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Strategic Approaches to Curriculum Integration for Pre-doctoral Dental Education in an Iranian Research-intensive University Context

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Abstract

Drawing on the scholarship of educational leadership (SoEL), this paper examines strategic approaches to curriculum integration in a pre-doctoral dental program at Guilan University of Medical Sciences (GUMS), Iran. Appreciative inquiry methodology was employed to assess broad contextual factors, best practices and strategic institutional supports within a diverse disciplinary setting. Data suggest that strategically aligned promotion, tenure and reappointment criteria, as well as customised professional development initiatives are contributors to facilitate faculty engagement in effective learning-centred curriculum practices in the pre-doctoral dental program. Furthermore, a networked improvement community grounded in curriculum inquiry is to enhancing and sustaining curriculum integration in this research-intensive university context. Key institutional supports, challenges and strategic applications of curriculum integration are discussed.

Keywords: Dental Education, Curriculum Leadership, Curriculum Integration, Scholarship of Educational Leadership, Appreciative Inquiry, Strategic Institutional Supports

1. Introduction

Framed by regional, national, and institutional contexts, curricular integration, within and across diverse disciplines, presents significant challenges for university program leaders on a global scale. Curricular integration in higher education is part of a larger process of undergraduate and graduate degree program reform. For example, in order to solve relevant, dynamic and complex problems, contemporary curricula in a wide range of sectors (including health sciences) place emphases on student engagement and higher order thinking, including interdisciplinarity and integrated student learning

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experiences, critical thinking, and authentic assessment (Daryazadeh, Faghihi, & Yaghini, 2017; McAndrew, Motwaly, & Kamens, 2015; Pearson & Hubball, 2012; Van der Veken, Valcke, De Maeseneer, & Derese, 2009). Within the Iranian context, dental education has under gone numerous curricular changes to include evidence-based practices in integrated programs. Drawing on the scholarship of educational leadership (SoEL) and Appreciative Inquiry (AI) methodology, this paper examines strategic approaches to curriculum integration in the pre-doctoral dental program at Guilan University of Medical Sciences (GUMS), Iran. The results highlight a number of positive innovations, successful approaches, and strategic opportunities to curriculum integration. We provide a theoretical framework, as well as practical examples within a diverse disciplinary setting.

1.1. Dental education in Iran

During a 30-year period (1982 to 2012) the dental curriculum in Iran has been renewed four times. Reforms began to manage faculty overload and overcrowding problems but have continued to include changes in the structure and design of the dental education program. Issues and controversies facing dental education in Iran have been discussed and addressed in the national scholarly literature (Daryazadeh et al., 2017; Fazel, Jafari, & Khami, 2013; Pakshir, 2003; Radafshar, Sobhani, Sadegh, 2010; Shiranibidabadi, NasrIsfahani, Rouhollahi, & Khalili, 2016; Tabatabaei, Yazdani, & Sadeghi, 2016;). Not surprisingly, international scholarly research has been far ahead of Iran in criticizing and further analyzing the main concerns pertaining to pre-doctoral dental curriculum (Crain, 2008; Field, 1995; Pyle, 2012), four of which may be considered as the impetus behind the current curriculum reform, including 1) poor linkage between basic sciences and students' clinical education, 2) overcrowded curriculum and the resultant students' frustration and 3) less time to develop critical thinking and student-centered learning, as well as 4) a need for approximation of clinical instruction with comprehensive care through integrative, multi-disciplinary rather than isolated departmental instruction.

It is important to note that the Doctor of Dentistry (DDS) curriculum in Iran is planned, developed, and reformed by the Ministry of Health and Medical Education, with institutions having limited freedom to make context-based adaptations and modifications. Up to twenty percent of the 221 overall credits are adaptable to the local context. In 2012-13, the Iranian Ministry of Health and Medical Education (2012) initiated the most recent dental curriculum reform, which introduced a major shift towards integrating dental disciplines both vertically, through connections between theory and practice, and horizontally across disciplines. Further, the government reform mandated medical universities to strategically engage all educational stakeholders in the process of effective curriculum implementation. Although the current curriculum has been rationally redesigned, the readiness of the institutions (macro level), departments (meso level) and

classrooms (micro level) seem not adequately and efficiently scheduled (Hubball & Pearson, 2009).

GUMS is a public university, established in 1984, and consisting of nine schools (Medical, Dental, Nursing, Pharmacy, Paramedical, and Public Health) and eight academic hospitals. The Faculty of Dentistry has 61 faculty members who train more than 500 students (including 50-60 students admitted through the Iranian University Entrance Exam† in each academic year). The dental program is comprised of two years of basic sciences, followed by one year pre-clinical, and three years of clinical studies. The final semester of the program includes an internship in general dentistry. In this learning context, GUMS students and residents are expected to be able to practice independently and demonstrate social responsibility when promoting optimal health while collaborating with other health care professionals for early recognition of oral and systemic diseases (Manakil, Rihani, & George, 2015). Assessment of student learning requires students to complete a dissertation in order to achieve a doctoral degree in dentistry (DDS).

During August and September 2015, the Ministry of Health and Medical Education invited and hosted several multidisciplinary expert panels and universities in Iran, to critically revise and redesign the existing platform for medical and dental education. The participants have been tasked with a ten-year medical and dental education reform with the purpose of training more competent and independent graduates who can critically evaluate and apply knowledge from diverse fields to the real world in order to meet the systemic and oral health needs of the public throughout the twenty-first century.

In terms of curriculum implementation, GUMS faculty of dentistry has recruited increased numbers of junior dental professionals during the last five years, in order to enhance higher teacher-student ratios and the quality of dental student learning experiences, including one-on-one student-faculty mentoring interactions, professional values, multi-task teaching abilities, educational leadership (Chickering & Ehrmann, 1996; Hosseini, Amery, Emadzadeh, & Babazadeh, 2015; Wilson, Sweet, & Pugsley, 2015). Despite greater attention to curriculum policy (including emphasis on dental student learning outcomes) and related faculty recruitment in the GUMS context, very little research has investigated the effectiveness of curriculum integration practices.

1.2. Program renewal in dental education

Dental and medical education reform and strategic curricular development initiatives began in the early twentieth century (Flexner, 1910; Gies, 1926), in the United States and Canada, and continued to evolve from a scientific foundation in the training of dentists and the establishment of formal accreditation processes in the last thirty years

† The Iranian University Entrance Exam, also known as the Concours, is a standardized test used as a means to gain admission to higher education in Iran.

(Howard, Steward, Woodall, Kinsley, & Ditmyer, 2009). Although Flexner (1910) convincingly put forward the importance of creating an active learning environment to challenge students, widespread historical assumptions about dentistry (i.e., microsurgical techniques rather than biomedical and science-oriented approach to treating oral disease) has meant that the adoption of integrated basic and clinical science curriculum and the modernization of courses has been a slow process compared to medical education worldwide (Hendricson, 2012; Nadershahi, Bender, Beck, & Alexander, 2013). In-depth analysis of pre-doctoral dental curriculum, including horizontal and vertical integration of clinical, biomedical, and behavioral sciences, and attention to the context of learning may hold promise in preparing graduates for the demands of evolving practice (Dent, Harden, & Hodges, 2013).

Higher education measures for training competent, caring, and dedicated dental graduates is rapidly changing. According to the World Education News and Reviews (2016), there have been increasing trends in Iranian student mobility and academic collaboration with the North American and European institutions following the recent cessation of international sanctions on Iran. The University of Tehran, the University of Isfahan, and Sharif University of Technology are leading Iranian institutions, which have signed preliminary partnership agreements so far. Moreover, in line with the global trend, DDS programs in Iran have become increasingly competitive. Public institutions and colleges compete with a group of public, private, and for-profit institutions for students, faculty, and funding resources. As a result, policy makers and program planners in Iran prioritize re-structuring of the undergraduate medical and dental curriculum to global standards. Accordingly, the philosophy underpinning current national DDS undergraduate curriculum reform has been a shift from traditional teaching/learning and curriculum structure, to practice integration facilitated by innovative educational practices.

1.2.1. Evidence based practices in dental education

The ways different institutions implement current curricular practices depend very much on their institutional and pedagogical contexts. After three decades, the principles for good practice in undergraduate education proposed by Chickering and Gamson (1987) are still considered foundational guidelines for faculty members, students, and administrators. Frequent contact between students and faculty, both in and out of class, is beneficial for student motivation and active engagement. Students credit increased interaction with the instructors as decreasing their feelings of isolation (Bigatel, Ragan, Kennan, May, & Redmond, 2012). It is suggested that regardless of the teaching format (classroom lecture, simulation, clinical case, self-study, etc.), designing students' learning experiences should be guided by strategic approaches to contextual/situated learning; explicit, implicit, or procedural knowledge; critical thinking; and self-directed assessment (Bassir, Sadr-

Eshkevari, Amirikhorheh, & Karimbux, 2014; Hendricson, Andrieu, Chadwick, Chmar, Cole, George, Glickman, Glover, Goldberg, Haden, & Meyerowitz, 2006).

Literature informed practices frequently advocate four educational innovations to be incorporated in all components of dental (and other health professions) education reform; 1) problem- based learning (PBL), 2) applications of low- and high-complex information technology (Hathaway, 2013; Steinberg, Bashook, Drummond, Ashrafi, & Zefran, 2007), 3) creation of thematically or topically integrated curricula specially for biomedical science, with courses that are team taught across traditional academic boundaries, and 4) teaching evidence-based practice (EBP) by incorporating the teaching of critical appraisal into the patient care and clinical settings.

However, it is the teaching of EBP that is the most frequently adopted strategy. For example, dental educators encourage students to search scientific databases and to critically read and evaluate various resources, instead of relying solely on the clinical experiences of their mentors. Modeling how to evaluate the applicability of the perceived knowledge to the clinical problem or patients is one example of EBP in the Iranian context (Eslamipour & Ghaiour, 2016). In Iran, the level of knowledge of the basic principles of EBP in dental faculties is shown to be moderate (Sabounchi, Nouri, Erfani, Hooshmand, & Khoshnevisan, 2013). However, faculty members' overall interest and positive attitude towards learning EBP is encouraging.

1.2.2. Integrated dental curriculum

Integrated curricula consider the connections between disciplines (horizontal) and the connections between theory and practice (vertical). Additionally, curriculum integration requires consideration of the curriculum as espoused, enacted, and experienced, because the curriculum may not be implemented as originally planned, nor have the expected outcomes (Pearson & Hubball, 2012).

During the last 35 years, dental curriculum in Iran has undergone four reforms; 1982, 1988, 1999, and 2012, respectively. National and institutional research about the long-term outcomes of the 1999 dental curriculum is the impetus for the most recent reforms. Drawing on Fogarty's definition of operationalized models of integration (Fogarty, 1991; Fogarty & Stoehr, 2007), Iran's reformed dental curriculum includes courses that follow the single discipline, in the form of connected model, and courses that fit into the multiple discipline, and follow either sequenced, webbed, or integrated model (Table 1).

Table 1. Operational definitions of models of integration

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Model	Operational Definition
Single Discipline	
Fragmented	Focuses on a traditional pedagogical approach in which subject matter and/or courses are disconnected. Subject matter is linked only by coincidence.
Connected	Subject matter within a single discipline is connected from course to course. Key concepts taught in a course lead to concepts within a subsequent course.
Nested	Multiple skills are taught within a single course.
Multiple Discipline	
Sequenced	Topics within a single department/discipline are arranged to coincide with one another.
Shared	Faculty within a single department/discipline do team planning and/or teaching in which overlapping concepts emerge.
Threaded	Skills are taught in a specific order as they feed into the next topic or skill within and across departments/ disciplines.
Webbed	A common theme serves as a basis for instruction within and across departments/disciplines.
Integrated	Interdisciplinary approach in which faculty do team planning and/or teaching both within disciplines and across departments.
Learner Models	
Networked	Courses are taught so that students are required to integrate content that leads to external networks in the field of dentistry.
Immersed	Courses are student-centered so that the learner filters the content and becomes immersed/absorbed in his or her learning experience.

Sources: Based on Fogarty R. Ten ways to integrate curriculum. Educational Leadership 1991;49:2; and Fogarty R, Stoehr J. Integrating curricula with multiple intelligences: teams, themes, and threads. 2nd ed. Thousand Oaks, CA: Sage Publications, 2007.

The single discipline courses are offered mainly as traditional classroom teaching, while the later is indicative of a learner model in which the students are actively involved in the learning process and experience problem-solving, critical thinking, and clinical reasoning in a chair-side teaching environment. This is primarily in clinical courses, where students work with a facilitator (clinician teacher) in small groups, and there is always a patient, case, or specified clinical situation being assessed. This poses a specific challenge for educators at GUMS as the dental education program is being implemented using two different models at the same time. As learners acquire competencies over time, progressive and integrated curriculum implementation would make the most sense. (Mortaz Hejiri, Gandomkar, & Mirzadeh, 2015; Davis & Harden, 2003).

Strategically aligned institutional and Faculty-level faculty development initiatives/processes (including leadership practices) seek to foster an effective and sustainable dental program in Iran, which is not clearly addressed in the national literature.

1.3. Faculty development initiatives to support program renewal

In the classic research model for faculty development in the medical literature, as described by O'Sullivan and Irby (2011), there is a linear relationship between faculty initiatives, trainees, and patient care. The sequence has multiple sectional outcomes with improved health care being its final output (Figure 1).

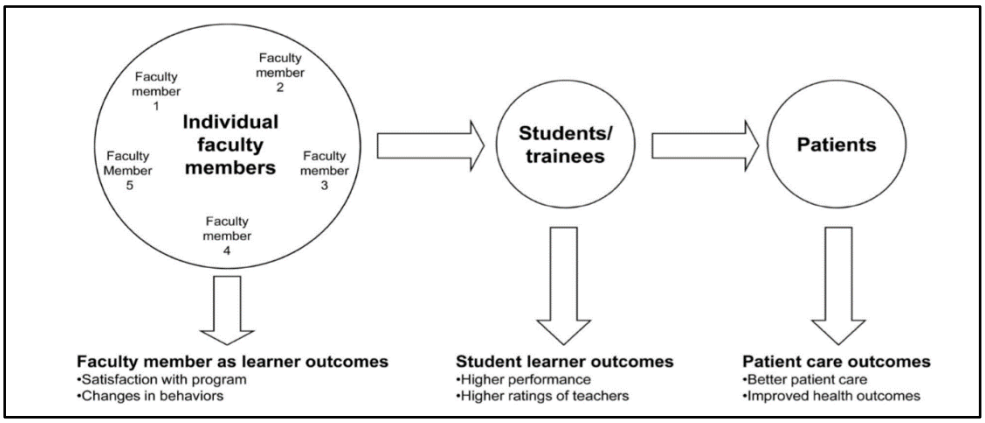

Figure 1. Classical model for faculty development in health professions (O'Sullivan & Irby, 2011).

O'Sullivan and Irby (2011) expanded the traditional model of faculty development and articulated that the overall process of faculty development as a social enterprise. In this society two basic communities of practice, the smaller faculty development community and the larger classroom/workplace or clinical community, interact through their related components (Figure 2). Each of the four components of faculty development community is related to a teaching component in the workplace and interact with each other to bring about the desired change at all levels of educational practice within organisations.

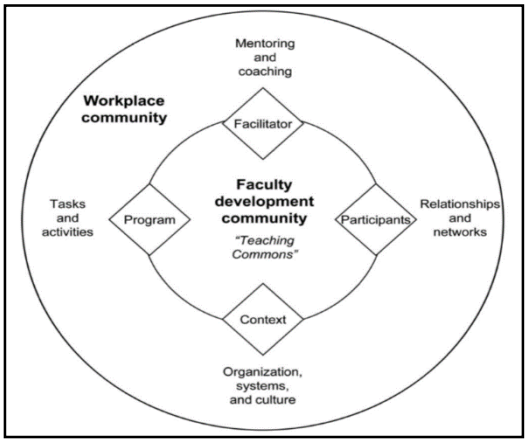

Figure 2. Expanded model of faculty developing in health professions (O'Sullivan & Irby, 2011).

Although faculty development has different descriptions in the literature, an implicit consensus on the themes is evident: a strategically planned and evidence-based effort towards change, which begins with, but is not limited to, faculty self-assessment/reflection. In reflective practice, practitioners consider the philosophy underpinning their curricular and pedagogical choices, but also assume that there are many models for good practice (Hubball, Collins, & Pratt, 2005).

Despite persistent calls for reflective practice, there is a need for more standardized, well implemented, and assessed educator development programs in medical and dental schools in Iran. For example, Khosravian, Moonaghi, Yazdani, Ahmadi, and Mansoorian (2015), have suggested that a comprehensive curriculum plan for management and leadership in general medical practitioner discipline in Iran should be considered. Shiranibidabadi et al. (2016), articulated that the distinguished professors of technology in Iran believe that effective pedagogical practices should take a mixed (teacher-centered, as well as student-centered) approach. However, there are some important barriers such as inadequate and/or inconsistent promotion policies for educational initiative practices, need for recruiting educational assistants or teacher assistants, ignorance towards reflective teaching, and infrequent use of course plans.

A key factor for achieving creativity and lasting change within organizations is to move from strict top-down management in hierarchically arranged structures to a healthy human relations environment in which the reciprocal needs of the organization and the individual are met (Crain, 2008). Yet, without sustained institutional support, leadership, financial support, human resources, and faculty buy-in (Lancaster, Stein, MacLean, Van Amburgh, & Persky, 2014), building a culture of acceptance for change within a legitimate time frame becomes unpredictable and any efforts for professional development leads to superficial or trivial change (Crain, 2008). Curriculum renewal requires individuals to lead the change, and faculty development programs to have the potential to prepare current or future leaders to implement new curricula. Several authors have noted the need to address leadership skills with specific faculty development activities (Farmer, 2004; Jolly, 2002, Steinert, Mann, Centeno, Dolmans, Spencer, Gelula, & Prideaux, 2016).

Dental faculty at GUMS have recently focused on establishing an infrastructure to support and align sporadic professional development endeavors and set plans for achieving short and long-term goals for educational best practice of the faculty. In alignment with the current Iranian national guide to reappointment, promotion, and tenure (Ministry of Health and Medical Education, 2015), in which educational excellence (including scholarships) is ranked equally to the scholarly research in faculty member's primary field, GUMS is planning to foster more sophisticated educational training for faculty. Initiatives such as national or international scholarships, help to build a strategic vision about career development and institutional values and expectations.

Recognition and rewards aimed at faculty members' educational achievement and innovation is gaining more attention and meaning among dental faculty of GUMS. Motivating faculty to effectively and efficiently enhance their pedagogical knowledge, practice, and skills is becoming a priority in the Dental Faculty of GUMS. Mårtensson and Roxså (2016), use the term "local level leadership", and Hannah and Lester (as cited in Mårtensson & Roxså, 2016), use meso-level leadership to describe leaders (such as Heads of Departments, program directors and /or coordinators, and Deans). These are local

leaders with whom educators discuss their teaching concerns to take their instructions and advice. Such leadership takes place in a socio-cultural context, unique to each institution, where local or meso-level leaders perform a balancing act between their external (institutional) and internal (faculty) mandates.

1.4. The scholarship of educational leadership and program renewal

Integral to the broader process of graduate program reform around the world, the scholarship of educational leadership (SoEL) provides multiple benefits for research-intensive universities (RIUs) and academic leaders with particular educational roles and responsibilities (e.g., innovation in teaching and learning) at various institutional levels. SoEL can help such leaders gain scholarly knowledge and practices to better articulate a strategic vision, set standards for performance, and create focus and direction for their own disciplinary priorities SoEL emphasizes a familiarity with the relevant research literature, and focuses on systematic rigorous inquiry; networked improvement communities; symbolic and cultural changes to the normative context that governs academic work; and dissemination of theory and practice in peer reviewed fora (Bryman, 2007; Grimmett, 2014; Hubball, Clarke, & Pearson, 2016). Diverse perspectives of SoEL are shaped by context-specific frameworks, including cultural (i.e., global, regional), institutional (i.e., university-specific), disciplinary (i.e., signature practices), epistemological (i.e., how we know what we know), methodological (i.e., alignment of the approach with the conditions), and ethical (i.e., confidentiality and anonymity) considerations. In complex RIU contexts with diverse stakeholders and challenges, and varying levels of support, SoEL assists academic leaders to ensure that the whole far exceeds the sum of the individual parts while seeking to better understand, examine, improve, and disseminate evidence-based practice for innovation in teaching and learning in peer reviewed fora (Bryk, Gomez, & Grunow, 2011). Thus, the importance of SoEL in RIU contexts is compelling, especially when one considers that educational leaders are expected to respond to strategic priorities for graduate program renewal with research-informed and evidence-based practices within and beyond the communities they serve.

The following framework has been adapted in diverse higher education settings (Burt & Hubball, 2014; Hubball, Clarke, Chng, & Grimmett, 2015; Hubball, Clarke, & Pratt, 2013).

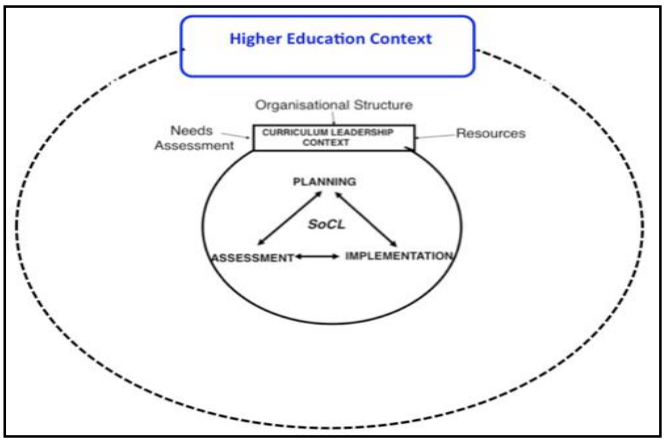

Figure 3. A framework to enhance strategic approaches to the implementation of an integrated in pre-doctoral dental curriculum in the Iranian RIU context

Using this flexible framework, we considered all the factors related to the context in which this project applies, such as relevant literature and other resources, cultural and political configurations, institutional facilities available for achieving an optimal curriculum implementation environment, promotion and tenure guidelines, and strategically aligned faculty development initiatives. In the planning phase, considering all the components of the conceptual framework is the basis for clarifying and discussing key student learning outcomes from the reformed curriculum with all the stakeholders. In the implementation phase, considering all the components of the conceptual framework is crucial to engage experts in curriculum and pedagogical practices, and improve student learning experiences. Assessment strategies are also built upon the components of the conceptual framework to perform authentic assessment of curriculum practices via formative and summative assessments. In addition to increasing policy attention toward curricular integration, SoEL is strategically aligned with RIU mandates and plays a critical role to enhance curriculum renewal and integration within and across diverse disciplines in diverse RIU contexts.

Very little research has examined strategic approaches to curriculum integration for pre-doctoral dental programs in research-intensive university contexts. For the purpose of this study, the following research question was designed to guide this investigation in GUMS's RIU context: *What are strategic ways to enhance curriculum integration for the pre-doctoral dental program at Guilan University of Medical Sciences (GUMS), Iran?* Integral to the primary research question are the following sub-questions (SQs):

SQ1. What are contextual factors influencing curriculum integration in the pre-doctoral dental program at Guilan University of Medical Sciences, Iran?

SQ2. What are current best practices pertaining to curriculum integration in the pre-doctoral dental program at Guilan University of Medical Sciences, Iran?

SQ3. What are strategic institutional and/or Faculty-specific professional development supports to enhance curriculum integration for the pre-doctoral dental program at Guilan University of Medical Sciences, Iran?

2. Methodology

2.1. Research methodology

In order to gather evidence for the above inquiry, appreciative inquiry (AI) research methodology was employed over a ten-month period. AI is a distinctive form of practice-based research methodology with an explicit transformational agenda for strategic visioning to systematically enhance and sustain organizational initiatives (Breslow, Crowell, Francis, & Stephen, 2015; Cooperrider & Whitney, 1987; Sanders & Murdoch-Eaton, 2017).

The fundamental principles for AI suggest that the inquiry should begin with appreciation, should be collaborative, should be provocative, and should be applicable. This type of inquiry assumes that every organization has qualities that are working. AI begins with the identification of positive attributes and then connects those attributes with the community's vision and action for change (Cockell & MacArthur-Blair, 2012). In other words, AI is based on the simple idea that people and organizations move in the direction of what they ask questions about.

AI research methodology is highly generative in nature and consists of a 4-D cycle of phases: discovery, dream, destiny and design. For example, AI research methodology places emphases on strategically engaging curriculum stakeholder representatives (key personnel at the host institutions, administrators, curriculum leaders, faculty, field-based instructors, and students) in a networked improvement community in order to gather relevant contextually-bound data pertaining to 1) factors that influence curriculum integration; 2) best practices for curriculum integration; and, 3) strategic organizational supports for effective and efficient curriculum integration in diverse university settings.

2.2. Data collection

Integral to AI methodology, a purposeful sample of contextually-bound data collection sources were strategically employed at GUMS to gather evidence for the research questions:

- Relevant documentation from GUMS strategic planning documentation 2014-2019 GUMS and College-specific websites pertaining to innovation in teaching and learning; most recent (2015) policy statement and criteria for promotion and tenure appointment released by the Iranian Ministry of Health and Education;

- Focus groups and semi-structured interviews with senior administrators, curriculum leaders, faculty members and students at GUMS;
- Samples of best practices from course syllabi materials; student course evaluation documents review and analysis regarding educational best practices among faculty members, as well as peer review of teaching documents; and classroom observations. EDC documents review and analysis of faculty engagement in educational initiative opportunities during the past three years;
- Reflective field notes from the researchers pertaining to the GUMS Dental Education (May 2016-January 2017), GUMS forum presentations, and workshops on the scholarship of educational leadership. Researchers included the Director of Periodontology residency program, and the Dental Sciences Research Centre, and the instructional team of the *University of British Columbia (UBC) International Program for the Scholarship of Educational Leadership*.

The sampling method was purposive, selective sampling. Stakeholders whose information best assist and support the research question were identified and invited to participate (Arthur, Waring, Coe, & Hedges, 2012; Lochmiller & Lester, 2016; Palinkas, Horowitz, Green, Wisdom, Duan, & Hoagwood, 2015). Ten percent of students from each entry year (overall 30 students), ten percent of faculty members (six faculty members, including field practitioners), and six administrators were interviewed together with six pre-clinical or clinical technicians. Interviews were conducted in six groups comprising of one student of each entry year, one faculty, one administrator, and one technician.

The interview questions were focused around the affirmative topic and its sub-questions and followed the 4-D cycle:

- Discovery: appreciating, valuing the best of what is in the organization; strengths, best practices, and peak experiences.
- Dream: envisioning what the ideal future might be, and what the organization may look like in its fullest level of potential.
- Design: dialoguing what should be, synthesizing and discussing dreams and positive core attributes and deciding about the desired changes moving forward.
- Destiny or delivery: innovating what will be and it is all about making it happen or implementing desired changes. All the interviews will be recorded to identify themes for further analysis.

Data collection and analysis was ongoing and iterative. The overall aim throughout the analysis was to interpret the corpus data with appreciation of the transformation that has occurred as a result of organizational initiatives, as appropriate within Appreciative

Inquiry methodology (Cooperider & Whitney, 1987). Qualitative data sources were analyzed using the constant comparative method (Boeije, 2002; Glaser, 1965). The data were analyzed for key fragments (the separate themes) and connections with other data sources, beginning with the strategic planning and curricular documents. Next, member checking, through interviews and focus groups, was utilized to compare, contrast, and refine the major themes, data patterns, and to discern complex interactions, contradictions, and improvements to enhance curriculum integration practices (Arthur et al., 2012; Friedman, 2008; Vitello-Cicciu, 2015). These themes then influenced the collection of subsequent data, as the data at hand was analyzed again and compared with new data, until saturation was reached. The use of iterative and multiple data sources established the trustworthiness of the research findings through triangulation (Boeije, 2002; Lincoln & Guba, 1985).

3. Results

Drawing on AI methodology, the corpus data highlight a number of positive innovations, successful approaches, and strategic opportunities to curriculum integration in the pre-doctoral dental program at GUMS.

3.1. Contextual factors influencing curriculum integration

Selective interviews with distinguished faculty members revealed specific contextual concerns, which may be categorized into three major themes; classroom context (micro level), disciplinary or departmental context (meso level), and educational leadership context (meso and macro level).

3.1.1. Classroom context

Faculty recruitment policies and regulations, student heterogeneity, and institutional infrastructure/ logistics were significantly findings mentioned by the participants. GUMS needs serious attention to the criteria for teacher selection, development, evaluation and reward (Ministry of Health and Medical Education, 2015). While applicants' compassion and commitment to teaching excellence, pedagogical development, or interest in education courses should be given priority when recruiting in higher education settings, other factors such as board exam grades or their research background have been the major determinants, so far. As stated by one faculty member,

> Although distinctive graduates are highly competent in delivering comprehensive patient care, it is not a sufficient predictor of one's quality of teaching. Good teachers have empathy for students, have passions for learning, for their field, and for teaching. I have found those who are creative, active, and enthusiastic about transformative rather than transmissive mode of teaching, readily engage in educational

> development opportunities and curriculum practice within our specific contextual, cultural, and professional environment.

Additionally, at the micro level, participants highlighted the diversity of the student body as a positive contextual factor. Recently, the student body has diversified and expanded dramatically. Universities in Iran accept students under a specific quota system, which makes student diversity even more prevalent. Students come from a considerable variety of backgrounds; their academic performance, as well as their social and behavioral characteristics are diverse. Because of the quota system, the interaction between students and between students and professors needs to be modified. Several faculty members mentioned the influence of such diversity upon their pedagogical decisions and selected assessment styles. An educational award winner in the GUMS dental faculty explained,

> Sometimes I find myself teaching across a spectrum of different methods for a single course. I believe that successful implementation of the integrated curriculum not only needs faculty engagement, but also students eager to deep learning is a key factor which is yet to be discussed.

Deliberately aligned infrastructural elements assist faculty members in setting academic tasks that are tied to curriculum and assessment. A good framework can help instructors to define quality in students' work and provide valid evidence of instructional quality and teaching effectiveness. Recent trends in faculty educational initiative planning aimed at teaching, assessment, and simulation technology (that enriches course materials), are examples of efforts to synchronize infrastructural foundations with the reformed curriculum goals in the GUMS dental faculty.

3.1.2. Disciplinary or departmental context

At the meso level, some faculty members are embracing interdisciplinary collaboration. Integrative teaching requires continuous interaction of two or more disciplines with a common goal, which is to prepare graduates to be critical thinkers and problem solvers who are competent to deliver comprehensive patient care. Inter-disciplinary collaboration is relatively new to GUMS faculty and several sectors contribute to its successful implementation. For instance, curriculum integrative course descriptions, proper sequencing of course delivery, consensus on learning outcomes, and student assessment methods should be planned in collaborative teams (Gosselin, Vincent, Boone, Danielson, Parnell, & Pennington, 2016), yet this is not evidenced in the examination of GUMS syllabi. One of the educational developers at GUMS suggested,

> There is a myriad of ways for building connections between disciplines to enhance the integrated curriculum implementation; from starting small with a guest speaker in a single course to a fully interdisciplinary syllabus. Departments may use various interdisciplinary teaching strategies based on their educational initiatives and course descriptions. However, in the absence of leadership programs and local level leaders,

building communities of practice and teamwork would not be sustainable and successful.

However, integrative models of teaching do take more time. Faculty members must be committed to the belief that the educational benefits resulting from multidisciplinary teaching are worth the extra time involved. On the other hand, it is a valuable opportunity for departments to reflect upon the learning environment they have provided by moving away from silo instruction. At present, students' clinical learning experiences at GUMS are highly discipline-based, with a few departments being the most stressful and unsupportive, despite their heavy course load. According to a senior student in a focus group discussion, "Students experience extreme stress even before entering those few departments. Senior students give negative feedbacks about working under high pressure and stress with little supportive attitude from instructors".

Therefore, a strategic approach to faculty development requires unit-specific support. Departments with low inter-personal and student-teacher communication skills need sustainable, and customized programs, workshops, and activities to shift from ad hoc and situational planning towards systematic and heuristic models of improvement in their student-teacher-environment intersection.

3.1.3. Educational leadership practice

At the meso and macro levels, strategically situated and institutionally supported educational leadership is instrumental in assisting faculty members as they implement curriculum change. Participants frequently articulated the importance of leadership in all phases of curriculum practice. The Educational Development Centre (EDC)'s educational developer noted, "EDC of GUMS leads and coordinates educational initiative programs and activities in EDCs of other health profession universities located in each of the five provinces of Golestan, Babol, Mazandaran, Semnan, and Shahrood."

Curriculum renewal should be a collaborative process guided by a strong, adequately resourced, and influential team comprised of opinion leaders, course directors, high profile teachers and at least one member of the current curriculum committee (McLeod & Steinert, 2015). At GUMS, such a renewal team has been struck and is actively receiving and evaluating the suggestions, and feedback of educational leaders from national dental institutions regarding the existing curriculum as it goes through different reformation and implementation stages.

Such leadership is a unique opportunity for reflecting upon GUMS faculty development programs, workshops, and upcoming events to customize them according to each department's needs and teaching/learning context. Unfortunately, GUMS do not offer leadership programs. Many experienced faculty members perform institutional educational leadership, but most of the time the faculty members are unaware of their valuable contribution. At present, there is a call for knowledgeable leaders to supervise their peers through the appointment, promotion, and tenure process in alignment with

curriculum leadership in the GUMS dental faculty. GUMS vice dean for education put forward, "We encourage departmental leadership in the form of interaction between academics and team work rather than command and strict hierarchy."

Curriculum and interdisciplinary coordination is time consuming and takes collaborative teamwork. While participants are active in interdisciplinary activity, GUMS vice dean of education suggested that, "They (faculty members) are not convinced that their educational practice is valued enough. In other words, there is a gap between policy and practice, which calls for effective educational leadership, supervision, and guidance."

3.2. Best practices in curriculum integration

Consistent with the literature, interview data revealed a wide range of best practices for curriculum integration in the pre-doctoral dental program at GUMS. The following individual and institutional initiatives are currently practiced within and across the disciplines at the GUMS dental faculty.

3.2.1. Individual initiatives

Preliminary focus group and selected interviews revealed two different educational contexts: classroom/preclinical and clinical. Classroom and clinical teaching in dentistry have two different learning contexts with qualitative differences in their content and teacher-student interactions. For example, what is known as *the romance of medicine*, refers to the unique environment in which clinical courses are taught and how a well-designed, supportive clinical environment induces the attitudes, knowledge, skills, progression, and behaviors of medical/dental students (McLeod & Steinert, 2015).

GUMS students' evaluation of teaching documents for the past three years, revealed higher scores for those faculty members at the GUMS dental faculty who have incorporated blended and virtual learning facilities in their classroom and pre-clinical course design. Students of the GUMS dental faculty mentioned several indicators of good practice. For example, students note positive experiences of didactic classroom teaching. They cite examples of engaging teaching and learning strategies that were utilized in the classroom; serial arrangement of relevant topics, bridging knowledge with practice by setting good examples, engaging students in active questioning about the content, emphasizing on key elements instead of overloading students with information, opportunity to work in small groups, and understanding students' unfamiliarity with new concepts especially in vertically integrated courses. Similarly, faculty members note the use of best practices in clinical teaching; creating an encouraging, stress-free learning environment, promoting case-based learning, being helpful throughout the clinical tasks, approachable, having positive attitude, being flexible and supportive in case of students' mistakes.

Although many elements of best practice have been utilized by GUMS faculty members and experienced by GUMS learners, it has not become embedded in GUMS dental practices. GUMS faculty members need to be educated in the ways of facilitating case-based learning, small group teaching, and student-centered learning skills. Moreover, implementing integrated courses and engaging respective disciplines in the planning, execution and evaluation of teaching and learning processes, is another challenge confronting academics and administrators. There is a call for strategies to enhance inter-disciplinary collaboration and share pedagogical practices among dental faculty members within GUMS academic context.

3.2.2. Institutional initiatives

Scholarly approaches to curriculum integration in the pre-doctoral dental program at GUMS are grounded in reflective practice, professional development activities, and ongoing improvements to curricular and pedagogical strategies. Academic leaders with educational leadership expertise, within and across GUMS disciplines, play a critical role initiating, supporting, mentoring and overseeing activities related to scholarly approaches to curriculum integration in the pre-doctoral dental program at GUMS.

Various faculty development workshops are being offered by GUMS EDC annually, some of which are mandatory for faculty members with less than ten years of teaching experience. However, participation for all dental faculty members, regardless of their experience, has been strongly recommended and participation counts towards their annual promotion. Available data on dental faculty members' participation over the last three years is summarized in Table 2.

Table 2. GUMS Dental Faculty Participation in Professional Development Workshops (2014-2016)

Workshop title	Faculty members' experience (year)			
	<10		>10	
	Participation rate		Participation rate	
	N (42)	%	N (28)	%
Professional ethics	12	28.5	10	35.7
Course plan and lesson plan development	14	33.3	14	50
Undergraduate mentorship & supervision	9	21.4	12	42.8
PBL, bedside teaching	15	35.7	15	53.5
Teaching in small & large groups	10	23.8	15	53.5

Student assessment methods: OSCE & MCQ	14	33.3	14	50
Clinical key	2	4	3	10.7
Ontological & epistemological foundations for research	5	11.9	14	50
Article writing in English	15	35.7	15	53.5
Educational scholarship (new)	2	4	7	25
Virtual training and LMS	16	38	7	25

There are other new, one-off workshops such as hidden curriculum, curriculum development and renewal, applied English courses, pedagogical innovations, professional skill assessment and others, which are not listed in Table 2. Begun in 2016, GUMS is now offering a Master's degree program in Medical Education. Five novice dental faculty members have been admitted to the program. Its impact on their teaching performance and students learning experiences would further be assessed.

However, in some faculty members' experience, fragmented activities do not effect teaching behavior:

> Giving a single intensive workshop on a topic and then never reinforcing the learning is ineffective. Participants need to have concepts reinforced in a longitudinal manner. For example, serial workshops at different levels on a topic beginning from basic to advanced and master throughout a semester.

It may be concluded that faculty educational development should be guided by contextual and stage-specific course and pedagogical design strategies. Frequent scholarly reflection and self-assessment of teaching performance by faculty members is fundamental to achieving higher standards in teaching excellence. A community of practice in educational development can act as a strategic core at the institutional (macro), departmental (meso), and classroom (micro) levels. The support is crucial to enhance specific, sustainable, and effective pedagogical practices and students' learning experiences.

3.3. Strategic institutional supports

Drawing on data on contextual factors (SQ1) and best practices (SQ2), institutional support strategies can take many forms to predispose, enable, and reinforce curriculum integration for the pre-doctoral dental program at GUMS. Data suggest that while there are useful institutional policy developments underway to support curriculum integration

for the pre-doctoral dental program at GUMS, strategically supported implementation at the Faculty level also requires increased attention to aligned professional development initiatives within and across the disciplines.

3.3.1. Professional development

EDC currently provides valuable centralized support for curriculum integration for the pre-doctoral dental program at GUMS. However, its impact within and across the disciplines is limited because it is not strategic and often ad hoc. Nevertheless, there is always an array of highly responsive and engaging faculty members who stay connected with EDC and try to embed perceived knowledge into their practice and evaluate its impact on student learning experiences. EDC of GUMS acknowledges their contribution and gives them an official letter of appreciation, which would count towards their promotion.

Data suggest that in order to enhance curriculum integration for the pre-doctoral dental program, GUMS' research-intensive university (RIU) context requires customized professional development to strategically support to educational scholarship at multiple levels. For example, GUMS recently funded one academic leader to engage in the four-month blended/online international SoEL program offered by UBC, Canada. The GUMS academic leader was selected as having an educational leadership role and responsibility for dental program curriculum integration.

Nevertheless, these initiatives are in their infancy and not without obstacles. Faculty members' limited foreign language, the challenges of finding appropriate professional development programs, uncertainty about the academic practicality of the program within home university context, and the admission process are among many concerns confronting university professors in Iran (Dehnavieh, Kalantari, Afsari, Abazade, Mohammadi, & Noori Hekmat, 2015). GUMS could provide additional strategic leadership within and across the disciplines in this regard.

However, no one single strategy is adequate for enhancing curriculum integration for the pre-doctoral dental program at GUMS's RIU context. Rather, a multi-pronged strategic approach is required within and across the disciplines. Moving forward, data suggest that GUMS needs to implement customized professional development in educational leadership for strategically identified academic leaders in order to spearhead scholarship in that area (e.g., facilitating networked improvement communities grounded in educational inquiry) and develop effective mentoring (e.g., for scholarly approaches to innovation in teaching and learning, the scholarship of innovation in teaching and learning) to entrench a culture of educational innovation within and across the disciplines at GUMS.

3.3.2. International engagement and educational research support

In the most recent medical education protocol, Iranian dental education is aligning itself with international standards in order to facilitate communication across boundaries.

The Vice Chancellor for research and technology at GUMS promotes international scholarships in a variety of fields including medical education. One educational developer said, "We interact with faculty members through social media and GUMS website with updated information about such opportunities (international scholarships and fellowships) worldwide. Interested faculty members would benefit from financial and academic support during their sabbatical leave."

In a recent announcement from the GUMS Vice Dean for research and technology, new faculty members, with fewer than three years of experience at GUMS, receive grants to support applied research; not only in their own field of specialty, but also in the national and international educational practices of that field. Additionally, the "Institutional Award for Excellence in Dental Education" will be awarded each year to two full or part-time faculty members who have completed at least three years of teaching in the GUMS Faculty of Dentistry.

3.3.3. Promotion and tenure criteria

Current Ministry of Health and Medical Education (2015) appointment, promotion, and tenure (APT) policies facilitate the career advancement process for two percent of eligible faculty members through the educational scholar and scholarship practice pathway. The APT guidelines include clear criteria and scoring for specific activities including; innovative pedagogical and curriculum practices, mentoring undergraduate students, participating in course and syllabus design, new student or faculty assessment methods, quality assurance and quality assessment activities, and educational leadership practices. In this regard, non-disciplinary initiatives are being recognized and encouraged. Vice dean for education at GUMS dental faculty put forward,

> Faculty members need to reconcile their educational practice with their research activities. However, they are not convinced that their educational practice is valued enough. On the other hand, our faculty members have little scholarly knowledge and experience about curriculum development or scholarly teaching although they have very practical and creative visions.

Meaning that, even those faculty members with research backgrounds in their own disciplines, could still benefit from conducting educational research or scholarly educational activities when working towards their promotion. With attention to aligning faculties' educational initiatives with their appointment, promotion, and tenure benefits, GUMS institutional initiatives support the needs of students in different learning environments (classroom, pre-clinic, and clinic) at different stages. Faculty members agree that, effective leadership strategies are crucial to fostering an institutional culture of acceptance for educational scholarship and scholarly educational activities.

4. Key challenges and cautionary lessons for curriculum integration

While there is growing institutional support for pre-doctoral dental education program renewal at GUMS, data suggest that there are substantive challenges resulting from the lack of strategic attention to curriculum integration. This may undermine the credibility and status of effective program renewal within and across the disciplines. Substantive challenges in GUMS's RIU context include: inadequate educational leadership training and its related scholarship for pre-doctoral dental program reform within and across the disciplines; lack of strategically aligned promotion and reappointment criteria (as well as qualified personnel on these committees to judge scholarship of teaching and educational leadership) that hinder educational leaders and faculty members from engaging in pre-doctoral dental education program renewal. Also, recent changes in senior administration and subsequent short-term 'management' orientations (versus strategic long-term SoEL orientations) to pre-doctoral dental education program renewal and competing institutional priorities (e.g., technology, disciplinary research) often constrain efforts to adequately implement program renewal including strategic attention to curriculum integration and its related scholarship within and across GUMS's disciplines.

Furthermore, exacerbated by already heavy workloads, there are notable challenges for many faculty to fully engage in curriculum integration including mentoring support to develop new forms of inquiry in higher education that focus on research-informed and evidence-based educational practices. Thus, even under the supportive institutional conditions at GUMS, it is challenging for many faculty members to engage in educational scholarship. However, despite significant challenges and barriers at GUMS, increasing institutional support for curriculum integration is a testimony to the growing value placed on innovation in teaching and learning at this RIU campus.

This pilot study sought to use a strategically based methodology to reveal preliminary data that has not been explored in the Iranian context. Appreciative inquiry was deemed to be beneficial to highlight the nature of dental education at GUMS and then design future supports for curriculum integration at the micro, meso, and macro levels. Traditionally AI is used for strategic visioning but in this inquiry, it was used as a strategic engagement of key stakeholders within this cultural context. Iranian medical curriculum reform has previously been based on critique and change based on the influence of external factors.

An appreciative inquiry research project, emphasizing what is working in the current curriculum integration, will support a locally developed, culturally sensitive dental education curriculum. However, it is important to acknowledge that, given the complexities of curriculum reform, it was a challenge to draw participants away from the negatives of curriculum integration and focus on what was working. The freedom to criticize a government initiative may be a key part of the current intellectual culture in Iran.

5. Conclusions

A strategic approach to curricular integration at GUMS is still very much in its infancy. Drawn from appreciative inquiry methodology and institutional leadership experiences, we have attempted to provide a theoretical framework, as well as practical examples for enhancing curriculum integration in this RIU context. Although institutional examples are still works-in-progress, significant developments and commitments to curriculum integration have been made in this setting.

Preliminary findings from this pilot study indicate that enhancing curriculum integration in GUMS' RIU context is complex and multifaceted. Data suggest that strategic institutional supports (including incentives, rewards, promotion and reappointment criteria, and faculty professional development initiatives) play a critical role in the art (i.e., flexible and responsive adaptation for diverse disciplinary needs and circumstances), science (i.e., grounding practice in the relevant scholarly literature and evidence-based approaches), and politics (i.e., alignment and communications with all stakeholders about progress) of curriculum integration implementation. For example, in the GUMS context there is a need for:

- Strategic visioning and implementation plans for enhancing curriculum integration within and across the disciplines;
- Strategically-aligned professional development supports for enhancing curriculum integration at various institutional levels (e.g., academic leaders and SoEL). For example, through SoEL, the strategic engagement of networked improvement communities (e.g., through iterative phases of needs assessment, planning, implementation, and evaluation) grounded in systematic and rigorous educational inquiry for enhancing undergraduate and graduate degree program renewal within and across diverse disciplines at GUMS;
- Strategically-aligned workload expectations, as well as promotion and re-appointment criteria to enhanced program renewal at GUMS;
- Strategic visible communications (e.g., noticeboards, unit meetings, award schemes for best practices and related scholarship, data analytics, newsletters, and/or websites) and dissemination of progress, challenges, and goals for enhancing undergraduate and graduate degree program renewal in peer reviewed contexts (including institutional and College-level presentation for a and related quality assurance requirements).

While there are still many challenges and areas for improvement at GUMS, an institutional and Faculty-wide commitment to educational leadership within and across diverse disciplines can be the basis for enhancing program renewal in GUMS's RIU context. Further studies are required in diverse RIU dental contexts to examine the impact

of SoEL for enhancing curriculum integration within and across diverse disciplinary settings.

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