

## Description and Pathology of Research Development in Tabriz Medical University

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### Abstract

**Background and purpose:** Research in medical science, as in all other fields of science, is necessary in order to maintain and improve the public health. This is achievable only by researchers and faculty members. This study is attempt o identify intra-organizational factors that influence research planning and related interventions in Tabriz Medical University.

**Methods:** In this descriptive cross-sectional study, the study group included all faculty members and masters of science (equivalent to faculties) in Tabriz Medical University, of which 121 persons were selected randomly. Lickert style questionnaires were developed to evaluate and compare the attitudes toward project approval process, knowledge about research facilities, departmental cooperations in research, and researchers' capabilities in project execution. Data analysis was performed using SPSS software.

**Results:** During a 3 year period, each faculty member had, on average, supervised 5.17 dissertations, conducted 1.15 approved research projects, and had 3.4 presentations in domestic and 0.36 presentations in international conferences. Lack of time was the main problem in conducting research. Comparing faculties with and without research experience, there was significant differences in regard of access to research facilities ( $p < 0.01$ ), assessment of the benefits of research ( $p < 0.02$ ), and the level of research knowledge ( $p < 0.02$ ); while no significant difference was found regarding motivations, job satisfaction, departmental cooperation, and expecting benefits from conducting research.

**Conclusion:** According to the faculties' views, intra-organizational problems are less important than personal factors in performing research projects; i.e. the main obstacles for research were lack of time, and lack of competence in research methodology and problem-finding. Intra-organizational factors such as delay in project approval and lack of knowledge about research priorities are classified in the next levels.

**Keywords:** FACULTY MEMBERS, RESEARCH PROBLEMS, INTRA-ORGANIZATIONAL FACTORS

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### Introduction

Research is a pursuit to find facts and knowledge; in other words, research means exploration,

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investigation and examination. Research is a road which leads to development goals and, eventually, to quality improvement in human life (1). By gathering, assessing and interpreting data systematically, a research project can find answers to a question or solutions for a problem (2).

Research is one of the most important issues in scientific circles. Scientific advance is

undoubtedly the building block that guarantees the continuation and improvement of economic and political independence of the country in the future. The medical society of our country, which has always made its best effort to achieve self-reliance in the field of medicine, requires research most intensely (3).

In its acts and constitutions, the Superior Council of Cultural Revolution emphasizes on the role of research and researchers in discovering new things, and requires the government to resolve the problems and obstacles of research and support the researchers financially and morally (3). According to UNESCO's statistics, investments in research and research workforce training is much higher in industrialized countries, and the number of researchers per million in these countries is 24 times more than that of developing countries. In other words, 2-24% of gross national income is allocated to research in developed countries, while this figure is only 0.05% in developing countries. It should be mentioned that scientific development is a time-consuming process. The US and Japan, for example, tried 50 years to establish and expand their scientific and research organization to reach the standards of and compete with their European counterparts (4).

For research to succeed, six factors have been determined in six most industrialized countries, which include:

1. the main sponsor for research costs was the government
2. revised projects with government-supported programs were available
3. strategic research with specific objectives were performed
4. federal and state governments supported academic research
5. specific mechanisms were established to bring a balance between scientific community and the government in order to identify priorities and main research trends
6. research share of the budget was high

Results provided in the First Research Congress in Mashad Ferdosi University in 1985 showed that in the past century, research-related issues have been ignored in developing countries; they

were limited to specific times and specific centers and not continuous, and most important of all, research results were not even useful to solve the community problems (1).

Between 1981 and 1985, based on UNESCO's data, more than 80% of all global publications were originated from 10 industrialized countries. Developing countries shared only 5.8% of publications, of which India, China, Brazil, Egypt, Argentina, Venezuela, Korea, Taiwan, Singapore, Pakistan and Nigeria had the most scientific publications. Of the total 5.8%, 3.73% belonged to Asia, 1.15% to Latin America, 0.37% to Africa, and 0.58% to the Middle East. Most of these publications were in the fields of medicine, biology, agriculture and geology (5).

International Foundation for Science (IFS) evaluated the status of researchers in the Third World, which showed there are two groups of researchers in these countries: One whose papers are published in paramount international journals and one that publish their articles in domestic journals. The former are usually connected with international organizations and communities, while the latter have research activities beside their main educational or service-provision responsibilities; these research efforts are sometimes very useful for internal affairs and development but they are not interesting for the international community.

The main motivation for the author to publish papers in journals is that he/she hopes the research results will be applied for the development of the society. When asked about their motives in performing research projects, researchers of the Third World emphasized on 'working in a scientific environment' and 'applying the results for the public'; scientific, job, or position promotion and also job security were among other motivating factors.

Studies in the developing countries show that researchers usually do not have a proper job or a stable position. Most of them perform research activities as their second job and are engaged in other occupations such as education and training, consultation or administrative jobs. Almost all these researchers believe that their earnings from research projects are not consistent with

their needs and they almost always have economic limitations for their projects. This is especially true for those who work in universities. That is why researchers prefer to work in other educational, service-providing or counseling sectors (3).

According to the researchers in the Third World, what motivates them to select a subject for research is, in order of significance, solving a social problem, paper publication in a reputable international journal, and presentation in international conferences; also social factors, project cost-effectiveness, and solving a medical or public health problem were among these motives. The problem is, since most practical projects are aimed at solving a problem in a specific country, the resulting paper is usually not interesting for international journals (3).

Research activities must be consistent with each country's social, economic and cultural circumstances, and the strategic development planning should be based on these activities. Other countries' performance and experience cannot be accepted as an ideal prototype. In order to develop research, appropriate technology and knowledge must be transferred; simple technology transfer, however, will not result in research progress. This can only be achieved when a powerful educational system works to educate and train professional forces at the highest level. This needs researchers who are active in research projects. On the other hand, competition among universities and departments is another obstacle in research development. While team work and cooperation is necessary for practical research projects, this competition can become a great barrier (3).

In this study, considering the intermediate ranking of Tabriz Medical University in regard of research, and also because of considerable number of faculties in this university, we have tried to evaluate the role of intra-organizational factors in research project implementation. The results can be used in planning appropriate interventions to improve research projects in Tabriz Medical University.

## Materials and Methods

In this descriptive cross-sectional study, the study group included all faculty members and masters of science (equivalent to faculties) in Tabriz Medical University, which is comprised of about 700 faculties and 30 equivalent masters of science. Of this number, 121 persons were selected randomly, using Cochran Sampling Formula. Data collection was via interview and questionnaire about demographic information, how to access research resources, research problems and expecting benefits from conducting research.

In order to evaluate the constructs, Likert's style questionnaires were developed. The extent of change of the constructs was weighed and equilibrated. After equilibration, "the researchers' views toward the administrative process of project approval and implementation", "the researchers' knowledge about research process and facilities", "departmental and school cooperation in research implementation", and "researchers' capabilities in conducting research projects" were evaluated and compared. In addition, to determine and prioritize researchers' problems, Analytical Hierarchal Process (AHP) technique was used as shown in Figure 1. The questionnaire content validity was approved by research arbitrators. Questionnaire reliability was calculated to be 0.779 by Cronbach's  $\alpha$  value, which was higher than the standard (0.6).

In order to assess the faculties' research activities, 10 questions were designed and measured as ratio, which are provided in Table 1. Thirteen questions were developed to evaluate researchers' attitude toward research implementation and its consequences; these are shown in Table 2 and 3. To compare motivational powers, departmental cooperation, assessment of the benefits of research, and access to research facilities among faculty members with and without research experience, mean t-test was used via SPSS software.

## Results

In order to evaluate the level and the extent of

research activities of faculty members, a 3-year period was studied during which, as Table 1 shows, each faculty had, on average, supervised 5.17 dissertations and was consulted for 2.8 dissertations. In addition, they had conducted 1.15 approved research projects and participated in 1.6 projects, had 3.4 oral and 2.13 poster presentations in domestic, and 0.36 oral and 0.95 poster presentations in international conferences. Only one paper was published in international journals.

**Table 1.** Number of research projects conducted by researchers during the last 3 years

Activity	Mean	SD
Dissertation supervision	5.17	5.76
Dissertation consultation	2.79	5.3
Approved Project Implementation	1.15	1.75
Cooperation in Approved Project	1.60	3.0
Domestic Oral Presentation	3.43	5.2
Domestic Poster Presentation	2.14	3.23
International Oral Presentation	0.37	1.02
International Poster Presentation	0.96	1.82
Published Papers in Domestic Journals	2.86	1.40
Published Papers in International Journals	1.03	2.57

When faculty members' problems in conducting research projects were studied and prioritized, the main obstacles, as shown in Table 4, were as follows:

1. lack of time
2. lack of facilities
3. delay in project approval
4. lack of job security
5. lack of economic security
6. lack of research consultant
7. lack of knowledge on research priorities of the country
8. lack of knowledge and skill on research methodology

Access to facilities was easier for those who had research experience compared to those without such an experience (rate of 57.2 vs. 40.9;  $p < 0.01$ ). Also, compared to researchers, less number of faculties without research experience

believed that conducting research has any considerable benefit (40.05 vs. 56.27;  $p < 0.02$ ). There was no significant difference between the views of faculties with and without research experience toward departmental cooperation (48.2 vs. 43.3) and motivational powers (37.3 vs. 37.8). These results are summarized in Table 3.

**Table 2.** The average scoring for and ranking of researchers' problems in conducting research projects

Measure	First Priority	Second Priority	Third Priority	Score
Lack of time	33	17	19	47.8
Lack of knowledge and skill for different methods	2	10	6	9
Lack of facilities	22	22	19	39.3
Lack of research consultant	9	8	10	16.3
Lack of job security	15	17	9	20.5
Lack of economic security	10	18	15	19
Delay in project approval	19	16	15	27
Lack of knowledge about research priorities	5	9	14	14.5
Other	4	0	2	4.66

**Table 3.** Comparison between the views of faculty members with and without research experience toward intra-organizational factors

Factor	With research experience		Without research experience		p-Value
	Mean	SD	Mean	SD	
Departmental cooperation	48.27	15.54	43.38	18.62	0.125
Access to facilities	57.19	18.87	40.91	21.63	0.01
Motivational Powers	37.90	15.64	37.38	24.38	0.89
Assessment of the benefits of research	56.27	16.73	49.05	18.41	0.028

According to Table 4, job satisfaction ( $p=0.09$ ;  $t=1.6$ ) and expecting benefits from conducting research ( $p=0.19$ ;  $t=1.3$ ) was not significantly different among those with and without research experience, but the research-related knowledge level was higher among researchers (54.7 vs. 48.6;  $p<0.02$ ).

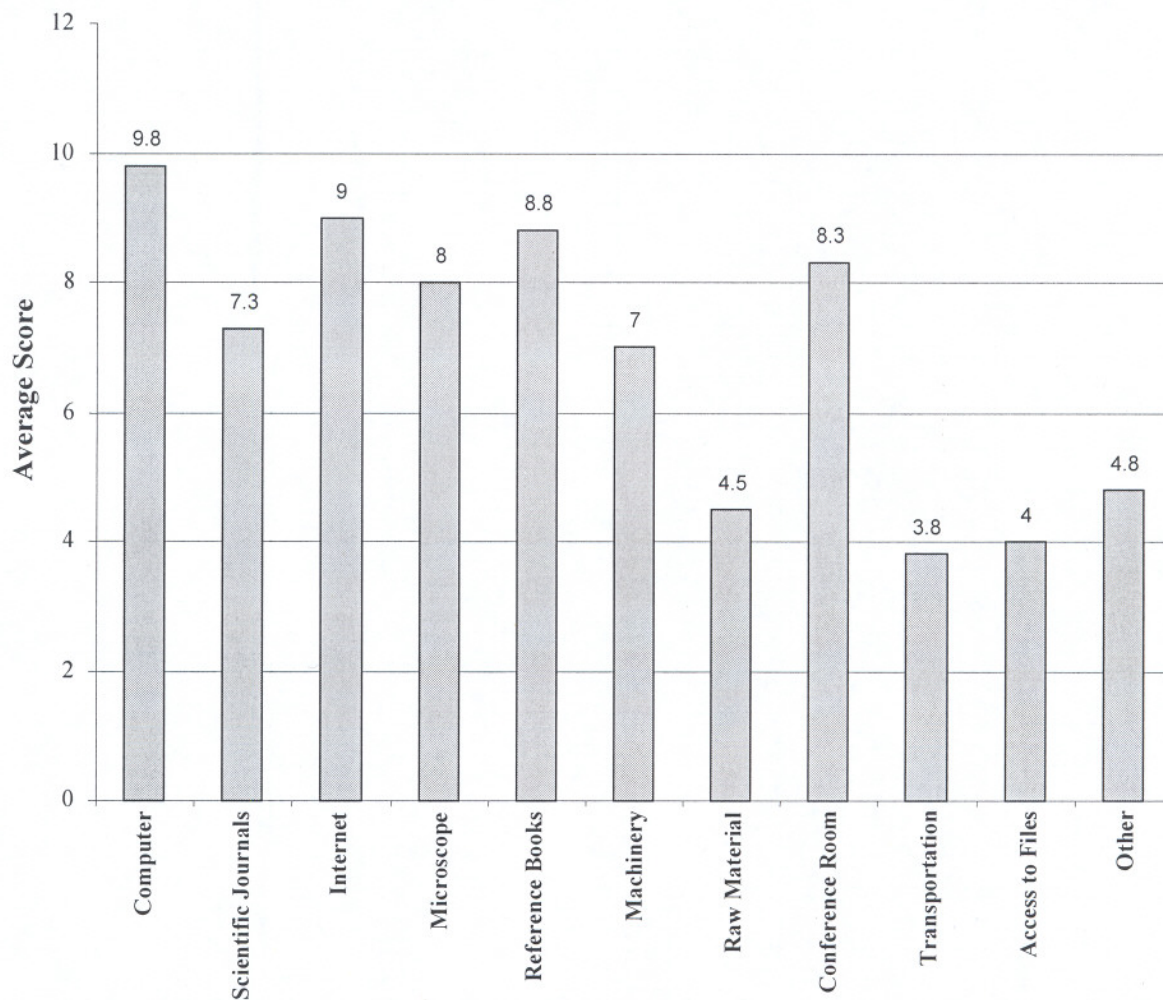
## Discussion

According to our results, each faculty member has, on average, conducted one research project during the three year period (2000-2002). Their main research activities were supervision on and consultation for students' dissertations. Since research activities in educational hospitals

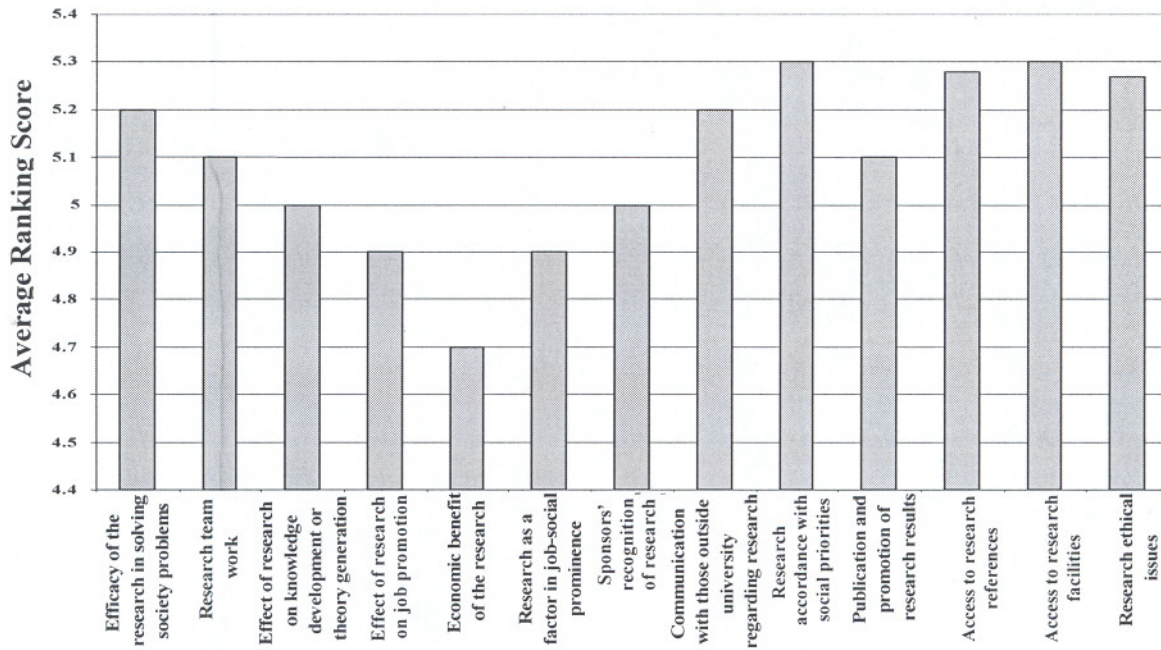
**Table 4.** Comparison of job satisfaction level, expecting benefits from conducting research and research knowledge level among faculties with and without research experience

Variable	With research experience		Without research experience		P-Value
	Mean	SD	Mean	SD	
Job satisfaction level	57.0	14.28	51.92	18.51	0.099
Expecting benefits from conducting research	60.51	10.45	57.67	12.82	0.192
Research knowledge level	54.71	11.28	48.66	14.74	0.014

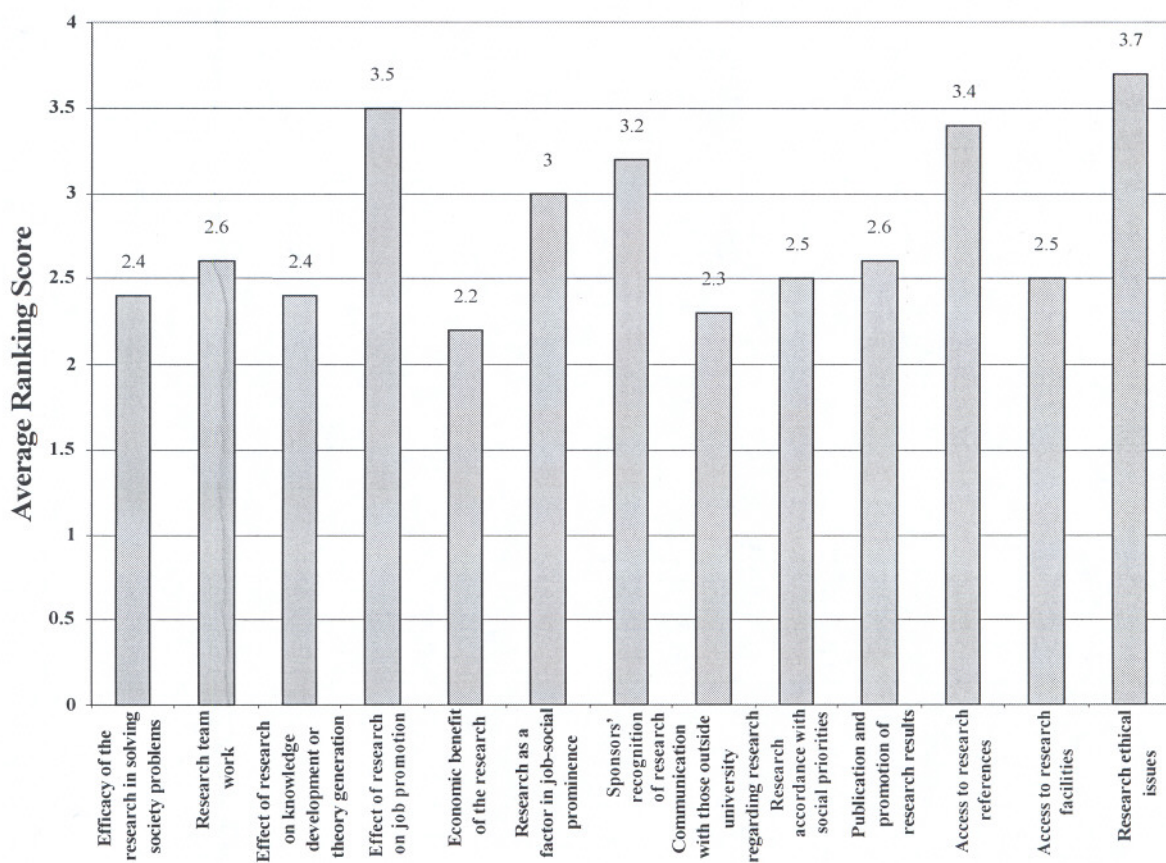
**Figure 1.** The status of research resources and facilities in Tabriz Medical University according to the views of faculty members



**Figure 2.** Faculty members' expectations of research benefits in Tabriz Medical University



**Figure 3.** Faculty members' evaluation of the current benefits of conducting research projects



was lower in Norway than in other Scandinavian countries, a study was performed to determine the factors influencing faculty members in conducting research projects. The study revealed that 83% of the faculties did not have enough time to work on research projects, which is similar to what our study shows. The study showed that clinical research units, which were established to promote research in Norwegian hospitals, were not adequate to achieve such a goal (6).

Lack of research budget was one of the problems that researchers mentioned in the present study. Most developing countries do not allocate enough resources to research, and researchers cannot rely on these governmental resources due to economic constraints and rapid changes in managerial positions. Bureaucratic mechanisms also delays budget approval and allocation processes so that the researcher gives up working on his/her project (3).

According to the faculties' opinions, finding a research question and prioritizing these questions is the first step in conducting a project. This should be done by faculty members and researchers; therefore, priority-setting is a mission which should be accomplished by those who are involved in the process themselves. The importance of this process is much more evident when resources are to be allocated. Priority-setting and research planning can help all countries in promoting health level, allocating research resources and increasing research capacities (7). Faculty members of Sydney Nursing School, also, believed that the first step in improving the quality of research projects is need-assessment and analysis of research requirements and priorities (8).

In the present study, faculties also believed that if research resources increase, researchers greet projects more warmly; the most important resource in this regard is access to Internet and professional libraries. Lack of budget, lack of communication among universities, and uselessness of research projects in solving social problems were other reasons why faculties are not interested in conducting research.

It should be noted that applying research results

for the society always has some barriers, and this is true in all countries. Lack of culture of research among managers and decision-makers, deficient information system, low quality of projects especially in implementation process, and inconsistency between research topics and social and organizational needs and problems are barriers to be noted (1).

Although faculty members of Tabriz Medical University mentioned that economic profits is their lowest interest and priority in conducting research projects, Blancharou believes that financial benefit is a factor in motivating professionals to get involved in research projects (9).

According to International Foundation for Science (IFS), research activities are inferior to educational and service-provision activities in the Third World, because faculties and researchers don't have job security in these countries (3). On the other hand, in developed countries such as the UK, the most important factor in evaluating faculties and clinical departments is the number of papers they publish in respected international journals; that is why faculties spend most of their time for research, and education and clinical service are their second priority. These countries, however, also recommend that faculties should be trained and evaluated for all these three fields, and their promotion and payment must be based on their performance in all of them (10).

The most important finding in our study is that the level of faculties' capability in conducting research projects is 59.1%, which casts doubt on whether any project can be technically and cognitively acceptable, even if priority-setting and resource allocation are done right.

On the other hand, technical problems can be solved by departmental cooperation and team-work; however, our study showed that cooperation in conducting research is only 52.4% among different departments, which is not high enough to compensate for technical and professional problems.

Overall, Tabriz Medical University faculty members believed that personal factors such as lack of time, lack of knowledge and skill, and

problem-finding are more important in not conducting research projects than intra-organizational factors such as delay in project approval and lack of knowledge about research priorities.

Dyer and Stem, also, found that the main organizational barriers for researchers are lack of time, lack of resources, lack of departmental cooperation, work pressures, and lack of feedback; while the most important personal factors are lack of skills and experience, lack of motivation, and excessive professionalism which prohibits new comprehensive approaches and views (11).

Most of our examinees believed that since they spend most of their time for education and clinical service provision, they don't have enough time for research. Bernardin, however, states that faculties can fulfill their educational responsibilities only if they are good researchers and apply their research results in their instruction (12).

As Table 2 shows, faculties with research experience are more optimistic than those without such an experience about the actual benefits and applications of research in education and clinical settings. This is in accordance with Fish and Eisen's Theory (13).

Moreover, access to research facilities was easier for and higher among faculties with research experience. Other studies also show that access to information in any specific field makes one to continue one's activity in that field (14).

The extent of departmental cooperation was not statistically different between faculties with and without research experience. This finding may show that this factor is an intermediary variable, and it does not determine directly whether a faculty tries to start a research project or not.

This study had some limitations: we were not able to compare research project qualities; and the results are based on the examinees' self-report which may cause reporting bias. Based on our findings, we recommend that each educational department should have a list of research priorities for itself; group projects should have higher scores; consulting centers should be

founded in each school; and the project approval process and time should be shortened.

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