they should be capable to integrate theories, concepts, and methods from multiple disciplines in designing interdisciplinary research frameworks and methods. To achieve this goal, scientists should communicate regularly

with scholars from multiple disciplines, for example by going to scholarly presentations by members of other disciplines and discuss with colleagues from other disciplines to gain their perspectives on research problems.

The training of the next generation of academics can be expected to be started by adding interdisciplinary courses to the typical scholarly programs for undergraduate students, assuring that the presentations come from a range of theoretical and methodological disciplines and that the presenters are themselves respectful of the interdisciplinary perspective. In addition, we need chief scholars serving as role models for the required collaborations in research design, analysis of findings, and ultimate presentation of results.

At the organizational level, interdisciplinary programs may fail if they are not given appropriate autonomy.^[5,6] Interdisciplinary researchers sometimes have difficulty getting funding for their research because the grant applications are often refereed by peer reviewers drawn from established disciplines; other barriers include the generally disciplinary orientation of most scholarly journals, which leads to hard publishing of interdisciplinary research papers.

A good solution to overcome all these problems may be founding interdisciplinary research centers. These centers are institutional structures that are supportive of interdisciplinary efforts in several ways. In these centers, scholars competent in interdisciplinary research can come together to develop interdisciplinary research frameworks and make contributions to interdisciplinary research efforts. These research centers may serve as a setting for student development capable to work on interdisciplinary research subjects and share research from his or her discipline in language meaningful to an interdisciplinary team. Furthermore, these research centers can be considered as an occasion for career development for scholars who are interested or competent to organize interdisciplinary studies.

A successful experience in our country, Iran, is founding the Medical Image and Signal Processing Research Center (MISP). MISP has been organized in collaboration between faculty members of Isfahan University of Medical Sciences (IUMS) and Isfahan University of Technology since 2006 to prepare the possibility of close communication and scientific cooperation between engineers and medical doctors in various fields.

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At this time, MISP includes several sub-groups such as “processing of eye images, processing of dental images, bioinformatics, stem cell tracking, processing of microscopic images, electrical impedance tomography, treatment planning software, mathematical modeling of medical images, and biomedical signal processing”. For more information about these groups, please visit: <http://misp.mui.ac.ir>. There is a monthly steering committee meeting attended by all the center faculty members and includes discussion on center activities as well as individual scientific presentations. Through these meetings, investigators share their work to gain their own perspectives on research problems. The steering committee is also authorized to fund grant for interdisciplinary research proposals.

To introduce and develop of some interdisciplinary researches, we decided to publish a new journal in this area namely “Journal of Medical Signals and Sensors (JMSS)”. The first issue of this journal has been published in spring 2011 and now you are reading the editorial of the second issue.

Let’s know your successful experiences on the development of interdisciplinary researches in your country.

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