Perspectives

Toward a Model of Institutional Scholarship in Health Professions Education

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Abstract: Using an expanded definition of scholarship that goes beyond the scholarship of discovery (research) to include the scholarship of integration, the scholarship of application, and the scholarship of teaching, this article explains interrelationships among these scholarship types in health professions and specifically dental education. Such interrelationships can lead to meaningful expansion of scholarship especially in the form of translational research, which relies on the development of all four of these types of scholarship. In recent years, health care-related organizations have been seeking ways to expand translational research. At the same time, an increasing number of academic institutions have been considering how to redefine what qualifies as advancing one’s discipline in ways that go beyond mere number of publications and grants to better reflect the faculty member’s overall scholarly effort. These redefinitions and a new attention to scholarly collaboration have led to the concept of a “complete scholar”: one who makes contributions in all four areas of scholarship by collaborating with other scholars, practitioners, and members of the community. Expanding the concept of a complete scholar to that of a “complete institution” is the basis for what we propose as a Model of Institutional Scholarship. This model is exemplified by the Cochrane Collaboration, a gold standard for a complete vision of research on evidence-based health care. In the Model of Institutional Scholarship, an institution can visualize, plan, develop, and orchestrate all scholarship being conducted within its realm, creating collaborations among individual efforts that will enhance effectiveness and the creation of new knowledge.

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In 1990, in a landmark publication, Boyer expanded the definition of scholarship beyond what had previously been recognized. This broader definition went beyond “research,” which Boyer described as the scholarship of discovery, to include the scholarship of integration, the scholarship of application, and the scholarship of teaching in order to reflect the variety of scholarly contributions a faculty member may make during his or her career. These four areas of scholarship have been the subject of much subsequent debate in the educational literature. Some authors have focused specifically on the scholarship of discovery and the scholarship of teaching as the primary recognized types. Other studies have assessed performance across all forms of scholarship using an agreed upon set of standard criteria while yet others have sought a balance between research and teaching so that the faculty member can become a more “complete” scholar.

While the debate continues, the majority of academic institutions continue to value the scholarship of discovery (research) as the most important criteria for determining the value of scholarly work. However, more and more institutions are considering the combined scholarly efforts of an individual that qualify as advancing one’s discipline, beyond just the number of publications and grants. The broad spectrum of all recognized faculty contributions collectively fosters an institution’s effectiveness and thereby its contribution to scholarship. Expanding the concept of a complete scholar to that of a “complete institution” is the basis for what we propose here as a Model of Institutional Scholarship.
Four Types of Health Professions Scholarship

Of the four types of scholarship in health professions education, the scholarship of discovery is the original research in basic or clinical sciences “that expands or challenges current knowledge.”

It is considered by most institutions as the highest form of scholarship and is often critical for faculty members’ promotion and tenure. Discovery, as the name implies, encompasses a wide range of research activities including data collection, analysis, and publication of findings, as well as scientific hypothesis testing and the interpretation of results.

The scholarship of integration, the second type, was originally described as “making connections across disciplines,” but has been expanded to mean “integration requiring innovative thinking to be able to integrate knowledge from different disciplines and create new and different perspectives on significant ideas and theories.” This type of scholarship includes not just an individual scholar’s interdisciplinary research but collaborative efforts among scholars from different disciplines to incorporate concepts and ideas into meaningful and workable outcomes. The scholarship of integration may have been previously marginalized, but in recent years, there has been increasing focus on interprofessional education, a form of scholarship that is gaining recognition as it addresses community issues at both the individual and society levels.

The scholarship of application, the third type, emerged from the critical concept that the application of knowledge must, at some point, serve the interests of the larger community. The main goal of scholars working on application is to link other forms of scholarship to practice by engaging the community. For this reason, the scholarship of application has also been called the scholarship of engagement.

Similar to shared efforts found in other types of scholarship, this form of collaboration involves a bringing together of learning, research, and practice while involving in the process community members who may be more knowledgeable than the scholars on specific issues. One of the challenges in this type of scholarship is the extent to which the institution will see it as an effort that can be rewarded.

The scholarship of teaching, the fourth type, is based on the acknowledgment of teaching as a comprehensive, intellectually challenging process rather than as mere instruction or the transfer of information. As teachers broaden their means of instruction and link teaching with learning outcomes, they advance along a continuum toward scholarly teaching and subsequently into scholarship of teaching. The scholarship of teaching refers to the use of defined scholarly criteria and an organized structure of pedagogical understanding with measurable outcome assessments that are peer-reviewed and published. It is based on the premise that pedagogical knowledge and its application are forms of intellectual inquiry.

The scholarship of teaching requires a variety of methodologies, including lectures, laboratories, clinical/small group teaching, mentoring, and educational administration. All of these instructional methods aim to achieve effective student outcomes, including critical thinking and active learning. This type of scholarship covers such a wide spectrum of activities that some view it as encompassing the categories of discovery, integration, and application.

The challenge is in measuring the efforts in order to distinguish among teaching, scholarly teaching, and the scholarship of teaching.

The scholarship of teaching has been the subject of much attention and debate in the educational literature. Individuals who have dedicated their academic careers to the scholarship of discovery often dismiss the scholarship of teaching as not measuring up to the standard of scholarly work, and most institutions have traditionally ascribed little or no value to this form of scholarship, especially regarding the assessment of a faculty member for tenure and promotion. As a result, some organizations have attempted to elevate the scholarship of teaching and help skeptics to better understand its rigor and value. The Carnegie Academy for the Scholarship of Teaching and Learning (CASTL), for example, was launched in 1998 with the express purpose “to broaden the reach and depth of the scholarship of teaching and learning.” On a more global scale, the Scholarship of Teaching and Learning (SoTL) movement was launched to promote the scholarship of teaching. The SoTL philosophy is endorsed by many institutions and organizations, including the American Dental Education Association (ADEA), which has introduced it to its membership.

At the institutional level, Michael D. Smith, dean of the Faculty of Arts and Sciences (FAS) at Harvard University, has recently placed significant emphasis on the scholarship of teaching by making other efforts...
a commitment to “pedagogical and curricular excellence” as FAS’s main goal. Dean Smith’s commitment is unprecedented for a leading academic institution that has traditionally placed much greater value on the scholarship of discovery. Harvard Medical School and Harvard School of Dental Medicine now also recognize the scholarship of teaching as being equal to that of discovery in their faculty promotion criteria. Although many institutions preceded Harvard in this regard, when such a leading research university emphasizes the scholarship of teaching, it signals a paradigm shift. As more organizations and institutions embrace the value of pedagogical innovations, academia can expect to see further, more standardized development of guidelines, matrices, and portfolio formats that can measure this form of scholarship.

Towards Translational Research

Although some have sought to justify recognition of all forms of scholarship, the historical tendency to define scholarship only as research (scholarship of discovery) has resulted in a debate in the academic literature on the value of the other three forms of scholarship (integration, application, and teaching). Much of the debate relates to how the different forms of scholarship are measured in terms of quality. In 1997, Glassick et al. summarized the findings on this subject from a major Carnegie survey of scholars, and Glassick subsequently proposed a criteria-based assessment based on six major themes or standards. Irrespective of the type of scholarship, Glassick argued that all forms of scholarship must meet six critical standards: 1) clear goals, 2) adequate preparation, 3) appropriate methods, 4) significant results, 5) effective presentation, and 6) reflective critique.

Although Glassick’s guidelines are well regarded in academia, the debate is ongoing. Part of the reason is that Boyer’s four areas of scholarship (discovery, integration, application, and teaching) are usually seen in silos (Figure 1) and not necessarily as being of equal value. A great deal of discussion has focused on the balance between the scholarship of discovery and the scholarship of teaching, often described in the literature as “researchers vs. teachers.” Ironically, the other two forms of scholarship (integration and application) are left out of this debate much of the time. However, it is these two forms that best exemplify what is commonly known in health professions education as translational research (Figure 2).

According to the U.S. National Institutes of Health (NIH), “To improve human health, scientific

Figure 1. Independent units depicting Boyer’s scholarship types
discoveries must be translated into practical applications. Such discoveries typically begin at the bench with basic research—in which scientists study disease at a molecular or cellular level—then progress to the clinical level, or the patient’s bedside. In the NIH definition, translational research is a two-way street, from “bench to bedside,” and is thus the bridge between lab work and actual patient care. Translational research is now a focal point of much health-related research and requires collaboration across diverse groups of academicians and practitioners to “translate” basic traditional research into practical real-world applications.

In October 2006, the NIH established a consortium on translation research and launched the Clinical and Translational Science Awards. The consortium members are working together to improve the efficiency and speed with which laboratory discoveries are translated into patient treatments. What began with twelve academic health centers in 2006 expanded to fifty-five centers in 2011 and is anticipated to grow to sixty by the end of 2011. It has also been reported that translational research is of prime importance in the European Commission, with six billion euros budgeted for health-related research. The goal of these programs is to advance, captivate, create, innovate, and synergize multidisciplinary translational research in order for research knowledge to reach populations and individual patients.

The U.S. Institute of Medicine’s Clinical Research Roundtable has divided translational research into separate blocks, later named T1 and T2. T1 research is that in which new knowledge and understanding gained in the laboratory are transferred to new diagnosis or treatment modalities, and T2 research is that in which findings from clinical research are translated into everyday clinical practice. Translational research embodies the interrelationship of Boyer’s four types of scholarship, in which translational block T1 refers to the merging of the scholarship of discovery with the scholarship of integration and translational block T2 is the merging of the scholarship of discovery with the scholarship of application. Other terms are being introduced to describe expertise in more than one area: “community scholarship,” for example, refers to the combination of the scholarship of integration and the scholarship of application.

As an appreciation for these overlapping types of scholarship has grown, the concept of the complete scholar has emerged. A complete scholar is one who gains recognition for contributions in all four areas of scholarship by collaborating with other scholars, practitioners, and members of the community. The challenge for the complete scholar is that although an individual may be able see the application of his or her work in all four areas, it is unlikely that one can develop breadth and depth of expertise.

Figure 2. Overlapping areas between scholarship types
in every area. However, a diverse group of scholars can collaborate to achieve the scope of expertise necessary to satisfy all four areas of scholarship on a topic. Such collaboration will optimize the scholarship being conducted at an institution.

Transition from Individual to Institution

Following Boyer’s model of the four areas of scholarship, in the early career of an academician a single area is likely to dominate and become the focus of his or her scholarship. In research-oriented institutions, for example, a faculty member on the tenure track will devote most of his or her scholarly activities to research (scholarship of discovery). Conversely, institutions that value and have a systematic method for evaluation of teaching may foster the growth of individuals who focus their scholarship on teaching.

Although faculty members typically progress along a single path of scholarship, merging different areas of scholarship (Figure 2) may become more feasible and desirable as the individual matures along a career path. Their scholarship is thus expanded by creating overlapping areas, and the overlapping areas can be diverse, leading to many creative opportunities. Although Figure 2 is simplified, there can be numerous combinations; some common relationships are shown in Figure 3.

For such overlapping areas to be effective, identification and planned overlap of scholarship types should become a specified goal of scholars. Doing so encourages scholars to go beyond their own expertise (discovery) to develop meaningful expressions of knowledge (integration), to seek collaborations with other scholars to involve the community (application), and to ultimately include these elements within the curriculum (teaching). This collaborative model will close the gaps between different types of scholars, increase their overall scholarly activities to include different types of scholarship, and offer greater potential for funding. The components of this model, in combination, will support the growth of the individual as well as the institution and result in the optimal utilization of research, application to educational programs, and patient care. In essence, complete scholars enable all types of scholarship to become translational.

A Model of Institutional Scholarship

To broaden the concept of a complete scholar into that of a “complete institution,” we are proposing a Model of Institutional Scholarship that attempts
to develop this vision into full programs (Figure 4). Ideally, an institution should identify a few critical developments that have the possibility of expanding into all four areas of scholarship (discovery, integration, application, and teaching). The principal premise of this model is to bring people and experiences together, while removing boundaries that have typically resulted in scholarship that may be limiting.

In such a model, scholars with different scholarly concentrations would be brought together to work collaboratively towards more comprehensive efforts, pooling their talents to enhance research, patient care, and education within the institution. This model requires vision, information, planning, and resources to coordinate the efforts of faculty members. It is anticipated that, upon completion of the process, scholars will expand their expertise, understand broader application of their core focus, and create successful and lasting models. These orchestrated collaborations have the potential to support the growth of scholarship beyond individual efforts towards that of the institution or organization as a whole.

**An Example of the Model**

The Cochrane Collaboration exemplifies this Model of Institutional Scholarship. The collaboration’s working model embraces Boyer’s types of scholarship toward the goal of promoting evidence-based health care (Table 1). Moreover, the inclusion of all of Boyer’s types of scholarship allows the collaboration to accomplish its goals.

The Cochrane Collaboration recognizes and compiles research (discovery). Through systematic reviews, clinical questions are answered, and the information is made available to enhance the clinical practice and inform policy makers (integration). The knowledge gained is applied to patient care (application), and the collaboration’s vast database enhances and supports educational curricula (teaching). With its goal of contributing to evidence-based health care, the Cochrane Collaboration illustrates the idea of the complete institution as the overlapping areas of scholarship are clearly identifiable (Figure 4). Where all areas overlap at the core, the Model of Institutional Scholarship is realized.

**Challenges of the Model**

The path toward planning and implementing a Model of Institutional Scholarship is not without challenges and issues that may arise. There may be physical barriers as a result of the way most academic environments are structured (physically and functionally) as independent entities that support different types of scholarship. The institutional scholarship model may thus be limited to only a subset of the variety of overlapping interests that exist within the

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**Figure 4. A model of institutional scholarship through a planned overlap of scholarship types**
institution. The physical proximity of collaborators to each other is desirable, but the lack of proximity is not prohibitive if online meetings and file sharing are viable means of communication.

Political and territorial barriers are more difficult to overcome. The model can only be effective if consensus toward a common goal is reached among the different groups. To achieve this consensus, the groups’ areas of scholarship must be analyzed and areas of overlap determined to identify working groups and collaborative teams. Effective teams should be synergistic in academic interests and expertise as well as working relationships and schedules. This requires a need for a greater vision with the establishment of a focused goal, like that of the Cochrane Collaboration. Such focus on a common goal will also assist in securing necessary resources to support such efforts as building, maintaining, and managing a collaborative database to optimize efficiencies. The extent to which scholars embrace the blending of scholarship areas under a common vision will determine the degree to which institutional scholarship reaches its full potential.

**Conclusion**

This article has proposed a basic model of institutional scholarship by which an institution can visualize, plan, develop, and orchestrate different types of scholarship being conducted within its realm. This model requires acceptance of an expanded definition of scholarship beyond discovery to include integration, application, and teaching, but will have positive results for individual scholars, their institutions, and the academic field in general.

### Table 1. An effective model of institutional scholarship: correlating the Cochrane Collaboration with Boyer’s model of scholarship

<table>
<thead>
<tr>
<th>The Cochrane Collaboration</th>
<th>Boyer’s Model of Scholarship</th>
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<tbody>
<tr>
<td>Practitioners reporting clinical reports, case series, case</td>
<td>Discovery: individual’s expertise</td>
</tr>
<tr>
<td>control studies, randomized control trials</td>
<td>Integration: meaningful expressions of knowledge</td>
</tr>
<tr>
<td>Systematic reviews to facilitate the choices for clinicians</td>
<td>Application: involve the community</td>
</tr>
<tr>
<td>and policy makers</td>
<td>Teaching: include these elements within the curriculum</td>
</tr>
<tr>
<td>Gained knowledge applied to patients (consumers)</td>
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<td>Evidence-based teaching in curriculum</td>
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### REFERENCES


