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Comparison between the Viewpoints of Faculty Members Regarding the Share of Scholarship Functions in Different Disciplines

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Abstract

Background & Objective: Previous research suggests that the type and amount of the activities of faculty members vary depending on the nature of various disciplines. The present study aimed to evaluate and compare the viewpoints of faculty members regarding the share of scholarship functions in different disciplines.

Materials and Methods: This descriptive survey was conducted in 2014. Sample population consisted of 1,200 faculty members at Shiraz University of Medical Sciences and Shiraz University, Iran. Based on Morgan’s table, 300 members were selected as the research units, and 265 questionnaires were completed. Data were collected using a researcher-made questionnaire with 37 items, which were scored based on a Likert scale. Content validity and face validity of the questionnaires were assessed by five experts, and the reliability was confirmed at the Cronbach’s alpha of 0.91. Data analysis was performed using ANOVA.

Results: In all disciplines, research had the highest share, and commitment in research (engagement with the community) had the lowest share. Share of research in the disciplines of engineering, basic sciences, and basic medical sciences was higher comparatively ($P<0.05$). In addition, the optimal status profile in the disciplines of engineering, pure basic sciences, and basic medical sciences had more significant associations, with an inclination toward scholarships. On the other hand, the profile of humanities, paraclinical sciences, and clinical medicine were more inclined toward education.

Conclusion: According to the results, share of the scholarships varied depending on the nature of the disciplines, which should be taken into account in the regulations and modifications of the evaluation systems for faculty members.

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Introduction

In the literature of higher education, the functions of universities and scholarship fields have been classified into various categories. Scholarship of discovery or ‘original research’ is defined as the discovery of new knowledge with the aim of achieving a better understanding of the world, which is essential to the dynamics of universities and scientific circles. Research activities in specialized fields broaden the horizons of knowledge, serving as a definition of the application of discoveries (1-4).

The research liaisons of professors and students at the time of theses and dissertations result in the production of new knowledge, original research, improved critical thinking in students, and a sense of perseverance in sciences. Some examples of discovery scholarship are presenting research articles in scientific journals and national and international conferences, and proposing a new theory of invention (1, 4).

Teaching and learning are a set of scholarly innovations to promote learning (5, 6). Every faculty member might be a good teacher, which manifests as the art of teaching in the form of the teacher’s activities to enhance learning in students (7, 8); however, this is not sufficient to guarantee learning, since this level of teaching is merely based on specialized knowledge of contents. To achieve the scholarly function of teaching and learning, a faculty member must acquire specialized knowledge and master the teaching contents. Other necessary skills in this regard include class management, communication with students, educational design, graphic design, conflict management, economic development, political analysis (9, 10), curriculum development, and applying distant learning (11).

Allan and Field believe that scholarly teaching is a type of wise contemplation of the teaching and learning process, which is beyond the realm of the class (12). With respect to the scientific function of teaching and learning, the knowledge and experience of teachers compile throughout years and are not restricted to the teacher, but rather to the ‘social capital’ as stated by Boyer (1); this knowledge must be made available for use, criticism, and revision (13, 14).

Scholarship of integration has become increasingly important in recent decades. Scientific and technological advances have enabled access to extensive knowledge of various fields, which may be short-lived due to the rapid change of information. Therefore, assessment and integration of diverse components of knowledge, which have become separate through specialization and constructing new knowledge, are among the major necessities of modern scientific circles (1, 4). In addition to the evaluation of knowledge, communication and constructivism are inherent elements of integration. In this function, faculty members must overstep a specialized discipline and search for the connections between the conducted researches within or between various disciplines (4). Basically, science must be viewed in a broad sense in order to discover the associations of events without restriction to a specific field of specialty (5). Some examples of integration are meta-analysis, systematic reviews, book authorship, interdisciplinary activities, producing decision-making and policymaking documents, scientific manuscripts and critiques, and writing references (12, 15, 16).

Scholarship of application is based upon the belief that produced knowledge becomes valuable when it is applied. Although discovery and integration aim to search for and create disciplinary and interdisciplinary knowledge, application scholarship is concerned with using the produced knowledge and its benefits. Scholarship of application indicates the accountability of universities to the usability of the produced knowledge as opposed to its other functions. In this regard, the issue is the extent to which the produced, transferred or integrated knowledge in universities could be applied for problem-solving (17).

Engagement scholarship is a newer field of scholarship, which aims to strengthen the bonds between universities and community. Several studies have assessed the importance of the attention of universities and higher education institutions to the major issues of the community (18-22). Experts believe that universities should not only determine their approaches with commitment to solving community issues, but they should also be able to adopt strategies to facilitate direct interactions with the public and simplify specialized knowledge for public understanding. Paying attention to the social application of the engagement of universities with the community highlights the excessive specialties and research projects since World War II, with faculty members defined only as ‘specialists’, which is the root of the distance between universities and the community (23).

In a book entitled “University, Scientific Thinking, Innovation, and the Public”, Paya emphasizes on the key role of universities in increasing public knowledge. Some of the examples of the connections between universities and the community include events and festivals, exhibitions, communications with schools and media, raising awareness through public media, annual competitions to select the best authorships and translations of scientific books for 'public understanding', general lectures, publication of periodicals and non-specialized journals with brief messages, interactions with people in science-recreational parks, and establishing halls of scientific communication with the community (24). In this article, the term 'commitment' has been used to refer to the engagement of universities with the public.

Considering the variety of the concepts in the functions of universities, studies have indicated that research applications have long been superior in the evaluation and promotion systems of faculty members, so that functions such as the teacher's role, service provision or interaction with the community have occasionally been overshadowed by the publication of scientific articles (1, 25, 26). In higher education, challenges of research versus education, community orientation versus specialty orientation, and general interdisciplinary approach versus specific specialty orientation have a long history. However, after the publication "Scholarship Reconsidered" by Boyer, the academic society was encouraged to modify the functions of scholarship (1). Initially, the process was focused on elaborating on the significance of scholarship and teaching-learning as the foremost function of universities as a link between research and teaching in the activities of faculty members. However, universities gradually became oriented toward new obligations, such as the evaluation and management of knowledge and information, accountability toward the community, and developing a common means of communication for specialists and the public. In Iran, a similar pattern has resulted in increasing the number of research articles, especially within the past decade, which has been followed by overlooking the functions of education. In 2008-2009, medical universities in Iran incorporated the concept of educational scholarship into the literature of medical sciences, emphasizing on the pivotal role of scholarly attitudes toward teaching and learning processes on behalf of faculty members (27, 28).

Another issue in this regard is the insufficient attention to the differences in the nature of disciplines and the proportionality of scholarship functions in various disciplines in the evaluation and promotion systems of faculty members. The present study aimed to review the functions of scholarship and evaluate the viewpoints of faculty members regarding the appropriateness of these functions in various disciplines. The objectives of the research were as follows:

1- Identification of the status of the quantitative development in scholarship fields in universities from the perspective of faculty members;

2- Comparison of the current status of scholarship fields based on the differences in disciplines from the perspective of faculty members;

3- Determining the optimal status of development in the scholarship fields of universities based on the differences in disciplines from the perspective of faculty members

Materials and Methods

This descriptive survey was conducted with a quantitative approach in 2014. Sample population consisted of 1,200 faculty members from Shiraz University and Shiraz University of Medical Sciences in Shiraz, Iran. Using Morgan's table, 300 members were selected as the research units. Stratified random sampling was used in proportion to the number of the faculty members in the disciplines of humanities, basic sciences, engineering, and medical sciences. Considering the variety of the disciplines in medical sciences, this field was classified into three categories of clinical medicine, basic medical sciences, and paraclinical sciences.

Data were collected using a researcher-made questionnaire with 37 items and five dimensions of discovery (specialized research), teaching and learning, knowledge integration, knowledge application, and engagement with the community. The main question raised in the study was the share of each dimension in the activities of the professors within the past three years.

Items of the questionnaire were scored based on a six-point Likert scale (very high=6, very low=1). Content validity and face validity of the questionnaire were assessed by five experts, and the reliability was confirmed at the Cronbach's alpha of 0.91.

The second section of the questionnaire contained one question, which required the participants to rate their expected (optimal) share of the five dimensions depending on their discipline within a score range of 0-100. Data analysis was performed in SPSS version 18 using one-sample t-test, ANOVA, and Tukey's post-hoc test.

Results

Among the participants, 28% (n=74) were female, and 72% (n=191) were male. In terms of academic status, 12% (n=33) were instructors, 43% (n=114) were assistant professors, 27% (n=71) were associate professors, and 18% (n=47) were professors. Work experience was 3-10 years in 39% (n=103), 11-20 years in 36% (n=95), and 21-30 years in 25% (n=67). With regard to the distribution of disciplines, 18.5% (n=49) were in engineering, 17.4% (n=46) were in humanities, 17.7% (n=47) were in basic sciences, 16.6% (n=44) were in clinical medicine, 15.1% (n=40) were in basic medical sciences, and 14.7% (n=39) were in paraclinical sciences.

According to the results of one-sample t-test regarding the current status of scholarship, all functions of the scholarship were below average (P<0.01), while research was revealed to have the highest function, followed by education, integration, application, and engagement scholarships.

In the evaluation of scholarship functions based on the discipline, the results indicated that all the functions were affected by the discipline (P<0.01). To assess the interdisciplinary differences, Tukey's post-hoc test was used (Table 1). Application of research in humanities was significantly lower compared to engineering, basic sciences, and basic medical sciences, while humanities had a higher integration function compared to the other disciplines (P<0.01). Moreover, scholarship of application had a higher share in engineering compared to the other disciplines (P<0.01).

With respect to the scholarship of application, the information in Table 2 demonstrates that the items about the provision of practical healthcare services had high rates among the participants of the medicine and paraclinical medicine. However, since most of the items in this dimension were related to the connection of industries, universities, and research and development centers, the mean value was higher in the engineering discipline compared to medical sciences.

In terms of educational scholarship, the highest mean value was obtained in basic medical sciences (P<0.05). As for scholarship engagement, the lowest mean value was observed in the pure basic sciences compared to the other disciplines (P<0.01). In terms of educational scholarship, basic medical sciences had the highest mean value compared to the other disciplines (P<0.05).

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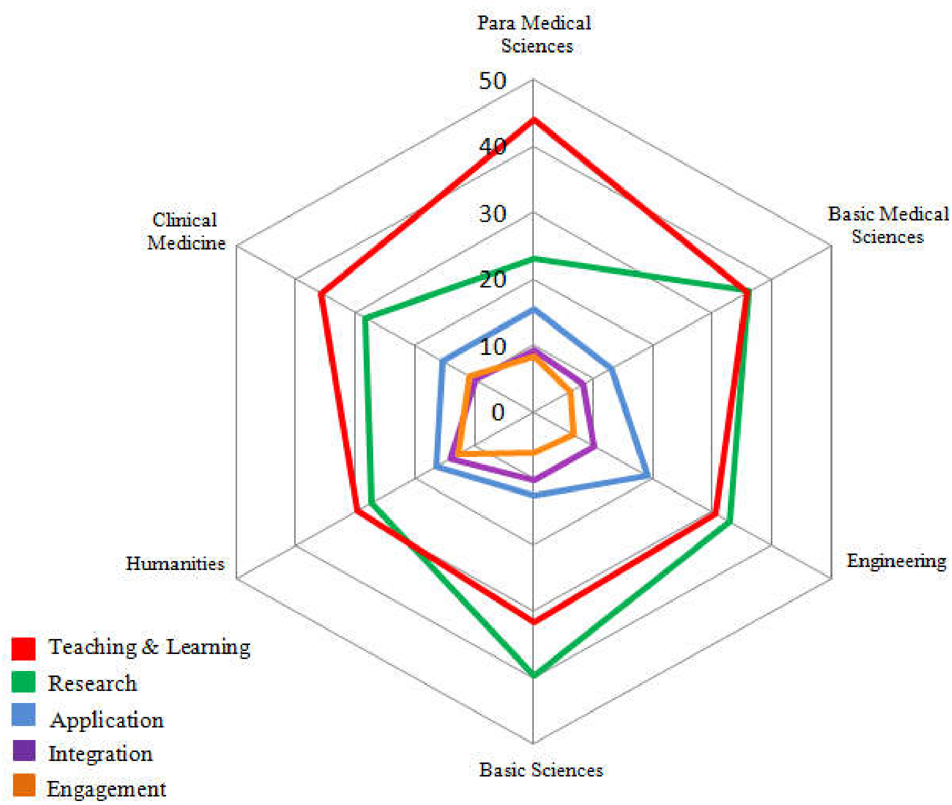
Table 1: The results of Tukey's post hoc test on the difference between scholarship functions and disciplines

Functions	Group 1	Group 2	Mean Differences	Sig.
Research	Engineering	Humanities	0.934	*P<0.001*
	Engineering	Clinical Medicine	0.766	*P<0.001*
	Humanities	Basic Sciences	-0.835	*P<0.001*
	Humanities	Medical Basic Sciences	-0.823	*P<0.001*
	Basic Sciences	Clinical Medicine	0.668	*P<0.001*
	Basic Sciences	Paramedical Sciences	0.529	*P<0.001*
	Medical Basic Sciences	Clinical Medicine	0.655	*P<0.001*
	Medical Basic Sciences	Paramedical Sciences	0.516	*P<0.001*
Integration	Humanities	Engineering	0.593	*P<0.001*
	Humanities	Basic Sciences	0.817	*P<0.001*
	Humanities	Clinical Medicine	0.832	*P<0.001*
	Humanities	Medical Basic Sciences	0.483	*P<0.001*
	Humanities	Paramedical Sciences	0.662	*P<0.001*
Application	Engineering	Humanities	0.935	*P<0.001*
	Engineering	Basic Sciences	1.056	*P<0.001*
	Engineering	Clinical Medicine	0.631	*P<0.001*
	Engineering	Medical Basic Sciences	1.100	*P<0.001*
	Engineering	Paramedical Sciences	0.857	*P<0.001*
Engagement	Basic Sciences	Humanities	-0.759	*P<0.001*
	Basic Sciences	Clinical Medicine	-0.544	*P<0.001*
	Basic Sciences	Medical Basic Sciences	-0.435	*P<0.001*
	Basic Sciences	Paramedical Sciences	-0.447	*P<0.001*
	Engineering	Humanities	-0.215	*P<0.001*
Teaching and Learning	Medical Basic Sciences	Engineering	0.501	*P<0.001*
	Medical Basic Sciences	Humanities	0.424	*P<0.001*
	Medical Basic Sciences	Basic Sciences	0.679	*P<0.001*
	Paramedical Sciences	Basic Sciences	0.679	*P<0.001*

Table 2: The average of scholarship function by the disciplines (Average range: 1-6)

Scientific Fields / Scholarship Functions		SUMS (Medical)			Shiraz University (None Medical)		
		Clinical Medicine	Medical Basic Sciences	Paramedical Sciences	Engineering	Basic Sciences	Humanities
Research	Conduct research projects	3.95	4.08	3.85	3.92	3.53	4
	Patent, discovery, Innovation	1.59	2.72	1.62	3.04	2.65	1.49
	Introduction of a new scientific theory	1.91	2.30	1.67	2.55	3.04	1.89
	Presentation of posters and lectures at scientific conferences	3.67	4.55	4.59	4.80	4.80	4.17
	Print research papers in Internal Scientific journals	3.59	4.10	4.13	4.04	3.67	3.98
	Print research papers in Significant international journals (Pubmed, ISI, Scopus, etc.)	3.43	4.34	3.13	4.41	4.52	2.54
	Advising the Thesis and dissertation	3.63	4.18	3.68	4.63	4.91	4.65
Integration	Letters to the editor, critique of others' articles	2.30	2.52	2.32	2.53	2.22	3.70
	Meta-analysis articles, Omega studies	2.41	2.28	2.26	2.44	1.93	2.65
	Developing an interdisciplinary scientific activity	2.55	3.05	2.69	2.88	2.69	2.87
	Writing a book, text book, or handout	2.18	2.98	2.82	2.71	2.72	3.54
	Delivering an idea to mass production, communication with scientific incubators.	1.63	1.78	1.77	2.61	1.87	1.78
Application	Application and implementation of research results	2.09	1.90	2.16	2.88	1.98	1.98
	Generate a new product (software, hardware, etc.)	1.84	1.93	2.03	2.88	1.76	1.80
	Industry-University activities	1.61	1.67	2.19	3.49	2.13	2.18
	Provision of applied services (health care, engineering, consulting, etc.)	4.73	2.30	3.02	3.22	2.04	2.59
Engagement	General lecture on Radio, Television or Public media	3.66	2.43	2.47	2.12	1.57	2.67
	The publication of the article in the widely publicized newspapers and magazines	2.27	2.12	2.17	2.02	1.38	2.93
	Relationships with K-12 education, high schools, etc.)	1.98	2.10	2.21	2.14	1.68	2.72
	Membership in public associations, nongovernmental NGO, charity	2.41	1.98	1.97	2.04	1.87	2.22
	Membership in councils or cooperation with public and social institutions of the city	1.91	1.95	1.74	2.00	1.52	2.52
	Membership in social networks, blogging, personal site	1.77	1.95	1.81	2.04	1.50	2.09
	Contribute to Open University Day Celebrations, Communicate directly with people	2.43	2.90	2.77	2.67	2.43	2.33
	Write a Public book for students and people	1.61	1.78	1.97	2.00	1.65	2.31
	Activities that have addressed the main problem of people in the city	2.11	2.02	2.03	2.17	1.70	2.31
Teaching and Learning	Publishing an article on educational experiences as a teacher	2.25	2.15	2.30	2.10	1.67	2.80
	Contributing to the internal evaluation of a discipline, institution or department	3.02	3.45	2.90	2.55	2.45	2.56
	Applying a new method of teaching or evaluating a student in a class	2.93	3.08	2.77	2.63	2.60	2.48
	Developing or participating in curriculum development or study guide	3.36	3.60	3.12	2.69	2.83	2.72
	Review, and modify curricula or educational programs	3.05	3.50	3.33	2.63	3.00	2.87
	Presentation a lecture in Seminars or Faculty Development programs	2.39	2.72	2.74	2.24	1.96	2.39
	Participate in conferences in the field of education	2.27	2.67	2.68	2.35	1.82	2.67
	Collecting and recording management experience as a teacher or manager	1.77	2.10	2.13	2.06	1.52	2.04
	Writing faculty experiences for other peers or students	1.68	1.92	1.64	1.76	1.52	1.93
	Participating in e-learning programs, launching a virtual course, etc.)	2.14	2.95	2.13	2.82	2.07	2.30
	Upgrading and documenting an educational or managerial planning	2.16	2.63	2.31	2.22	1.89	2.11
	Provide educational innovations	2.33	2.67	1.97	2.08	1.91	2.09

In addition to evaluating the viewpoints of faculty members regarding the functions of scholarship in universities, a short question was added to the questionnaire to rate the optimal status of scientific functions, based on the discipline within a score range of 0-100. The findings are illustrated in Diagram 1.



Graph 1: The expected Scholarship functions from the viewpoint of faculty members in different disciplines

In the engineering discipline, the main priorities were research, teaching, application, integration, and engagement scholarships. In the humanities, the priorities were application, teaching, research, integration, and application with engagement scholarships. As for basic sciences, disciplinary priorities were research, teaching, application, integration, and engagement scholarships. The priorities in clinical medicine were teaching, research, application, and integration with engagement scholarships. As for the basic medical sciences disciplines, the priorities were teaching with research, application, integration, and engagement scholarships. Finally, the faculty members of paraclinical sciences mentioned teaching with research and application scholarships, followed by integration and engagement scholarships as the main priorities of their disciplines (Diagram 2).

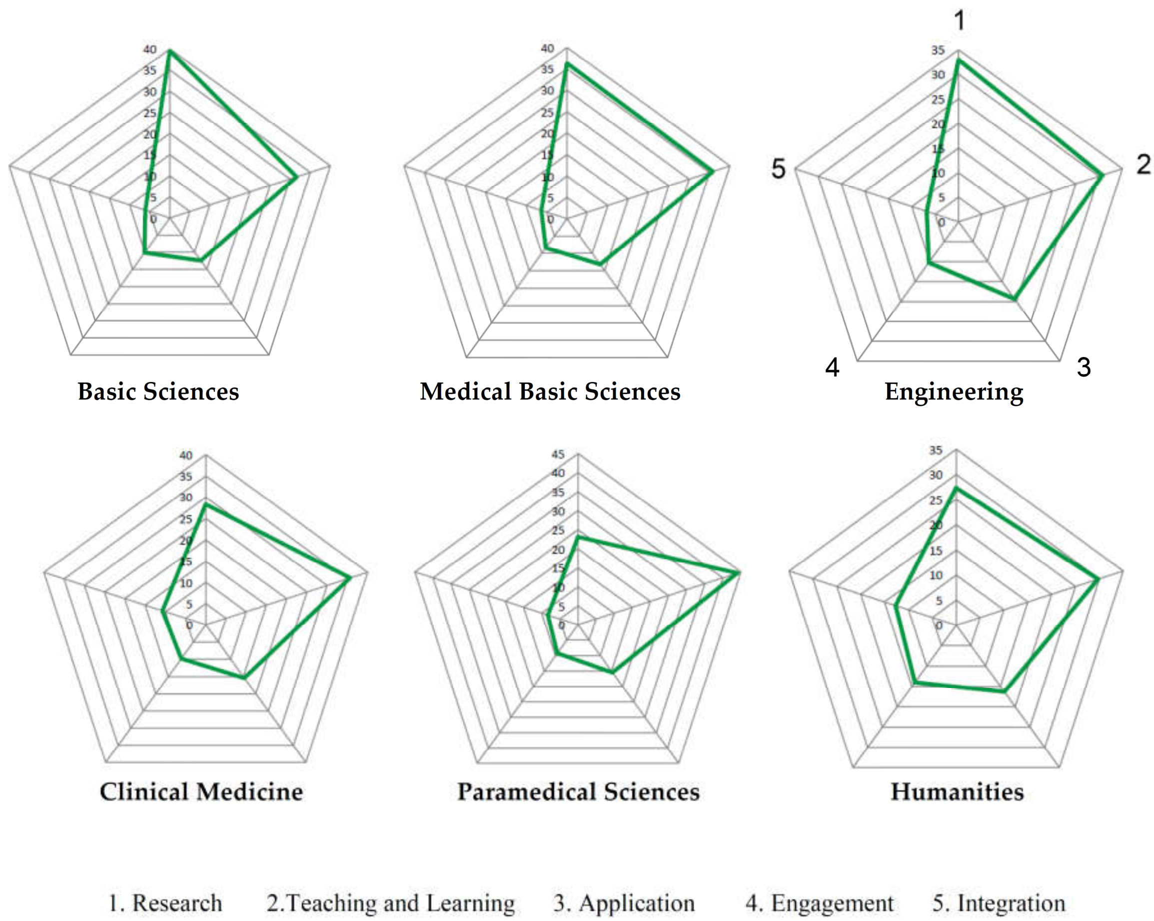


Figure 1: Comparison of the expected scholarship functions from viewpoints of faculty members in different discipline

Discussion

According to the results of the present study, the function of discovery (research) significantly surpassed other scholarship functions with the highest mean value, followed by teaching, integration, application, and engagement scholarships. This is consistent with researches by Boyer (1), Carnegie Foundation (26), Marquez (3), and Simpson et al. (33). It seems that this finding mostly stems from the evaluation and promotion systems of faculty members.

According to Winter, faculty members become committed to the scientific functions of teaching and learning, when they value their promotion system in higher education institutions (34). Another reason for the lack of tendency in faculty members to other activities compare to research could be the measurability of research and ambiguous measurement of other fields.

According to Subaru and JaGarten, the majority of faculty members, especially clinical members, consider the criteria of teaching and learning functions as well as commitment to the community ambiguous and subjective, compared to research (35). In general, several studies have confirmed that in clinical medicine disciplines, the definition and evaluation of scientific activities must be revised. Along with the integration of all the scholarship functions, the mechanisms of evaluation and promotion should also be respected in all scholarships (36-38).

Another reason for the dominance of research over the other functions of scholarship could be time constraints and preoccupations of faculty members. In this regard, the findings of Peterson et al. have indicated that clinical faculty members have less time for teaching and learning activities, since their time is mostly dedicated to the treatment of patients; therefore they are not able to adhere to new scholarship and education policies and regulations and prefer spending their time on the common methods of evaluating faculty members, based on the production of articles (4). Considering the affiliations of the medical universities in Iran with health care and heavy workload of healthcare teams, there is inadequate time for research activities.

In the present study, among the disciplines of the medical university, basic medical sciences had the highest share of teaching and learning (educational) scholarship. This finding is justified considering the limited clinical practices compared to clinical medicine. On the other hand, non-clinical disciplines of the universities affiliated to the Ministry of Health showed low levels of educational scholarship, despite their extensive clinical practices. This discrepancy could be due to the infrastructures required for the development of teaching and learning scholarships in educational development centers. Furthermore, the nature of the discipline is a significant determinant of its scientific outputs.

According to the comparison of the current status of scholarship functions based on the differences in disciplines, our findings indicated that the nature of the discipline influences the development of scholarship functions. This finding is consistent with the results of the previous studies in this regard, since academic disciplines are different socially and cognitively and involve specific frames of thought and conventions (39-43). In this regard, Del Faro believes that the world of academic disciplines has diverse cultures, and the faculty members should incorporate the culture of their discipline into their threefold task (research, teaching, and services) (44).

According to Biglan and Simpson (in line with the perspective of Biglan), the type of scientific outputs is influenced by the nature of disciplines (40, 45). Biglan classifies his discipline based on three degrees of flexibility (simple/tough), applicability (practical/pure), and communication with living organisms (relevant/irrelevant to living organisms). Accordingly, pure sciences (e.g., chemistry, mathematics, physics, and engineering) have a solid structure and are of a robust nature, which makes them suitable for the precise methodologies used for the scientific findings. On the other hand, the level of robustness is comparatively lower in humanities, which leads to possible changes (40).

In he current survey, the function of engagement scholarship was higher in clinical medicine, humanities, and paraclinical sciences compared to pure sciences, which is consistent with the study by Dobernik, who reported that the professors of practical disciplines (alive and tough) were more involved in community-based scholarships, compared to the professors of pure disciplines (soft and non-living). Furthermore, the researcher stated that the share of faculty member activities was higher in the engagement scholarship in practical and live disciplines (e.g., medical sciences) compared to pure disciplines (e.g., pure basic sciences) (42, 43). In the study by Dobernik, community-based commitment was reported to be higher in practical disciplines compared to pure disciplines, which is in line with the results of the present study regarding the function of engagement scholarship. Another difference among the disciplines was the activities in practical settings, which was higher in engineering and medical disciplines in the current research compared to the other disciplines, and is consistent with the findings of Dobernik. In addition, Dobernik observed that the level of interactions with industries and commercialization were higher in tough disciplines compared to soft disciplines, which is in congruence with the results of the present study (42).

According to another study, live disciplines such as sociology, health sciences, women's studies, agriculture and forestry, and educational sciences, were more inclined toward the engagement scholarship compared to engineering and pure sciences. This is consistent with the results of the present study (46). In his dissertation, Binsfeld realized that the professors of humanities, especially educational sciences and sociology, paid more attention to the engagement scholarship, while the faculty members of basic sciences, especially mathematics, placed greater emphasis on specialized researchers (17). It is also notable that in the current research, the responses to the final question regarding the optimal share of each scholarship function mostly revolved around the expected research functions in engineering, pure basic sciences, and basic medical sciences, whereas the disciplines of clinical medicine, humanities, and paraclinical sciences were inclined toward education. Therefore, it could be inferred that basic sciences disciplines have a solid structure, thereby are inclined toward research activities as their main objective. On the other hand, humanities, paraclinical, and clinical medicine disciplines tend to be inclined toward education. As illustrated on the scholarship of application side (clinical disciplines) in Diagram 2, although medical universities are currently involved in practical activities in clinical disciplines, the optimal status demands less of such activities than education. Therefore, it could be concluded that clinical practitioners feel the need for the reduction of clinical practices and increasing clinical education.

Conclusion

Proportionality of the fivefold function of scholarship, including discovery (research), application, teaching and learning (education), integration of knowledge, and engagement, is significantly associated with the nature of academic disciplines. Currently, this issue has been overlooked in the evaluation and promotion systems of faculty members. On the other hand, among various functions of scholarship, research achievements or discovery, these aspects have improved owing to the attention to valuing and enhancing the infrastructures, influencing the evaluation and promotion systems, and development of infrastructures to distribute knowledge. However, it seems that the nature of disciplines affect the inclination toward scientific functions, which necessitates the simultaneous development of all the scientific functions in universities.

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To determine the criteria of the evaluation systems of scientific functions, promotion, and encouragement of faculty members, attention must be paid to the tasks and missions of various disciplines and their nature in order to predict proper infrastructures. Differences in the development of teaching and learning function in medical and non-medical disciplines (compared to non-medical disciplines) could be influenced by the centers for the development of medical education, which are currently active as specific organizations affiliated to the deputy of education, ministries, and faculties. Therefore, empowerment of faculty members is essential to improving the educational functions in all disciplines.

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