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Faculty Portfolio Development: Perception vs. Practices in a Major University, Riyadh, Saudi Arabia

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Faculty Portfolio Development: Perception vs. Practices in a Major University,

Riyadh, Saudi Arabia

by

Sarah Alyousif

A THESIS

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Abstract

Higher educational institutions have been using faculty portfolios to help ensure that the mission of academia is being met. This study aimed to develop a faculty portfolio using a sequential mixed methods design. The portfolio development process took place in King Saud bin Abdulaziz University of Health Sciences (KSAU-HS) colleges based in Riyadh, Jeddah and Alhassa, Saudi Arabia. In-depth interviews and focus groups, two ubiquitous approaches for qualitative research, were used to collect data from purposefully selected interviewees ($n = 18$) and focus group participants ($n = 24$). The quantitative arm of this study included questionnaire administration to 66 participants. They completed a 59-item questionnaire developed to obtain evidence of the validity and reliability of items used to form a portfolio. The audio taped and videotaped data were transcribed and analysed using thematic content analysis. The quantitative data were analysed using between group differences. This hybrid approach identified five main portfolio domains and their 59 subdomains. The individual domains, which were prioritized using judgemental weightings assigned by 18 participants, included education, service, research, professional development and academic management and leadership. Subdomains were identified within focus groups, with a total of 59 items representing measurable faculty daily activities that constitute the five main domains. The portfolio scores were found to have good reliability and validity based on the quantitative analyses and their triangulation with the qualitative results, thereby providing evidence of the trustworthiness and credibility of the data.

This study informs the scientific community by presenting a faculty portfolio developed through a multi-step validation process. It is expected that this faculty portfolio will be

implemented successfully in KSAU-HS colleges because its development is based on the opinions of all stakeholders affiliated with this higher educational institution.

Keywords: Faculty portfolio, in-depth interview, focus group, sequential mixed methods, triangulation, reliability and validity, thematic content analysis.

Preface

This thesis gives a stepwise approach to develop a faculty portfolio by integrating quantitative and qualitative research methods. This doctoral research can be of an interest to medical educators, educational leaders, and faculty members. The work included in this thesis is original, unpublished, and, independent work by ALYOUSIF.

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Dedication

**To those who inspired it
and will not read it**

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Chapter One: Introduction

Historically, faculty held three traditional responsibilities: teaching, research, and service. This was referred to as a tripartite mission of higher educational institutions (Boyer, 1990). The three core roles of faculty are shaped and moulded by ongoing challenges and opportunities to meet the demands of students and the public (Terenzini & Pascarella, 1998). Change does not come easily and there are always opposing forces. This is also true globally in relation to faculty role change (Lester, 2013), which has implications for assessment of faculty. One primary means of ascertaining the degree to which faculty are fulfilling their diverse academic roles is to use faculty portfolio. Teaching, research scholarship and service are three different roles (domains) of faculty, and within each there are diverse roles (subdomains) embedded. Notably, faculty roles are changing; service may include clinical and administrative with a community and culture orientation; faculty may be involved in web-based teaching, research, service, and assessment modules; and at some stage faculty may take a leadership role. These faculty roles need to align with a move towards globalization of higher education, technological advancements, diversity within society to which students belong, and public demand in order that taxpayers' money be used effectively in higher education.

Overview

Faculty members may use portfolios (paper or electronic) to record a variety of information such as teaching, research, and service achievements; and these may serve multiple purposes such as faculty evaluation, selection of faculty enhancement programs, and distribution of teaching load. Items within each include statements about professional teaching goals and achievement; materials that demonstrate reflective thinking; evidence of effective teaching,

demonstration of competency and student learning; documentation of professional growth; research in progression, completed and mentored; and clinical, administrative and community services rendered. The systematic documentation of all academic activities in portfolio assists faculty in presenting their abilities to apply for a suitable academic job and title, timely promotion, and guidance for progressive career development.

Faculty members hold mixed views about faculty portfolio evaluation, content, roles and purposes. In particular, some faculty members raise concern about quality and amount of portfolio content and subjective assessment (Supiano, Fantone, & Grum, 2002). In addition, time constraints, biases, and questionable reliability and validity linked with inconsistent results related to portfolios are some other challenges. Some researchers have reported perceived barriers against use of a faculty portfolio such as lack of training for the implementation of a portfolio, time constraints related to increased paper work, uncertainty about what should be recorded, and costs related to portfolio implementation (Brennan & Lennie, 2010; Plaza, Draugalis, Slack, Skrepnek, & Sauer, 2007). Williams and colleagues reported that initial positive attitudes of nurses about portfolio tend to deteriorate over time (Williams et al., 2009), and a similar trend is also found among pharmacists, educators, mentors and preceptors about creating and maintaining a portfolio. This may occur because of irregular use of a portfolio, limited understanding of the full potential of portfolio, dismissal of faculty opinions before implementing a portfolio, and lack of training in their use.

Despite these problems, globally there are more positive than negative views of faculty about portfolios and its application across medical schools. Regarding examiner perceptions, one of the strengths of the Dundee Medical School's portfolio assessment process is that it assesses the candidate holistically (Davis & Ponnamperuma, 2010). It includes assessment of reflective

teaching and learning, research scholarship, administration, clinical and community services, competencies, and attitudes and perceptions about diverse cultures to which academia belongs.

According to the developers of this program, faculty identified one of its advantages to be the examination of accumulated achievements. However, faculty were dissatisfied with the volume of portfolio material and required time and workload to complete it. This research suggests that the amount of content in portfolios needs to be further studied and better defined to determine what is optimal for a comprehensive assessment (Davis & Ponnampерuma, 2010).

While designing a portfolio, developers should focus on its purpose. An online survey in US colleges and pharmacy schools indicated that 62% use portfolios in experiential courses and 67% formally assess the portfolio's intended purposes (Skrabal, Turner, Jones, Tilleman, Coover, 2012). This study also reported that there is a wide variation in content and use of portfolio. The majority of schools used portfolios as a formative evaluation primarily in the experiential curricula pertaining to real experience. The study suggested that colleges and schools need to present to the faculty the intended purpose of their portfolio system and follow through with implementation and maintenance of a system that meets these goals (Skrabal et al., 2012).

There is considerable research on faculty portfolio development, roles of faculty, domains and subdomains of portfolios and their assessment in the western world. Conversely, there is no research carried out on faculty portfolio design in Saudi Arabia and other Gulf countries. Furthermore, there is no study in Saudi Arabia or the Middle East that has specifically identified the domains and subdomains of a faculty portfolio; a tool that assesses multiple roles of faculty. Notably, the roles of faculty in these countries are similar to those in other countries. Both qualitative and quantitative methods are used to explore several domains and subdomains

including uses of portfolio in health sciences around the world. This trend guides developers of portfolios to keep pace with the changing roles of faculty which include a focus on effective teaching using innovative methods and course curricula, collaborative research, clinical and community services, and roles to meet the increasing demands of society and diverse cultures. Indeed, faculty roles will continue to change in order to conform to the advancements in information technology, newer teaching methods, unique curricula development and implementation, and modern faculty assessment methods.

Rationale

This study will contribute to the published research by examining stakeholders' (faculty, leaders and students) perspectives about the development of a faculty portfolio. While the existing research has identified some concerns and advantages of portfolio use, the present study will also address issues of reliability and validity of a faculty portfolio. This study emerged from the identified need for a paper-based portfolio to be used in King Saud bin Abdulaziz University of Health Sciences, Riyadh and elsewhere in other academic institutions. There is no uniformly developed portfolio that can systematically streamline the documentation of work of faculty across all major universities. This study will develop a portfolio after taking into consideration perceptions and practices of faculty that may be implemented in a systematic manner and serve multiple functions. This is the first study of its kind in Saudi Arabia that will take into account the views of stakeholders for developing a faculty portfolio.

Significance

This study will lay a foundation for using a paper-and-pencil faculty portfolio in King Saud bin Abdulaziz University for Health Sciences (KSAU-HS). Other universities may use this

lead in the kingdom of Saudi Arabia. This portfolio may also be a primer for developing an electronic portfolio in the same setting.

Background

A faculty portfolio is an important tool in academia. Despite the many studies in this field, there continues to be renewed research in faculty portfolios. It has many uses, purposes and applications in educational institutions for meeting a vision and mission. The portfolio may reflect the faculty's professional career, scientific activities and achievements, and it may include other relevant information such as awards given to faculty based on their extraordinary performance in teaching and learning. The faculty portfolio may also contain evidence of effective teaching and learning, reflection on teaching beliefs and values, teaching curricula, teaching methods, purposes, goals, course evaluation, career map of course participants, assessment of students, peer review, mentoring and teaching instructions, and research scholarship, service and leadership (Reece, Pearce, Melillo, & Beaudry, 2001). With regard to professional development and research scholarship, an important component of portfolio, faculty may document relevant activities such as attendance at professional meetings, academic contributions, presentations at professional meetings, scientific publications, research and creative activities, membership in professional organizations, self-learning and study, and enrolment in appropriate courses offered in a continuing education format.

Furthermore, a faculty portfolio might include rendered clinical, community and administrative service that can be used to profile the accomplishments of faculty at a university (Reece et al., 2001; Seldin, Miller & Seldin, 2010; Simpson et al., 2004). In addition, a faculty portfolio could include faculty members' active participation in the local community (Calleson, Jordan, & Seifer, 2005). A faculty portfolio may be used for professional development, faculty

evaluation for contract renewal and promotion (Simpson, Hafler, Brown, & Wilkerson et al., 2004), effective teaching and learning, and many other applications in health sciences including faculty assessment and retention.

In summary, the development of a faculty portfolio should take into account its important components, subcomponents and the opinions of faculty leaders, administrators and students as envisaged in the present study. The faculty portfolio should also be culturally sensitive and meet all important dimensions of faculty's activities including effective teaching, research scholarship, creative activities and clinical or administrative service with community participation (Calleson, Jordan, & Seifer, 2005). The successful implementation of a properly developed faculty portfolio is important from many perspectives including guiding professional development, which then can improve student learning in an acceptable social and cultural academic environment (Wilhelm et al., 2006). Also, this information provides evaluation committees considerable material to examine, as well as inform recommendations for improvement and compensation decisions.

This study is unique in its utilization of the sequential mixed method approach to create a faculty portfolio. It will contribute to new knowledge by explaining the method of developing and implementing the faculty portfolio in health sciences institutions. This research will help other researchers interested in portfolios by identifying portfolio developmental processes including important concerns of reliability and validity. This research is likely to be readily adopted by stakeholders affiliated with health sciences institutions because their opinions were considered in its development.

Study Purpose

The goals of this research are to: 1) identify the roles of faculty; 2) develop the domains and subdomains of a faculty portfolio; and 3) obtain validity evidence of the proposed use of the portfolio scores. To achieve these objectives, this study explores the perceptions and practices of faculty with regard to their roles, and domains and subdomains within a university setting. Through this process, it is expected that the scores of a faculty portfolio can be developed as a reliable and valid indicator of faculty competence and performance.

Study Approaches

In this study, a mixed method design was used. In regards to the qualitative approach, in-depth interviews using induction, and focus groups using deduction, were employed. Responses were analysed using thematic content analysis. In regards to the quantitative approach, a questionnaire was administered to determine participants' perspectives about the importance of various items derived from the qualitative results.

Thesis Outline

The present thesis is divided into five chapters. Chapter one provides a brief introduction about portfolios and faculty perception and practices about their use globally, concluding with a statement of the purpose of the study. Chapter two provides a review of the literature relevant to the current study, ending with the research questions that guide this work. Chapter three outlines the mixed methods approach used in the present study. Chapter four presents the results of the analytic methods. In Chapter five, results are discussed for the purpose of evaluating the research questions. This chapter ends with research limitations and recommendations for future research.

Chapter Two: Literature Review

Definitions of Portfolios

Portfolios have been defined as a "purposeful, collaborative, self-reflective collection of academic work" (McRobbie, 1992, p. 2). A teaching portfolio is a means to document, reflect upon, and improve teaching and students' learning (Paul, 2004). There are many terms and types of portfolios in medical education with accompanying definitions and descriptions in the published research. Some of the examples include teacher portfolio, educator portfolio, faculty portfolio, reflective portfolio, and learning portfolio, showcase portfolio, nursing portfolio, pharmacist portfolio, course portfolio, continuing professional development portfolio, academic portfolio, and so on. As this research is related to medical education and faculty portfolio, non-medical education portfolios are excluded from the following discussion because their content and standards are different. The following section first presents a description of a faculty portfolio, followed by its content and uses, and related portfolios typically used in medical education.

A faculty (teaching) portfolio is defined as a means to document, reflect upon, and improve faculty members' teaching and displays their teaching strengths, teaching performance, and accomplishments (Paul, 2004; Seldin, Miller, & Seldin, 2010). In other words, the teaching portfolio is a flexible document best thought of as a recorded statement of a faculty member's teaching and learning responsibilities, philosophy of teaching, goals, purposes and accomplishments as a teacher. This definition is limited because it does not refer to research and service components of portfolio, which are relevant to faculty. There is no universal definition of a faculty portfolio. Researchers have provided descriptions of what a faculty portfolio is, and their descriptions differ across countries according to area of profession, such as pharmacy,

nursing, and medicine. Content, purposes, uses and applications also vary. Portfolios have changed over time to include less emphasis on research scholarship and more on effective teaching; however, limited importance continues to be assigned to service (Marsh & Hattie, 2002). Portfolio assessment for different purposes, including faculty development and promotion, are not uniformly accepted (Corry & Timmins, 2009; Kalata & Abate, 2013; Van Schaik, Plant & O'Sullivan, 2013).

Most definitions of teaching portfolios focus on their purpose, which primarily include: 1) a source for documenting effective teaching with emphasis on showing excellence (O'Neil & Wright, 1992); 2) a means of empowering professors to gain dominion over their professional lives (Seldin, 1991); 3) providing evidence to exhibit that teaching is an institutional priority (Braskamp & Ory, 1994; Seldin, Miller & Seldin, 2010); and 4) a method of individualizing faculty development (Seldin, 1993; Shore et al., 1986). According to Williams and Jordan (2007), teaching portfolios provide a useful guide as to how to establish and achieve career goals. Given this range, it appears that a universally accepted definition of portfolio has eluded researchers. Moreover, definitions of teaching portfolios differ based on their content, purposes, structure, reliability, validity, and assessment (Driessen et al., 2007a; Driessen et al., 2005b; Gannon et al., 2001).

Concepts of Faculty Portfolio

A faculty portfolio is a reflection of professional standards, skills, teaching philosophy, and attitudes (Driessen et al., 2007a; Driessen, van Tartwijk, Van der Vleuten, & Wass, 2007b; Driessen, Van Tartwijk, Overeem, Vermunt, & Van der Vleuten, 2005a). It is conceptualized as a collection of evidence that reflects faculty competence in specific areas and is linked to specific goals and purposes (Driessen et al., 2007a). Portfolios are also described from the perspective of

continuing professional development as they can be used to monitor and enhance the scholarship of teaching and learning, personal development, faculty evaluation, faculty development, preceptor development and residency training (Tofade, Abate, & Fu, 2014). A professional development portfolio is perceived as a collection of materials developed by a professional who documents and reflects on key events and processes in his/her career (Hall, 1992). A faculty portfolio should also be seen as a judicious, critical, purposeful analysis of teaching performance, evidence, and goals rather than merely an indiscriminate collection of material (Seldin, Miller, & Seldin, 2010).

Portfolios have also been conceptualized as a collection of information documented over a period of time (Moseley, 2005). It may also include a process of reflection, selection, rationalization, and evaluation. This combined information may help in making hiring decisions in non-academic settings and be extended to other academic settings. A faculty portfolio has even been thought of as an organized and systematic tool for faculty assessment (Driessens, Muijtjens, Van Tartwijk, & Van der Vleuten, 2007a). Portfolios are a work in progress and never ending, and as such, should be regularly edited and revised by faculty (Buckley et al., 2009). Some researchers consider a faculty portfolio to be reliable and valid documentation of professional growth (Driessens, van der Vleuten, Schuwirth, Van Tartwijk, & Vermunt, 2005b; Gannon, Draper, Watson, Proctor, & Norman, 2001). Portfolios are indispensable tools globally used and theorized for multiple purposes and content in academic educational institutions around the world.

Content of Faculty Portfolio

Teaching related content. Typically a faculty portfolio would include the following content: 1) philosophy of education or teaching basic ideas about how learning takes place; 2)

statement of teaching responsibilities; 3) outline of learning goals; 4) discussion of relationship between goals, teaching strategies, assessments, and more broadly faculty philosophy of teaching and learning; 5) documentation and analysis of student learning outcomes; and 6) a development plan, based on information gained during the process of compiling the portfolio (Paul, 2004).

Portfolio allows faculty to describe additional activities, such as: 1) document teaching accomplishments within the respective discipline; 2) faculty ownership with regard to development and improvement in effective teaching and learning; 3) track and integrate learning in professional development activities into effective teaching; 4) demonstrate successes in promoting individuals' learning; 5) present contributions to improved student learning through teaching-as research; and 6) help generate meaningful change through collaboration with peers and colleagues (Paul, 2004). The portfolio permits faculty to describe the unique circumstances of their courses and approaches to teaching, explain their use of specific strategies and methods, and provide convincing evidence that they are effective instructors. Over time, a faculty portfolio has been used to serve a variety of functions that has expanded over the past 25 years.

Teaching portfolios also display effective teaching activities including teaching, research and service that support student learning. A faculty portfolio can be used to disclose the broad range of teaching skills, abilities, attitudes, philosophies, research scholarship, clinical, administrative and community services and methods. A teacher portfolio also can provide a strong signal that teaching is an institutional priority (Seldin, Miller, & Seldin, 2010).

The tension created by supporters of succinct portfolios versus its opponents who opt for voluminous portfolios may continue to dominate the academic institutions around the world. Each listed that content in a faculty portfolio needs a statement justifying its inclusion in the

portfolio. Furthermore, given the lack of standards regarding content, the debate remains as to what should be included in a faculty portfolio.

Service related content. Graduate-level education in translational medicine will require more than just scientific research in order to cross the gap from lab bench to patient bedside and to practice at interdisciplinary interfaces such as research design, clinical care, regulatory, technology, and teaching (Kurpinski, Johnson, Kumar, Desai, & Li, 2014). Faculty service is potentially important as it may have an impact on families, professional organizations, community agencies, institutions, and national and international policies and practices. The level of innovative service increases as a faculty member's career advances, from assistant (research and teaching are priorities) to associate to full professor (leadership role in his/her specialty, self-governance and community services at national and international level). Faculty service may include: advancement of a scholarly discipline (service to the profession), fulfilment of the obligations of self-governance (service to the department, college, or university), or meaningful engagement with national, or international communities (service to families, schools, community agencies or other organizations). The broad scholarly services that faculty carry out may involve: editorial service for peer reviewed journals; leadership in the governance of professional organizations; organization of conferences and symposia; chair or membership on committees of professional organizations; honours and awards for service to the profession, to national and international community and to the department, college, or university; mentoring of faculty and students; participation in recruitment activities; chair or member of departmental, college, and university-wide governance committees; sustained work in relevant community settings; presentations at non-peer reviewed conferences; and sustained work with governmental agencies (Arreola, 2007; Boyer, 1990; Seldin, Miller, & Seldin, 2010).

Research related content. Another traditional role of faculty is to conduct, supervise, and mentor research. The number of publications has been used as an important criterion for promotion and/or tenure of faculty (Arreola, 2007; Gallagher & Martin, 2000). In addition to the number of publications, their quality is important according to whether they are published in high impact journals and associated with scholarly discovery, adding substantial knowledge to the published medical literature. Both teaching and research grants are now emphasized as important for faculty, with a greater number of higher educational and research institutions moving towards an even balance between the two (Gallagher & Martin, 2000).

Portfolio Types

There are several types of portfolios. One is called a presentation or showcase career portfolio (Driessen et al., 2007a; Driessen et al., 2007b). This type provides samples of faculty lectures, teaching methods used, student assessment strategies and exam questions. The advantage of this portfolio is that it features a selection of a teacher's most outstanding work in a formal manner (Driessen et al., 2007a; Driessen et al., 2007b). However, a showcase portfolio lacks critical analysis of its included content. To address this problem, reflective portfolio was introduced, which is a collection of evidence that the faculty member reflects on and critiques. The advantages of reflective portfolios are that they inspire reflection and feedback, connecting academic knowledge with clinical practice (Klenowski, & Lunt, 2008; Kostrzewsk, Dhillon, Goodsman, & Taylor, 2008). In a study involving diverse students' perceptions of the reflective portfolio assessment process, Domac and colleagues found that it helped in the assessment of interprofessional competence and understanding of collaborative inter-professional behavior associated with reflective thinking and better healthcare outcomes (Domac, Anderson, O'Reilly, & Smith, 2015). These portfolios are typically used to enhance reflective practice, learning, peer

review, personal values and presumptions in personal and professional lives (Domac et al., 2015; Klenowski, & Lunt, 2008; Kostrzewsk et al., 2008). Nevertheless, they have a limited impact on professionals' practice. This difficulty may occur as a result of people's difficulties reflecting on their own work (Kostrzewsk et al., 2008).

It appears that reflective portfolios are the most advantageous portfolio because they involve a high level of reflection. It can help faculty and physicians teach patient safety and quality improvement to enhance patient safety and quality of care rendered by academic medical centers. Nonetheless, the most often cited disadvantage of reflective portfolio assessment is reliability. Its scores tend to have low test and retest reliability as these portfolios are unstructured.

Other types of portfolios are linked with specific purposes. These portfolios include developmental or learning portfolios that focus on faculty growth and student learning in a specific course or block, and employment portfolios. These provide prospective employers with information about an outstanding teacher for a position. Another is the assessment portfolio, which is used to assess teaching effectiveness. The hybrid portfolio combines any two portfolios, such as a teaching portfolio and a reflective portfolio (Wolf & Dietz, 1998). The clinical achievement portfolio is a systematic tool for assessing individuals' clinical learning and reflective thinking. It is associated with other potential benefits including individual accountability (Byrne et al., 2009; Tracy, Marino, Richo, & Daly, 2000). As noted above, portfolios are diverse and specific to medical education and non-medical disciplines.

Areas of Portfolio Use

Portfolios have been a useful mechanism in general practice vocational training as they bridge knowledge and experience in healthcare settings between hospitals and general practice.

They can also be used to design a learner-based curriculum and also explore emotive (emotional, controversial and sensitive) concerns from the clinical, general practice milieu and help facilitate feedback to trainers (Snadden & Thomas, 1998). These portfolios also guide general practitioners to reflective learning and also emphasize trainers' vital role in teaching reflective learning to general practitioners (Pearson & Heywood, 2004; Snadden & Thomas, 1998). Educational portfolios are likely to address the learning gap often found across different healthcare settings. However, they do not suit all learning styles, such as experiential learning (i.e., the process of learning by experience), reflective learning (i.e., the process of learning by reflecting on experiences), personalized learning (i.e., the development of strategies that address the unique learning needs and interests of individuals), and portfolio-based learning (i.e., the use of portfolios as an educational tool).

According to researchers, portfolios are important reflective tools and can be used in teacher education and practices including problem solving, critical thinking, formative assessment and accountability, curriculum development, enhancing communication, and collaboration within a multidisciplinary team (Divall et al., 2014; Tsingos, Bosnic-Anticevich, & Smith, 2014). Similarly, a range of suggestions for core content and uses are described in different contexts such as medical education (for effective teaching, discovery oriented research and clinical and community service), business and investment (for profit purposes), and engineering (for developing newer technology and products) and other non-medical branches of sciences (for inventing mechanisms underpinning biological and physical phenomena). Like other non-medical sciences, portfolios have several purposes and goals, uses and applications in medical education. A faculty portfolio is more beneficial for effective teaching, faculty assessment, and research evaluation, retention of faculty, faculty development, and awards and

promotion (Wolf & Dietz, 1998). A faculty portfolio is used to assess the three main roles including teaching, research and service, but is more frequently used for faculty evaluation, faculty hiring and promotion.

Uses of a portfolio may differ according to who is completing it. For a clinician teacher, portfolio assessment would adopt a style that focuses on clinical service. Likewise, in the case of a faculty teacher and researcher, portfolio assessment would consider teaching and research more than service. Overall, a faculty portfolio could be used according to the identified needs of the user.

Faculty Portfolio Purposes

Faculty portfolios have been used for both formative and summative purposes (Trigwell & Shale, 2004). In regards to formative purposes, the portfolio can be used to record feedback to be assessed by faculty and students to guide improvements in ongoing teaching and learning. In contrast, summative assessment of a portfolio involves measuring and comparing the level of achieved success at the end of an instructional unit through grading. In different medical schools and universities, another purpose of a faculty portfolio includes promotion of excellence in teaching, research and advanced practice (Corry & Timmins, 2009; Kuhn, 2004). Other purposes are faculty development, tenure and merit reviews, faculty retention, self-assessment and evaluation of faculty and students' skills and self-directed learning (Colthart et al., 2008; Kalata & Abate, 2013; Van Schaik, Plant & O'Sullivan, 2013). Furthermore, research scholarship, advanced clinical practice, faculty leadership, scholarly support, faculty accomplishments, reflective practice and critical analysis, change in teaching methods, design of syllabi and or curriculum, training courses, evaluation of students' feedback, and students' self-regulation are other applications of portfolios (Dannefer & Prayson, 2013; Van Schaik et al., 2013). A faculty

portfolio is an assessment and learning tool that may help in personal and professional development (Ryan, 2011; Stanley, 2001). A portfolio can provide support for new positions, a platform for setting goals, a transition to administration, and a vehicle for change in faculty programs, curricula and teaching methods (Corry & Timmins, 2009; Fleak, Romine & Gilchrist, 2003; Hayward et al., 2008; Van Schaik et al., 2013; Zipp & Susan, 2010). With regards to purpose, an assessment portfolio is suited for faculty assessment to identify outstanding teachers, promotion, and faculty development. It also presents educational organizations with information about teaching effectiveness. The learning portfolio purpose is to promote teacher reflection and ownership over the learning process (Wolf & Dietz, 1998). In summary, portfolios have different purposes concerning diverse contexts in higher education institutions.

A Global Perspective on Faculty Portfolio

The goals of higher education, reflected in portfolio development, differ around the world. This difference may be a result of a limited consensus on the goals of higher education, and each academic institution has its own defined purpose to achieve its goals, some of which may well overlap. These goals may differ with regard to social, cultural, moral and economic values of a nation. In the American context, the goals of higher education generally include: 1) obtaining knowledge, 2) ensuring that every student, regardless of parental wealth, has a chance to pursue the “American Dream,” 3) educating leaders in a democratic society, 4) advancing learning and knowledge through faculty research by giving students the opportunity to broaden their minds even when learning does not seem immediately relevant to their careers, 5) teaching students to interact with diverse people, and 6) helping students find a passion—and even a purpose in life (Curious, 2014; Harper & Yeung, 2013; Hurtado, Clayton-Pedersen, Allen, & Milemet, 1998; Owens, 2013). From a European perspective, the key objectives of higher

education include the following: (1) enhancing the overall quality of education by facilitating peer learning, cooperation and comparison with other education providers worldwide; (2) boosting innovation and job creation by attracting internationally mobile students and skilled migrants; (3) broadening horizons, increasing employability and preparing students to become global citizens; and (4) influencing and engaging new audiences in a way that advances the EU's position in the world (European Commission, 2013). From the perspective of Asian countries, there are three key challenges of higher education. These include improving education quality by increasing the relevance of curriculum and instruction; increasing and better utilizing the financial resources available to higher education; and balancing the continued expansion of access to higher education with greater attention to equity and to the need to raise quality (Asian Developmental Bank, 2011). Accordingly, the purpose of higher education is a mix of social, moral, and economic objectives (Jones & Thomas, 2005; Kezar, 2004) needed to sustain and bolster the economic security of the nation and provide access to everyone for higher education, irrespective of social, ethnic, and financial status.

Higher educational institutions should address racial and social inequality (Anderson, 2012; Ejieh, 2004; Harper, 2012), graduate employability (Redmond, 2011), and how to instil cultural values, morals and creativity, which gives individuals a better social standing and makes them well-informed citizens (Curious, 2011; Pillay, 2010). Similarly, faculty need to encourage individuals to learn about the world, become reflective and critical thinkers (Evens, Verburgh, & Elen, 2013), and pursue cultural competence and literacy. On a wider platform, the moral goal of university education and the role of the faculty is to guide learners to build a fairer and more open democratisation, providing a just and safe place to learn and live (Curious, 2011; Holowchak, 2013).

These goals of higher education are applicable to health sciences. In more specific terms, medical education should aim to develop highly competent medical and allied professionals who can promote the health of the nation and welfare of the patients (Curious, 2011; Gunderman, 2014). The question that we need to ask ourselves is: Are the public and or private universities and other commercial agencies promising students better economic gains by undertaking the exercise of so-called higher education? Arguably the goal-directed outcomes of higher education should include: advancing the knowledge base and learning of students; developing their multiple skills and competencies for obtaining a good job and or employment in a free market (economic); instilling societal, moral and cultural values (utilitarian); preparing them to understand and realize cultural diversities; making them more competitive in a globalized world; giving them a degree; and giving everyone equal rights and access to higher education (Curious, 2011; Fallows & Steven, 2000; Hu & Wolniak, 2013; Lester, 2014; Neumann, 2014; Schroeder, 2013; Talbot & Lilley, 2014). In summary, faculty roles have expanded exponentially over the past 25 years, which is attributable to society's expectations and diverse cultures. These important roles need to be embedded in a faculty portfolio, as discussed below.

Role of Faculty

Determinants of current roles of faculty. The role of faculty has been changing as a result of a number of factors since the early 1990s. Societal factors in terms of accreditation standards, primarily impact higher learning (Higher Learning Commission, 2003). Accordingly, a new role of faculty is to teach effectively, which was not strongly emphasized about one and half decades before. Faculty are also now teaching students to develop favourable attitudes towards diverse cultures. Students' learning involves acquisition of knowledge, discovery or generation of new knowledge and its application in teaching, research, clinical and other

professional and community service (Brown, White & Leibbrandt, 2006; HLC, 2003; Medina et al., 2011). Notably, effective faculty teaching through collaborative partnership and student engagement should lead to student learning in the aforesaid areas (Brown et al., 2006; Medina et al., 2011; Simpson et al., 2006).

By all measures, faculty teaching effectiveness and student learning, engagement and enhanced motivation are intertwined and could be related to action research used for redeveloping curriculum for the community (Medina et al., 2011; Seib, English, & Barnard, 2011). The result of this discussion is that, firstly, teaching by faculty needs to be assessed and evaluated for its effectiveness. Secondly, the effectiveness of faculty teaching needs to be verified by student learning, skills building, and development of positive attitudes towards education, teachers and diverse cultures. The latter aspect of faculty teaching is obligatory because most of teaching and academic institutions presently enrol students from diverse cultures. Some critics do not accept the notion that everything a professor does needs to be evaluated. Nevertheless, quality teaching has received increasing emphasis since the 1970s (Boon, 2011). Furthermore, critics argue that students are themselves responsible for their learning, with less responsibility on the professor. Other than teaching and research, the service role of faculty also has expanded and includes professional and community service, besides some administrative or management work (Arreola, 2007; Hovenga & Bricknell, 2006). It is reported that the ever-changing role of faculty is dynamic and complex, and should address the growing needs not only of society but also of students from diverse cultures in all disciplines (Brown et al., 2006).

Faculty teaching effectiveness. Faculty teach students in and outside the classroom, including inpatient and outpatient settings. This teaching is planned in accordance to the

designed curriculum and teaching methods adopted and recommended by higher education institutions. In the past century, there was greater emphasis and more time spent on research scholarship than teaching; however, in the last 50 years or so teaching has become as important as research (Gallagher & Martin, 2000). Marsh and Hattie (2002) have critically discussed the relationship between research productivity and teaching effectiveness. They argued whether the two are complementary, antagonistic, conflicting, or independent in different settings, such as university versus non-universities educational institutions, non-university tertiary institutions, and purely research universities. Based on their constructive arguments, effective teaching and research productivity are mutually supportive. Faculty can teach research topics that guide students in the conduct of research, which, in-turn, are used by faculty for teaching purposes. Hence, modern academic and research universities should have faculty with skills in effective teaching as well as innovative research, though research and effective teaching are discrete activities (Marsh & Hattie, 2002). Teaching needs to be effective and promote self-learning, which is an important role of faculty. Multiple factors contribute to effective teaching and student learning. These approaches include sound innovative pedagogies (teaching and instructional methods), well designed course syllabi, and students' active interactions and sharing of their feedback to teachers (HLC, 2003; Medina et al., 2011; Trigwell & Shale, 2004). In addition, a number of course activities, exercises, classroom assessment methods, and interactive teaching strategies also contribute substantially to students' learning (McInnis, 2000; Medina et al., 2011; Trigwell & Shale, 2004). Similarly, medical simulations are effective approaches in medical education and learning (Issenberg et al., 2005). Other researchers have identified factors such as joint consultation with students, interactions using open communication, and engagement of students in the classroom as contributing to effective

teaching by faculty (Granville & Houde, 2004). Early exposure of undergraduate students to clinical and community practice settings tend to help them learn realistically and relevantly, which may impact their career choice options (Dornan et al., 2006). Patients, in addition, also are likely to benefit from such educational interventions (Dornan et al., 2006). Arguably, faculty members need to be knowledgeable about the pedagogy (profession of teaching) of education and become capable of effective teaching. This would catalyse student learning through their participation (joint consultation, for example, in goal setting and team work for achieving objectives), interaction (students' open communication with faculty to affect a suitable action) and engagement (in classroom, activities, and strategies to enhance learning) (Granville & Houde, 2004). Furthermore, verification of effectiveness of teaching requires the design of appropriate assessment activities that will produce useful evaluative information about student learning. These assessment activities linked with evaluative information differ from assigning a grade on completion of coursework by students (Arreola, 2007; Medina et al., 2011), a time-honoured method still used in the assessment of students' learning. Faculty should show excellence in teaching scholarship and use innovative instructional strategies in order to improve students' learning, and enhance their engagement and motivation in learning activities (Draugalis & Slack, 2008; Medina et al., 2011).

In addition to teaching strategies, Carson (1999) reported that teachers' enthusiasm is critical for student learning. That is, ineffective instruction is characterized as a lack of passion for the topic, an inability to engage students to the topic, and an attitude of indifference towards students. In fact, research suggests that positive attitudes demonstrated by faculty are critical to long term student learning skills (Carson, 1999). Thus, both the healthy positive emotional milieu created by the instructor and student's intelligence are needed for learning of knowledge

and development of skills (Allen, Ploeg, & Kaasalainen, 2012; McConnell & Eva, 2012).

Notably, student evaluations of faculty teaching help identify consistently good teachers, instructors, and effective instruction (Feldman, 1998; Theall & Feldman, 2007). Donnon, Delver and Beran (2010), for example, identified the importance of running a well-organized course. According to Arreola (2007), faculty needs multiple skills and expertise in a number of professional avenues to advance effective teaching, creative activities, practice service, and administration or management (Arreola, 2007). Teaching methods and instruction (to design, assess, and deliver) that result in individuals' effective learning, need to be included in the content of a faculty portfolio. To improve their teaching quality, faculty typically looks for ways to improve their performance, teaching skills, and methods through means such as attending workshops, online courses and faculty enhancement programs. Most of these activities are based on adult learning theories of behaviorism such as T-group sensitivity training (group interactions such as role plays as a means of gaining personal insights) (McKeachie, 1991).

As part of subdomains, a faculty portfolio should incorporate a “learning model” that shifts faculty focus from delivering the lecture to one of mentor, preceptor, coach, and guide for the purpose of mutual learning. As a corollary, both students and faculty may benefit from this paradigm change and improve their knowledge by learning. The faculty challenge becomes one of creating participatory learning experiences rather than preparing and delivering lectures or accumulating hours in the classroom (Kyrkjebø, 2006; Medina et al., 2011). Ultimately, research shows that faculty need to create or supervise small research projects and quality improvement programs especially related to learning clinical skills involving students who can learn by doing research as well as delivering good quality care (Kyrkjebø, 2006). Faculty teaching is tied to individual learning and any paradigm that supports this concept should make an important

component of a faculty portfolio. Overall, faculty effective teaching is linked both with self-learning and student learning, and portfolios need to be tied to this global concept.

Faculty roles, curricula and teaching methods. Another area of teaching that is relevant to the role of faculty is the adoption of technological advancements in terms of virtual communities, social media, and distance learning. These have catalysed the agenda of faculty role change (Allen et al., 2012; Draugalis & Slack, 2008; Kurtz, Beaudoin, & Sagee, 2004; McConnell & Eva, 2012; Morris, 2013). Ever evolving new designs of curricula including learning-based and web-based have also added new roles to the faculty (Bokken et al., 2009; Dorsch, Aiyer, & Meyer, 2004; Frisby, Lane, Carr, Ross, & Gottlieb, 2006; Hammick, Freeth, Koppel, Reeves, & Barr, 2007). These dynamic changes in curricula guide faculty to update their knowledge in teaching methods, research, and practice, all of which are likely to have a positive effect on their own learning as well as student learning.

In addition, a variety of methods of teaching have also influenced changes in faculty roles. These teaching methods are briefly described. Problem-based learning is a student-centered approach in which students learn about a subject through the experience of solving an open-ended problem. Collaborative learning is an educational approach to teaching and learning that involves a team of students working together to solve a problem. Interprofessional education occurs when students from two or more professions in health learn together during all or part of their professional training, with the objective of learning collaborative practice for providing health care to patients (Bainbridge & Wood, 2012). Furthermore, case-based learning is an educational paradigm in which a case or problem stimulates students' interest and analytical thinking in acquiring knowledge, skills and attitudes (Candela, Dalley & Benzel-Lindley, 2006). Service learning involves interaction of knowledge and skills with experience and students learn

best by experience contingent on a problem. Team-based learning is known as an instructional method based on steps that build a team with high performance ability. This approach is expected to improve students' learning quality (Draye, Acker, & Zimmer, 2006; Higuchi, Hagen, Brown & Zieber, 2006). Interactive multimedia clinical skills teaching programs (these are computer-assisted teaching methods), and a mix of real patient and medical simulations (simulated, trained human patients) are some other methods used in teaching and learning (Issenberg, McGaghie, Petrusa, Lee Gordon, & Scalese, 2005).

Many other contributing factors to dynamic faculty roles include increased demand on faculty accountability in the scholarship of teaching, cost pressure and resource constraints. Furthermore, accreditation agencies (who assess the quality of professional higher education programs, healthcare infrastructure (hospitals, universities) and human resources (medical and allied medical professionals) using predetermined criteria and standards, globalization of higher education (multinational universities and global market for higher education), modules of multiple competencies and skills development programs, have also contributed to the expanding roles of faculty (Candela et al., 2006; Higuchi et al., 2006; Issenberg et al., 2005; Pangaro, 2012). Pangaro argued that vice-chairs should take a leadership role in education in the changing environment characterized by financial pressures and regulatory measures. Consequently, they should meet challenges and barriers often presented by their colleagues in higher cadres when integrating and redesigning medical school curricula (Pangaro, 2012). Notably, Steinert and colleagues reviewed the literature that focused on faculty development initiatives for leadership in medical education and practice and found increasing evidence to support such initiatives for leadership development at the individual and organizational level (Steinert, Naismith, & Mann, 2012).

Assessment methods of faculty teaching. Multiple models have been used for evaluating faculty teaching effectiveness. These models include peer ratings, student ratings, anonymous evaluation, open evaluation, self-evaluation, videotape playback sessions, student interviews, alumni ratings, employer ratings, administrator ratings, student and peer feedback reports, teaching scholarship, teaching awards, learning outcome measures, analysis of instructions including lectures, discussions, and questioning and teaching portfolios (Berk, 2005; Seldin, 1993; Steinert et al., 2006; Tochel et al., 2009).

Student evaluation is a necessary source of evidence of teaching effectiveness for formative decisions but an insufficient source for summative purposes, as there are many other faculty characteristics that need to be considered. Student evaluation of faculty teaching effectiveness is supported by research evidence (Berk, 2005). The intended purpose for faculty teaching ratings by all stakeholders including faculty, administrators and students varies (Beran, Violato, Kline, & Frideres, 2006). However, triangulation, or combination, of data from multiple data sources to weigh teaching effectiveness is advocated to solve variability, and strengthen the overall evidence for faculty teaching effectiveness (Berk, 2005). To meet society demands and unprejudiced faculty teaching evaluation, researchers have suggested possible improvement in teaching instructions and delivery methods that are tied to effective teaching (Beran, Donnon, & Hecker, 2012; Donnon, Delver, Beran, 2010; Feldman, 1998; Theall & Feldman, 2007).

Peer review of teaching in classroom and teaching materials is an important tool that increases personal control over teaching practices among faculty members, promotes professional development and enhances quality of teaching in higher educational institutions (Thomas, Chie, Abraham, Raj, & Beh, 2014). Peer assessment of teaching performance in the classroom and written materials is complementary to student ratings. It covers those aspects of

teaching that students are not in a position to evaluate. Student and peer ratings, when combined, furnish a comprehensive picture of teaching effectiveness. Nonetheless, peer ratings should not be used for personnel decisions such as promotion and salary increments. Furthermore, there is considerable resistance by faculty to its acceptance as a complement to student ratings. In fact, peer observation data are considered inappropriate for summative decisions by administrators (Berk, 2005). The Academic Senate for California Community Colleges (Morse et al., 2013) has provided a detailed description of principles and methods of faculty teaching evaluation including a focus on professional development, personal and professional growth and meaningful and useful feedback given to them. Furthermore, medical colleges also have developed an environment in which faculty excellence and success, improvement and growth are acknowledged and celebrated. All stakeholders must work together to establish evaluation processes and methods which need to be fair, meaningful, honest and consistent (Morse et al., 2013).

Another faculty teaching evaluation model is the use of student interviews. Group interviews with students furnish good evidence that faculty tend to consider as more precise, trustworthy, valuable, and credible than student ratings and written comments (Braskamp & Ory, 1994). The results of student interviews are not only most useful for teaching improvement but also are valuable in promotion decisions (Lin, McKeachie, & Tucker, 1984). Three types of interview techniques – quality control circles, classroom group interviews, and graduate exit interviews lay the foundation for providing student feedback for teaching improvement and supplement student ratings. Conversely, graduate exit interviews may be impractical to conduct or redundant with other teaching ratings (Berk, 2005).

Each evaluation method of faculty teaching has research supporting its utility. For example, faculty portfolio allows for uses such as assessment of multiple faculty roles including effective teaching, research scholarship, administrative and clinical practice (Angelo & Cross, 1993). A faculty portfolio is known to assess faculty performance and outcomes related to attitudes and professionalism that are difficult to gauge using traditional methods such as rating scales. Furthermore, a portfolio as an assessment tool can be regularly used at undergraduate, post-graduate, faculty, and continuing education levels (Angelo & Cross, 1993; Buckley et al., 2009; Tochel et al., 2009). In addition, portfolio assessment can be used for formative or summative assessment, or both. The aim of formative assessment, is to gather feedback to be used by faculty and students to guide improvements in ongoing teaching and learning. This is done, for example, by asking students to submit one or two sentences identifying the main point of a lecture, an outline for a paper and early course evaluation. On the other hand, the goal of summative assessment is to measure and compare the level of achieved success at the end of an instructional unit against some standard. This is accomplished, for example, by assigning a grade to a final exam, critiquing a senior presentation, and evaluating a faculty course. Notably, the outcome of a summative assessment can be used formatively when students or faculty use the results to guide their efforts and activities in subsequent courses (Angelo & Cross, 1993; Dannefer & Prayson, 2013; DiVall et al., 2014; Skrabal et al., 2012). This makes a portfolio a flexible and robust assessment method. Portfolios promote critical thinking and induce self-directed learning together with peer-supported and adult learning. It also initiates interaction between tutor and student, and is a source of reflection and self-assessment (Angelo & Cross, 1993; Davis & Ponnampерuma, 2005). It further reflects authentic assessment, and encourages creativity and problem solving. Finally, a portfolio promotes learning about learning

(metacognition) and uses multiple methods of assessment (Angelo & Cross, 1993; Davis & Ponnampерума, 2005). Obviously, a single method is not sufficient in the assessment of faculty teaching, and, hence, multiple methods are required to achieve this objective. Similarly, researchers conclude there is extensive quality-based information about the impact of a faculty portfolio on undergraduate and postgraduate students' learning and education (Buckley et al., 2009; Tochel et al., 2009). Driessen and associates suggest that the effectiveness of portfolios to assess competence-based education lies in its robust integration with curriculum and strong tutor support. User-friendliness and effectiveness of portfolios, qualities of holistic assessment procedures, and the competence of an effective portfolio mentor are avenues of further research (Driessen et al., 2007b). In other words, teaching portfolio (for summative purpose), student ratings and student group interviews (formative purpose), and peer evaluation (summative purpose) are tools that gather data for faculty teaching effectiveness. This evidence is used by promotion committees, instructors, and administrators for the purpose of improving teaching instruction and faculty promotion in academic institutions.

Faculty and service. The role of faculty with regard to administrative, community and clinical service is also changing. In just the 1980s, teaching of medical students was not considered the job of physicians. Nowadays, it is considered a high priority. Faculty may move from universities to private healthcare institutions and biomedical industries for higher wages. The model of "physician-researcher (scientist)" is undergoing transformation to "clinician-educator" (Korin, 2008; McCullough, Marton, & Ramnanan, 2015; Schafer, 2010). This means that beside clinical practice, physicians will have additional roles of teaching and administration or management. McCullough, et al. in (2015) reported that intrinsic reasons (enjoyment in observing outcomes of teaching, appreciation for new perspectives gained from students, sense

of duty, and self-reflection of their own skills), lead physicians more towards teaching medical students compared to the extrinsic reasons including rewards, recognition, university appointments and teaching workshops. However, physicians perceive a number of key barriers for accepting the teaching role. These barriers include decreased productivity, lack of compensation, increased length of the work day and workload, patient concerns, ethical issues, and lack of confidence in their own ability. To be an effective educator, the clinician–educator should have specific skills and attributes in methods of teaching and produce academic scholarship including curricular materials, publications, focus on education and medical education research (Roberts, Schwartzstein, & Weinberger, 2014), which is a scientific discipline to study several aspects - for example of teaching methods, curriculum development, and student learning in academic settings. This poses great responsibility on clinicians to be educators and teachers in addition to researchers. Promotion and tenure committees have started using this criterion (Kuhn, 2004). Notably, this polarized model is not consistent with other goals such as originality, inspiration, and compassion other instructors may strive for (Alpert & Coles, 1988; Manabe et al., 2009). Akselrod (2010) explains how academic physician careers can help global health researchers balance research commitments and the duty to care. Ideally, an academic must exhibit skills of effective teaching, research scholarship and clinical care, as well as schedule their time accordingly.

The changing roles of service, teaching, and research of faculty are critically needed. Although they will likely increase workload (Hovenga & Bricknell, 2006; McCullough et al., 2015), these dynamic roles of faculty will fulfil increasing demands (proper use of taxpayer money in academic institutions) both of the public and for students from diverse cultures regarding effective teaching and learning, scholarly and creative discoveries, and substantial

institutional and community services. In addition, based on the concept of continuing faculty development to bridge the staff shortage gap across health sciences, the continuing education role of faculty as initiated in Canada is required to meet the challenges of clinicians' expanding role in clinical service (Schindel, Kehrer, Yuksel, & Hughes, 2012). In relation to faculty involvement in organizational readiness, faculty need to take additional responsibility for health promotion through adopting behavioural change approaches. Overall, faculty portfolios meeting a variety of demands need to incorporate selectively innovative service activities, scholarly research work and effective teaching instructions and methods.

Faculty and research. Faculty effective teaching and research are two important responsibilities. Research can enrich teaching, but this notion is not supported by all academics. However, the research-teaching nexus allows integration of both through bringing research into the classroom, involving undergraduates in research projects, and broadening the definition of scholarship beyond the frontiers of disciplinary research (Prince, Felder, & Brent, 2007). According to some researchers, collaborative research carried out with students needs to be integrated in the curriculum for effective teaching and learning, as it can facilitate students' learning in both areas of teaching and research endeavours (Arreola, 2007; Medina et al., 2011). Indeed, shared research and teaching opportunities provide students a platform to substantially reflect on and learn these scholarship activities. However, all health sciences faculty need continuous effective training in research in order to build research capacity to meet organizational challenges not only associated with human resources but also infrastructure (Segrott, McIvor, & Green, 2006).

There are other important scholarly research activities of faculty. Faculty members need to conduct innovative research with appropriate methods and rigor. While planning a study, they

should use concepts and theories in an original way. They need to synthesize, criticise, and clarify extant knowledge and research. The research may also, but not necessarily, lead to the solution of practical and theoretical problems of societies. The research type may be basic, developmental or clinical. Furthermore, faculty should engage effectively in scholarly activity of high quality, distinction and significance. These areas broadly include published work in peer reviewed national and international journals, book chapters, books, book reviews, monographs, and technical reports, grant activities related to research proposals (principle investigator or co-investigator, or research consultant), training and development, and sponsoring programs, mentoring and research presentations (invited) at national and international conferences.

Other faculty activities are reflected in awards and honours that faculty receive from professional associations, and patents and copyrights. Furthermore, faculty research inspires other researchers, and creates new areas of research to be pursued by academics and undergraduate and postgraduate students. Development of interventions that prevent negative outcomes (or boost positive outcomes) is another scholarly activity. These distinctive, significant and quality oriented activities assist faculty in promotion at various stages of their career (Arreola, 2007; Boyer, 1990; Seldin, Miller, & Seldin, 2010).

Faculty Evaluation System and Faculty Portfolio

These diverse and challenging roles of faculty must be evaluated for accountability purposes to the institution, students, and society in general. One means of doing so is with a faculty portfolio and another one with a faculty evaluation system, the latter may help both in the development of portfolio and its implementation and evaluation in academic institutions. Arreola (2007) provided extensive details of how to develop a comprehensive faculty evaluation system according to an eight-step process. The first step is to determine the faculty role model [FRM]

that is represented by the roles of teaching such as developing courses (instructional design), delivering lectures (instructional delivery), and developing written examinations (instructional assessment); research and creative activities with dissemination of information through publications, keynote addresses and other means; and service and management or administration to the profession, institution and community. The second step is to assign the relative importance of the aforesaid roles by allocating values. According to Arreola (2007), each teaching and research role is given 40%, while service is assigned 20%. The third step is to write and agree upon a comprehensive definition of the three roles and their sub-subsets of teaching, scholarly and creative activities, and service in the FRM. The fourth step is to determine the weight of each role and their subdomain. For example, teaching involves instructional design (developing course material), instructional delivery (delivering lectures), instructional assessment (developing written examinations) and course management (managing the resources and facilities for appropriate teaching and learning). Each of these teaching components needs to be assigned relative importance in the evaluation of teaching. The fifth step is to select appropriate sources of information, by making sure that the source has first-hand knowledge of the performance being evaluated. Students are a good source of information as they are actively engaged with faculty. The sixth step determines the credibility of information sources and specifies the weight the information from each source will have in the overall evaluation of an individual. The seventh step determines how information should be gathered accurately from already decided sources which include students, peers and department chairs. A matrix sheet can be designed for this purpose and can include the aforesaid teaching role components, sources and methods for data gathering, peer analysis of exams and review of grading practice. The eighth step completes the system and is achieved by designing forms, protocols, rating scales and

questionnaires to measure defined teacher roles, for example teaching performance, simulated teaching, self-learning, administrators' observation about instructor performance and peer ratings, in addition to the teacher, research, scholar, and service activities (Arreola, 2007). These steps to evaluate faculty, through the use of various questionnaires, rating scales and assessment tools are tedious, time consuming and cumbersome, which is not the case when a faculty portfolio is used.

Domains and Sub-domains of Faculty Portfolio

Portfolios generally tend to contain the following domains and subdomains: 1) teaching scholarship - self-reflection about teaching, documentation of teaching curriculum and methods, teaching effectiveness, materials demonstrating student learning, activities to improve instruction, contributions to the teaching profession and institution, and honours, awards, or recognitions; 2) research scholarship – research conducted, publications, research papers and findings disseminated such as at conferences; 3) clinical service; and 4) administrative service (Granville & Houde, 2004; Kuhn, 2004; Medina et al., 2011). The domains of a faculty portfolio are not static and vary in accordance to the evolving new roles of faculty. Lamki and Marchand (2006) described a holistic medical educator teaching portfolio that records teaching effectiveness and achievements, skills, and strategies, and represents the faculty's growth and progress. Its template has four parts: evaluation (of teaching, clinical, administrative, educational development), personal and professional development (such as philosophy of education, goals and objectives to be attained), learning processes (such as records of achievements), and an appendix (such as tests or examination and curriculum) (Lamki & Marchand, 2006). Rogers (2001) described subdomains of teaching, which are reflective teaching statements, descriptions of one's personal teaching philosophy, strategies, and objectives and a personal statement

describing teaching goals for the next few years. One reported key feature of a faculty portfolio is that individual domains of portfolio support the whole structure of the faculty portfolio (Holowchak, 2013; Zipp & Susan, 2010). In nursing, professional development portfolios, Hespenheide, Cottingham, and Mueller (2011) identified a mix of domains and subdomains including: introduction, quality of care, self-evaluation, education, research, leadership, ethics, interdisciplinary process, and future goals. Teaching, research scholarship, and service are relatively constant domains of portfolios, but what is listed under each of these domains differs according to the type of profession such as nursing, pharmacy, public health, and dentistry.

Portfolio domains and subdomains vary according to additional characteristics. These include level of faculty, whereby junior professors tend to prioritize research and teaching while senior professors take leadership, administrative or management responsibilities. Kuhn (2004) emphasized the following domains of educator portfolios for junior and senior faculty: narrative of the philosophy of education, teaching and scholarly activities, recognition of excellence, courses, study for enhancing one's expertise as an educator, service, research, and publications. Each domain (component) has a variable number of subdomains (subcomponents). This type of variation requires a method of measuring all of them that is flexible and comprehensive. A portfolio is an instrument meant to assess these diverse roles. It can be customized to fit the individual and does not need to be presented as a standard form where all fields are completed in the same way; it is tailored to the individual's responsibilities, purposes and needs.

Effectiveness of Faculty Portfolio

If the faculty portfolio is used to assess multiple roles of faculty, it must be multidimensional (Byrne, Schroeter, Carter, & Mower, 2009; McCready, 2007; McMullan, 2006). At the end of evaluation, the portfolios must identify individuals' accomplishments,

strengths and weaknesses (Hayward et al., 2008; Supiano et al., 2002). Evidence of the ability of portfolios to deliver on these goals is lacking, but some studies do show positive results. For example, data from self-report surveys (McMullan, 2006) and a systematic review (McCready, 2007) showed that portfolios used to assess competencies of traditional and registered nurses in a community health nursing course enhanced their critical thinking skills. Portfolios can be effective as an assessment and learning tool, but it is essential that both students and mentors receive clear guidelines on and comprehensive support for their use. Portfolios should be designed in such a way that they are relevant, clear and user-friendly for both students and mentors (McMullan, 2006). The clear guidelines and university support also are needed for portfolio development and qualitative assessment of competence. Where the portfolio process is well developed, there are clear links to competence in practice (McCready, 2007). Other researchers have found the clinical achievement portfolio to be a creative and systematic tool for assessing individuals' clinical learning and reflective thinking (Byrne et al., 2009; Tracy, Marino, Richo, & Daly, 2000). It also was associated with other potential benefits including individual accountability (Byrne et al., 2009; Tracy, Marino, Richo, & Daly, 2000). McDuffie and colleagues demonstrated that the portfolio process was beneficial in developing learners' skills needed for creating pharmaceutical care plans (McDuffie, Sheffield, Miller, Duke, & Rogers, 2010). In a systematic review of literature on portfolios to assess competence development in education, Driessen and colleagues (Driessen et al., 2007b) reported that portfolio is an effective assessment tool if it has clear goals and procedures, flexible structure, portfolio mentor, and integration with curriculum and assessment, with reduced required time. There were 1939 retrieved papers that focused on the effectiveness of a faculty portfolio to assess competence and learning development. Of these, only five of the relevant articles benefit

reflecting learning, personal and professional development and understanding clinical programs. Portfolio use in continuing medical education (CME) yielded mixed findings. Some studies reported an impact on reflecting learning while others found support for planning and monitoring of CME (Byrne et al., 2009; Driessen et al 2007b; Schindel et al., 2012; Tochel et al., 2009).

Faculty portfolio assessment reflects teaching effectiveness if assessors are few in number, there are pre-and post-assessment discussions among raters and relevant rubrics specific to the purpose of the portfolio are used. Faculty largely supported formal assessment of portfolios. Studies on portfolio assessment and learning showed some conflicting results: students' portfolios assessment tend to show less reflection while other research reported no such finding. Also, researchers found that faculty supported formal assessment of portfolios, but students expressed disagreement (Buckley et al., 2009; Driessen et al 2007b; Tochel et al., 2009).

Mixed results may occur for a number of reasons. In some studies, the purpose is undefined and unclear (Driessen, 2009; Norman, 2008; Pearson, & Heywood, 2004). In other cases, faculty and trainees may be unfamiliar with how to use and document selective content in portfolios (Norman, 2008; Pearson, & Heywood, 2004; Tofade, Hedrick, Dedrick, & Caiola, 2013). Finally, researchers found that if portfolios are used in isolation (not part of other educational activities such as mentoring), they are of little use for assessment (Driessen et al 2005b; Pearson & Heywood, 2004). Time constraints and high daily workloads may also explain the mixed results, as people may see the portfolio as intrusive on their time and not complete it carefully (Brennan & Lennie, 2010; Dornan, Carroll, & Parboosingh, 2002; Driessen, 2009; Norman, 2008; Plaza et al., 2007). Portfolios are voluminous (Norman, 2008), with potentially meaningless content (Driessen, 2009; Norman, 2008). Lack of IT skills may create challenges for

portfolio use (Dagley & Berrington, 2005). Variations in portfolio content may also give rise to mixed results (Driessens et al., 2007b).

Several suggestions have been made for improving the quality of portfolio evaluations. These include a clear introduction and specification of their intended use. Goals must also be defined, and there should be a limitation on required paperwork. Learners can be given freedom to determine content, and content provided should be concise and selective. Availability of adequate support from mentors is needed to ensure that clear guidelines are given along with assistance in completing it. There should also be a focus on integrating portfolios with other educational activities such as mentoring and interviews. There should be a limited number (two or three) of trained assessors to reduce variation in assessment scores. Finally, the portfolio format needs to be flexible to address the various needs of the user (Driessens, 2009; Driessens et al 2007b; Norman, 2008).

Faculty Portfolios and Barriers

Portfolios are not accepted by all faculty members. They can be expensive and subjective (Brennan & Lennie, 2010; Costantino & De Lorenzo, 2009). They can take upwards of 12 to 15 hours to complete. Much of that time may be spent thinking, planning, and gathering the documentation for the appendices, according to the amount of content included (Seldin, Miller, & Seldin, 2010). Another issue in regard to hard copy portfolios is the space needed to store them (Reis & Villaume, 2002). Portfolios also involve disproportionately excessive paperwork on top of the daily paperwork requirements (Brennan & Lennie, 2010; Plaza et al., 2007; Supiano et al., 2002). The daily paperwork includes responding to administrative letters, writing prescriptions in the clinics, tailoring research proposals and so on. Other perceived barriers against use of faculty portfolio are training of faculty on how to use portfolio. In addition, faculty

also raised strong objection to faculty portfolio assessment by peer reviewers. Peers tend to report inconsistent assessment of faculty and different conclusions about competencies (Brennan & Lennie, 2010; Supiano et al., 2002). Some faculty may have a limited understanding of standards and knowledge of portfolios-especially how to document relevant activities (Tofade, Hedrick, Dedrick, & Caiola, 2013). In addition, barriers to portfolio development and implementation included lack of money, and human resources (Barnes, Torrens, George, & Brown, 2007). At the institutional level, lack of multiple supports including administrative, infrastructure, teachers, incentives and peers act as barriers. These support models should be available for successfully developing and implementing the faculty portfolio. Undergraduate students have expressed their concerns about portfolio such as anxiety about how to present information clearly, having a limited understanding of what constitutes reflective learning, and being unaware of. Its potential benefits (Ross, MacLachlan, & Cleland, 2009). Other barriers for portfolio implementation include poor reliability and validity, inappropriate use of portfolio in summative assessment, and dual use of portfolio for student's learning and assessment (Gadbury-Amyot et al., 2003; Plaza et al., 2007). Several researchers have recommended solutions to these problems such as considering views of faculty and staff training before implementing portfolios (Driessen et al., 2007b; Plaza et al., 2007).

Reliability and Validity Issues of Faculty Portfolio

Portfolios are used as assessment tools in academia, and hence, they must show good evidence of reliability and validity. As stated by Seldin (1993), originator of the teaching portfolio, a faculty portfolio should be relevant, reliable, practical, and flexible. Chang (2002) stated consistency of assessment results should be examined among different portfolios, raters, test times, and situations. To be authentic, a portfolio assessment requires good reliability and

validity scores in higher education programs, such as effective teaching and learning evaluation and faculty promotion and retention. The multifaceted nature of portfolios allows for the demonstration of a variety of strengths and weaknesses, and the latter need to be rectified by adopting several mechanisms that help enhance the reliability of scores. When used to make promotion and tenure decisions for individual faculty members, it is critical that adequate reliability and validity of scores be obtained from a portfolio. This is a challenge for researchers given the variability of content across portfolios.

Reliability of faculty portfolio assessment. Reliability refers to “the consistency of measurements where the testing procedure is repeated on a population of individuals or groups” (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999, p. 25). Despite the many types of reliability that could be used to examine the consistency of scores obtained from portfolios, the majority of researchers have examined test-retest reliability (Gadbury-Amyot et al., 2003; Gelina, 1998; Oskay, Schallies, & Morgil, 2008; Pitts, Coles, Thomas, & Smith, 2002; Plaza et al., 2007; Rees & Sheard, 2004; Tochel et al., 2009). The reported correlations in two separate studies are in the range of 0.28–0.60 (Gadbury-Amyot et al., 2003) and 0.36–0.69 (Rees & Sheard, 2004). This wide range is likely due to measurement error linked to the training and number of raters, grading rubric development, the variable purpose of portfolios, including holistic versus component grading or assessment, and inherent subjectivity.

Concerning interrater reliability, studies show poor to high reliability (Gelina, 1998; Tochel et al., 2009; Yu, 2003; Yueh & Wang, 2000). Gelina (1998) found a high overall consistency between two portfolio raters, in the range of 0.81–0.90. In contrast, Yueh and Wang (2000) found that portfolio assessment concerning personalized learning often shows poor

reliability. Furthermore, Yu (2003) stated that subjective judgment tends to affect reliability. In the absence of a well-defined scoring or grading system, raters tend to use different judgments in the evaluation of portfolios. Thus, they introduce bias in assessing the portfolios that may have an effect on the reliability of scores. In a systematic review of the interrater reliability of portfolios for postgraduate summative assessment, Tochel et al. (2009) reported that the summative evaluation of portfolio content could be reliable among multiple raters. The researchers investigated interrater reliability and score reliability with Rasch model analysis and a generalizability study to determine the relative impact of factors such as raters and items on portfolio scores. The level of rater agreement showed that the portfolios were rated consistently and provided an accurate measure of teaching competency.

The reliability of the portfolio scores involved in making professional decisions regarding the competence of teachers is a dilemma that is attributed to the variability often found among individual portfolios. Anna-Marie (1998) investigated interrater reliability in using portfolios to evaluate knowledge of teachers. The results indicated that the portfolio content—task performance, conceptual knowledge, years of experience, and pedagogic knowledge—were rated consistently. Moreover, the level of interrater agreement was excellent (0.81); thus, portfolios were determined to provide consistent measures of teaching performance. Driessen et al. (2006) showed interrater agreement that ranged from 0.46 (moderate agreement) to 0.87 (excellent agreement). Generalizability studies show that portfolio scores are affected mostly by discussions of ratings between raters rather than individual ratings. This might be due to the individuality and layout of the portfolios when combined with the personalities and preferences of the raters that can be agreed upon through discussion (Anna-Marie, 1998). The subjectivity inherent in rating portfolios is a major limitation in the implementation and scoring of portfolio

assessment (Anna-Marie, 1998). Pitts et al. (2002) looked at portfolio assessment with eight general practitioner trainers. They achieved poor to moderate interrater reliability of 0.10–0.41, which increased to 0.50 with rater criteria discussion. In other words, the reliability of a global pass judgment improved from fair (due to individual assessments) to moderate when open discussion about rating occurred between random pairs of assessors. Discussion among raters prior to testing the reliability of portfolios tends to enhance reliability of its scores. It is also known that when portfolio scores increase after feedback shared with faculty to improve their competencies, the reliability is reduced, as scores are changing. This must be accounted for when conducting research on reliability. Overall, research suggests that there is at least a moderate degree of reliability across the different types of portfolios that have been examined (Oskay et al., 2008).

Qualitative methods can also be applied to address the subjectivity of portfolios. Driessens et al. (2005b) used qualitative, global research criteria—prolonged engagement, member checking, audit trail, and dependability audit—for portfolio assessment. In their study, 233 portfolios were assessed by students and mentors. When they disagreed on certain portfolio assessments, only those portfolios were submitted to the full assessment committee. The results showed that 226 portfolios (97%) were graded without being reviewed by the full committee. Furthermore, nine students failed, 147 received a pass, and 81 were given a distinction. The entire procedure was completed in the relatively short time of 42 hours, with each portfolio assessed in 11 minutes on average. The full assessment committee meeting lasted one hour. The participants did not find the process stressful. These results reflected more credibility (validity) and dependability of portfolio assessment for summative purposes embedded in the professional

judgment procedure (Driessen et al., 2005b). Qualitative information and subjective research criteria might be used to reliably assess portfolios for both formative and summative purposes.

There are several sources of error that may reduce the reliability of portfolio assessment (Chang, 2002; Driessen et al., 2007b; Jasper & Fulton, 2005; Plaza et al., 2007; Scholes et al., 2005). First, Chang (2002) identified several factors that make the sources of score variation diverse and inconsistent, and these include subjective scoring methods, insufficient number of portfolio entries, potential variety of portfolio content, and the long duration it may take to complete it. Second, other researchers have pointed out ill-defined grading criteria, inappropriate and irrelevant portfolio content, untrained raters with poor understanding of content, too few raters, variable purposes of portfolio assessment (formative vs. summative), and use in multiple health profession settings (Driessen et al., 2007b; Jasper & Fulton, 2005; Plaza et al., 2007; Scholes et al., 2005). Many researchers have suggested a number of ways to effectively improve the reliability of portfolio assessment (Plaza et al., 2007). The role of well-defined scoring criteria is particularly critical in fostering consistency among raters. Other factors also lead to consistent results, such as appropriate portfolio rubrics, raters that are familiar with rubrics, and similar rater backgrounds (Chang, 2002; Driessen et al., 2007b; Jasper & Fulton, 2005; Plaza et al., 2007; Scholes et al., 2005). The major drawback of the portfolio as an assessment tool is its low interrater reliability attributed to differences in interpretations of how to complete it and how to rate the importance of the material contained in the portfolio. When a faculty portfolio is given to a peer, administrator, or student for assessment for any purpose, including teaching effectiveness or promotion, this can lead to conflicts of interest (Angelo & Cross, 1993; Davis & Ponnampерuma, 2005). When the personal information of a faculty member is known to the assessor, low scores may be given because of conflictual interpersonal relationships (Feldman,

1998; Marsh, 1987; Theall & Feldman, 2007), which may result in lower reliability. Evidently, similar scenarios occur in students' evaluations of faculty effectiveness. Students tend to give higher scores or evaluations to teachers who give them higher grades (Gigliotti & Buchtel, 1990; Theall, Franklin, & Ludlow, 1990). Conversely, students give lower scores to those faculty members who give them lower grades (Gigliotti & Buchtel, 1990; Theall, Franklin, & Ludlow, 1990). This may be explained as an attributional bias (i.e., students' tendency to take credit for successes and avoid blame for failure) and retributinal bias (i.e., students "rewarding" teachers who give them higher grades by giving them higher evaluations and "punishing" teachers who give them lower grades by giving them lower evaluations) (Gigliotti & Buchtel, 1990; Theall, Franklin, & Ludlow, 1990). The latter bias is called the "grading leniency effect" (Marsh, 1987). An anonymized faculty portfolio may resolve this dilemma, although identifying information in the portfolio may reveal the faculty member's identity to the assessor.

Validity of faculty portfolio assessment. Validity refers to "the degree to which theoretical evidence and theory support the interpretation of test scores for proposed uses of tests" (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014, p. 11). Validity is a major challenge in portfolio assessment as portfolio information may not adequately measure what it is intended to measure. This is particularly likely to occur when decisions, such as student pass/fail judgments, are made because portfolios need to have good to excellent validity scores (Driessens et al., 2006; Driessens et al., 2007b; Gadbury-Amyot et al., 2003; Gelina, 1998; Oskay et al., 2008; Yueh & Wang, 2000).

There are several types of evidence of validity. Traditionally, there are various means of accumulating validity evidence, which are mainly content-related (demonstrates that the test

questions represent the skills in the specified subject area), criterion-related (seeks that scores are systematically related to one or more outcome criteria), and construct-related (shows that the extent to which the test measures the right psychological constructs) (Brualdi, 1999).

Messick (1998) presented modern views on validity and criticized its traditional concept on the grounds that it is fragmented and incomplete because it fails to take into account both evidence of the value implications of score meaning as a basis for action and the social consequences of score use. He viewed validity as a unified concept which emphasizes how a test is used and he includes consequence as a part of validity and validation. He considers six aspects of validity (content, substantive, structure, generalizability, external factors, and consequential aspects of validity) to underlie validity. These six aspects are specific and yet overlap to provide converging evidence of validity (Messick, 1995). They are said to apply to all educational and psychological measurement for most score-based interpretations (Messick, 1995). When examining validity, the idea is that scores that measure similar constructs should be similar (convergent validity) and scores that measure different constructs should be dissimilar (discriminant validity; Brualdi, 1999; Kane, 2013).

Kane (2013) made the most recent advancement in validation theory and addressed the issue of prioritization and evidence gaps by highlighting key phases or inferences in planning and evaluating the validity argument (Cook, Brydges, Ginsburg, & Hatala, 2015). Kane traced an assessment from the scoring of a single observation, to using the observation score(s) to generate an overall test score representing performance in the test setting to drawing an inference regarding what the test score might imply for real life performance (i.e., extrapolation), and then to interpreting this information and making a decision (i.e., implications). Each phase in this process represents an inference with several assumptions (Kane, 2013). This validity framework

specifies evidence that can be collected to support (or refute) each of these assumptions, thus strengthening (or weakening) the associated inferences and ultimately the overall validity argument. Thus, the key insight provided by Kane refers to the prioritization, selection and organization of this evidence into a comprehensive and coherent argument (Cook, Brydges, Ginsburg, & Hatala, 2015). Although a more recent theory on validity, which has been applied to medical education, the Messick framework was adopted in the present study as it presents the original concepts and terms that apply today.

Two major threats known to influence validity include “construct underrepresentation” (the tasks which are measured in the assessment fail to include important facets of the construct) and “construct irrelevant variance” (the test measures too many irrelevant variables that are outside the scope of intended construct) (Hubley & Zumbo, 2011; Messick, 1995). Regarding concurrent validity, Anna-Marie’s study (1998) found a positive and significant relationship among portfolio scores, performance-based tasks, and years of teaching experience. The performance tasks were the best correlates of portfolio scores followed by years of experience. These findings revealed good evidence of criterion-related validity of the portfolios as an accurate method of measuring pedagogical content knowledge in the course. Furthermore, this study shows that conceptual knowledge and pedagogical content knowledge are related to the performance of teachers, suggesting portfolio assessment could provide valid insights into the competencies of teachers.

Gadbury-Amyot et al. (2003) examined several types of construct validity (content, substantive, structural, external, and consequential) of portfolio assessment and found a significant relationship between each of the seven subscales in the scoring rubric of a construct. The seven subscales included in portfolios were growth, attainment, self-evaluation, lifelong

learning, organization, creativity, and communication. The seven subscales all measured teaching effectiveness, and these scores were related to achievement. Some subscales on portfolio may have significant and other subscales may have non-significant relationship as reported in this study (Gadbury-Amyot et al., 2003). Roberts, Shadbolt, Clark, and Simpson (2014) showed that a portfolio for program assessment of performance was related to passing an integrated clinical placement, providing further evidence of concurrent validity. Overall, the authors concluded that portfolios serve as a valid measure for assessing student competency (Roberts et al., 2014).

In terms of discriminant validity, Driessens et al. (2006) found that irrelevant criteria, such as writing style and portfolio format, were not related to the ratings from the regular assessment or the inventory items. However, the quality of reflection had an impact on the ratings of the regular assessment and the validity of the portfolio assessment procedure. In other words, some irrelevant items may have an effect on the validity of the portfolio assessment method, and, thus, need to be considered. Oskay and colleagues (2008) reviewed several studies that focused on the validity of a faculty portfolio assessment and found good support for interpreting portfolio scores when certain conditions were in place. Portfolios should be clearly or meaningfully introduced to students, have uniform content, and be scored by experienced and trained raters who have a shared perception (prior discussion among raters) of the purpose of assessment and a clear understanding of expected student performance. These fundamentals of portfolio assessment have an enhancing effect on validity. In a systematic review of the validity of portfolios for postgraduate summative assessment across multiple health professions, the results of accuracy across the evidence base varied; however, more valid scores could be gained from portfolio use when combined with other assessment methods including peer assessment, self-assessment,

student assessment, and administrator ratings (Tochel et al., 2009). Despite all this support for the validity of portfolios as a good outcome measure of faculty evaluations, other studies have showed limited evidence of validity (Yao et al., 2008).

Portfolio assessment methods need specific criteria and standardization to increase the validity scores. According to Chang (2002), there is limited quantitative and qualitative research on the validity scores of portfolios. In this context, studies on validity (and reliability) mainly rely on the self-narratives of students and instructors to investigate teaching and learning effectiveness. Chang (2002) suggested the relationship between portfolio content and assessment results can be improved by creating clear learning objectives, which may be transferred to portfolio activities and entries.

Conclusion

This review reveals several insights. Despite extensive research on the faculty portfolio, it has no universally accepted definition, and, hence, various definitions and types of portfolios are available in the health science disciplines and higher education. In addition, the faculty portfolio has diverse purposes and uses, which lack specificity, and the judgment of portfolio data is subjective. Although the subdomain content of a faculty portfolio is typically defined, it varies across faculty portfolios. Teaching, research, and service are three primary roles of faculty, which are in turbulence and undergoing change. Effective teaching by faculty is associated with good student learning, as the public and educational administrators would expect. Research should be innovative and rigorous, and lead to new discoveries. Clinical, community, and administrative service should satisfy all stakeholders, including patients and their caregivers. These are the overarching goals of educational institutions. Faculty teaching effectiveness is measured by a variety of methods, but there is no gold standard test for assessing it. There exist

both advantages and barriers to the implementation and use of a faculty portfolio. Paper-based faculty portfolio development is a tedious process and passes through a number of stages. It can be used for multiple purposes, including high-stakes decisions, and, hence, it must yield consistent and valid scores. Despite continuing research, many aspects of a faculty portfolio continue to concern faculty, administrators, students, and the public at large. To smoothly transition into the use of the portfolio, the perceptions of faculty, administrators, and undergraduate students must be considered for its development. This study aims to use this approach in developing a paper-based faculty portfolio at King Saud bin Abdulaziz University of Health Sciences, Riyadh, Saudi Arabia.

Research Questions

The main purpose of this research is to develop a faculty portfolio. The following questions guided this research:

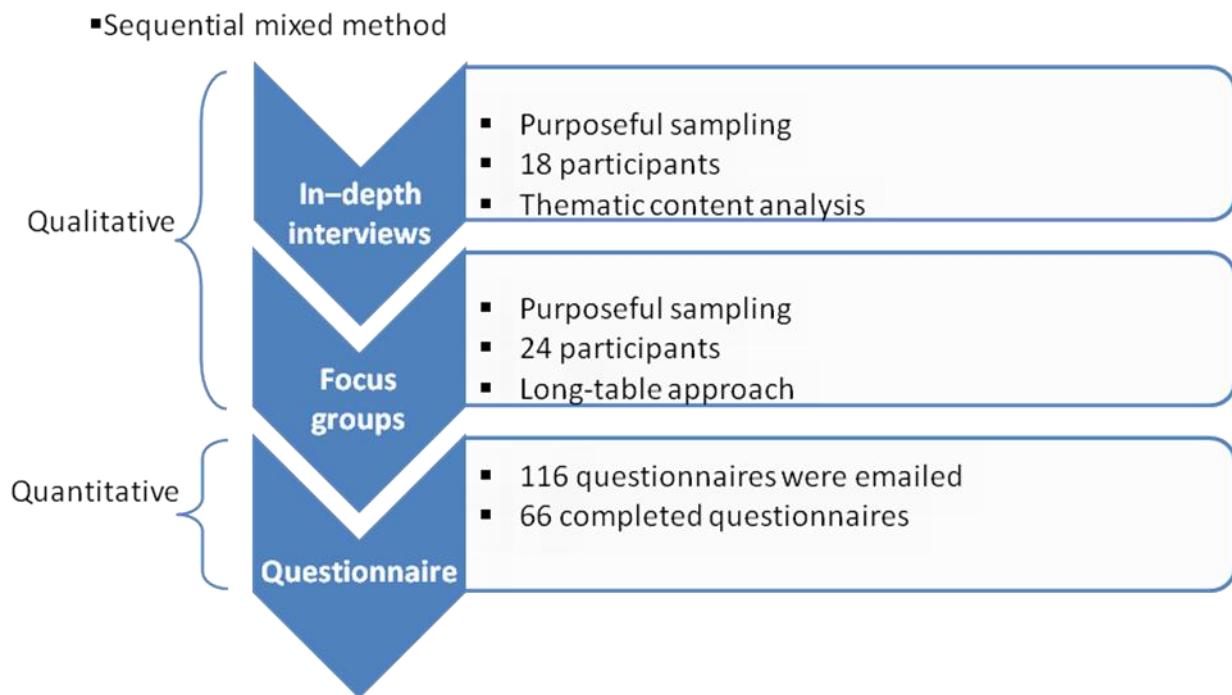
- 1) What are the current roles of faculty members? This question explores the roles, daily activities and practices of faculty and administrators using in-depth interviews.
- 2) What are the domains and subdomains of a faculty portfolio? This question is addressed by responses to in-depth interviews. Domains that emerged from the interviews were presented to focus group participants, and they were asked to identify the subdomains for each pre-defined domain. This triangulation method was adopted to support and complement the data collected from in-depth interviews.
- 3) What is the validation evidence for the developed faculty portfolio? This question was addressed by converting the newly developed portfolio into a questionnaire format, which was

distributed among participants drawn from senior faculty and administrators of health science universities.

The quantitative results from this question were used to inform the researcher about the various areas and details of a faculty portfolio that should be included in a comprehensive portfolio assessment. The goal is to design a faculty portfolio that would be compatible with cultural and academic sensitivities of Saudi Arabia, that could be used locally as well as transnationally, including other Gulf countries.

Chapter Three: Method

This chapter presents a detailed explanation of the research methods utilized in order to identify faculty roles, create a faculty portfolio through identification of the domains (main themes) and subdomains, and obtaining validating evidence of the newly created portfolio. This research used a sequential mixed method design comprised of in-depth interviews followed by focus groups and then questionnaires (Cameron, 2009).



These methods were adapted to support and complement the data collected from in-depth interviews and to obtain content validity. This chapter will explain the methods in a stepwise manner, starting with phase one involving in-depth interviews, where the participants are first described followed by the recruitment process, then the procedure, and finally the analytic method. The second section describes phase two of the research that includes focus group

discussions and a third section describes the method of collecting quantitative data using a structured questionnaire.

Phase One

In-depth interviews. Of all the 227 full time faculty and administrators at KSAU-HS, 116 met selection criteria. The criteria included full time faculty members who were in an academic position for at least five years, or administrators in a leadership role for at least three years. These eligibility criteria were used to select participants with possible experience in faculty portfolio to provide informed and relevant responses. Faculty portfolios are not used in any of the study settings (i.e., university's college of health sciences in Riyadh, Jeddah or Alhassa). However, selecting senior faculty and administrators increased the likelihood that they could have some knowledge of a faculty portfolio. Furthermore, faculty members with experience in teaching, research, service, and management were selected as participants. Therefore, our eligibility criteria identified the most appropriate participants for this study.

A purposeful sampling technique was used to select the participants in order to ensure that at least one faculty and one administrator were included to present the views of their respective field. They were also selected to ensure they were from all the study settings for the interview phase. An email was sent to the first 18 selected participants explaining the aim of the study and the requirements for participating. All the emails were sent through the university relations and media office. Out of 18, ten agreed to participate and eight declined due to reasons of travel and conflicts due to busy schedules. In the second round, emails were sent to the next ten eligible participants in order to complete the eighteen interviews. The investigator did not send emails to all 116 eligible participants because in this qualitative research 15 to 20 interviews were needed, which is acceptable according to Creswell (2009). Data were

triangulated to demonstrate stability and accuracy (Houghton, Casey, Shaw & Murphy, 2013). Eight out of ten agreed to participate in the interviews; two apologized due to their busy schedules. Thus, from a total of 28 invitations to eligible participants, only 18 (in the first round 10 were selected and in the second round eight participants were selected) agreed to take part in this study (response rate is 64%). The sample for this study represents 7.9% of full time eligible faculty and administrators.

As shown in Table 1, there were twice as many men as women. This ratio reflects the larger number of men in the university campus compared to women. Professors from all academic rankings participated, ranging from senior to junior faculty.

Table 1

Demographic Information of Interviewees

| Demographic characteristics | N (%) |
|-----------------------------------|-----------|
| Gender | |
| Male | 12 (66.6) |
| Female | 6 (33.3) |
| Faculty Ranking | |
| Professor | 7 (38.8) |
| Associate Professor | 4 (22.2) |
| Assistant Professor | 7 (38.8) |
| Role | |
| Teaching Faculty | 9 (50.0) |
| Administrative | 9 (50.0) |
| College | |
| Medicine (Riyadh, Jeddah) | 6 (33.3) |
| Dental (Riyadh) | 2 (11.1) |
| Pharmacy (Riyadh) | 2 (11.1) |
| Allied Health Science (Riyadh) | 2 (11.1) |
| Nursing (Riyadh, Jeddah, Alhasaa) | 6 (33.3) |

The settings for the interviews were branches of KSAU-HS. This higher educational institution has only health care discipline colleges. The Riyadh university has Medicine, Dental, Pharmacy, Applied Health Sciences, and Nursing faculties; Jeddah has Medicine and Nursing; and Alhassa has a nursing college. In Riyadh, all the in-depth interviews were conducted in the medical education conference room, college of medicine. In Jeddah, both interviews were conducted in the college of medicine meeting room, and in Alhassa the interviews were conducted in the college of nursing meeting room. All the in-depth interviews were audio taped for the purpose of transcription and analysis.

Procedures. Approval from the Conjoint Health Research Ethics Board was obtained prior to conducting the study. One week before the in-depth interview date, an e-mail was sent to each participant explaining to him/her the purpose of the interview to give time to think and prepare for interactive participation. Before starting the interview the participants were asked to read and sign the consent form.

In-depth interviews were conducted to gather comprehensive details about how a faculty portfolio could be designed to reflect daily work activities. Each in-depth interview lasted one hour, during which participants were asked to define their daily activities within all the roles they performed in the university. They were asked to translate the main roles as a domain and daily activities as a subdomain for the faculty portfolio. In addition, they were asked to give their view of an ideal faculty portfolio that would match their expectations and include all of their activities. They were asked to suggest domains (themes) and subdomains (subthemes) for the portfolio, and the interviews were guided using a topic guide [Appendix 1].

Participant interviews were conducted throughout March 2015, and an inductive approach was used for analysis. This is an exploratory method that involves reasoning of participants where main themes and also subthemes are identified (Fereday & Muir-Cochrane, 2006; Yeasmin & Rahman, 2012). This inductive approach was chosen to address the first and second research questions about roles of faculty and identification of domains and subdomains of the portfolio. The open-ended questions gave participants a broader space to imagine and think reflectively about roles and perceptions in relation to faculty portfolios. Probes, which are responsive questions used to find out more about what has already been raised, were used whenever needed. Before ending the interview, the participants were asked to assign a weight for each suggested domain to reflect the importance of the domain in the portfolio. It was expressed

in terms of a percentage to add up to a total of 100%. The sample was purposefully selected to cover all of the colleges in the three cities, and therefore, saturation was not used.

Analysis. Thematic content analysis (Aronson 1995) was used in order to analyze the interview responses, where themes emerge from participants' statements. This is achieved by aggregating the information provided by the participants into several categories then reducing them to meaningful sets of themes and subthemes. Inductive reasoning, referred to as a “bottom-up” approach, is used to help researchers build themes from collected data. This analytic strategy moves analysis from a broad reading of the data towards discovering patterns and developing themes and subthemes. Accordingly, data were organized into increasingly more abstract units of information. This process helps researchers work back and forth until they identify a comprehensive set of themes (Fereday & Muir-Cochrane, 2006; Yeasmin & Rahman, 2012).

The analysis started by transcribing all of the audio taped information into text. The text was then analyzed by coding the data for major categories - called “open coding.” This was then followed by “axial coding,” which identifies the open coding categories. The third step, called “selective coding,” involves the creation of a discursive set of theoretical propositions. In the context of this study, the selective coding resulted in the identification of the portfolio main domains and subdomains.

The analysis was independently conducted by two researchers (the main researcher and a research assistant). Regular meetings to examine the data and codes were conducted after each step to ensure dependability. In open coding, categories of the data were created by segmenting information provided by the participants. The goal was to build a descriptive, multidimensional preliminary framework for further analysis. Axial coding within each category was done by

creating several subcategories and organizing them. In selective coding, the core domains were defined by selecting the most common themes and combining others.

The primary purpose of these in-depth interviews was to define the main domains for the faculty portfolio. According to the topic guide, participants were also asked to propose subdomains related to each main domain of the portfolio.

Phase Two

Focus groups. Of all the 227 full time faculty and administrators at KSAU-HS, 98 met selection criteria. These criteria included full time faculty members that were in an academic position for at least five years, or administrators in a leadership role for at least three years. Final year senior students comprised the other stakeholder group who participated in the focus groups. Participants were excluded if they had participated in the in-depth interviews.

A purposeful sampling technique was used in the participant selection to ensure the diversity of members from various colleges. Individual invitations to 32 faculty and administrators selected from 98 eligible participants were sent through the university relations and media office. Expecting an approximate response rate of 50% to 66%, only 32 faculty and administrators were contacted for this part of the study to obtain 16 participants. In fact, 16 participants agreed to take part in the study, yielding a 50% response rate. Students' recruitment was done through the student club. A written request for eight senior students' participation was sent to this club. Eight out of 10 students contacted by club leaders agreed to participate in the focus groups (response rate 80%). The reasons given by faculty, administrators and students to decline participation included being busy or unavailable at the focus group time. A meeting time and place was set and a confirmation email was sent to all the participants. Each focus group consisted of two faculty members, two administrators, and two senior students.

After obtaining consent, the focus group participants were given five domains identified by the in-depth interviews. They were then asked to identify subdomains for each domain defined by the interviews. Notably, they were not given the subdomains identified by the 18 interviewees in phase one.

During April 2015, a total of four focus groups were run and no additional focus groups were scheduled since saturation was reached with no new themes emerging. A total of 24 faculty, administrators and students participated in the four focus groups. As in the interview phase, the majority of participants were male and assistant professors (see Table 2), with the same number of teaching faculty versus administrators.

Table 2

| <i>Demographic Information of Focus Group Participants</i> | |
|--|-----------|
| Demographic variable | N (%) |
| Gender | |
| Male | 15 (62.5) |
| Female | 9 (37.5) |
| Faculty Ranking | |
| Professor | 2 (8.3) |
| Associate Professor | 4 (16.7) |
| Assistant Professor | 10 (41.7) |
| Student | 8 (33.3) |
| Roles | |
| Teaching Faculty | 8 (50) |
| Administrative Assistant | 8 (50) |
| College | |
| Medicine | 4 (25) |
| Dental | 3 (18.75) |
| Pharmacy | 3 (18.75) |
| Applied Health Science | 2 (12.5) |
| Nursing | 4 (25) |

All of the focus groups were conducted at KSAU-HS, two of them in Riyadh, one in Jeddah, and the last in Alhassa. In the two focus groups that took place in Riyadh, the participants were a mixture of faculty, administrators and students from different colleges. Once a total of six members (two faculty, two administrators, and two students) agreed on a specific time, the focus group was conducted. In Riyadh, the focus group venue was the medical education conference room, college of medicine. In Jeddah, the focus group was a mix of medicine and nursing faculty, administrators and students, and it was conducted in the college of medicine meeting room. The last focus group was conducted in the nursing college, KSAU-HS, Alhassa. All of the focus groups were videotaped for the purpose of transcription and analysis.

Procedure. One week prior to the focus group date, an e-mail was sent to the participants explaining the purpose of the meeting and to help them plan for active participation. The participants were introduced to the pre-defined domains (education, service, research, professional development, and academic management and leadership) and were asked to suggest subdomains for each domain.

The focus group was conducted using a topic guide [Appendix 2]. This approach was used to address the second research question about identifying the portfolio subdomains. The focus group discussions started with a short introduction of the study aim by the researcher, followed by a presentation of the defined domains. Then the participants were asked to suggest subdomains that reflected their roles and daily duties. For example, they were asked to consider what subdomains or items in education, service and research should be included in their portfolio? What are the subdomains or items in professional development and academic management and leadership that should be included in their portfolio? At the end, they were asked if they thought that a faculty portfolio should be used for promotion.

Students were asked specifically to describe their ideal professor, as well as what they look for in their mentors or supervisors. These questions targeted subdomains of the faculty portfolio and were developed based on identified domains from the in-depth interviews. The topic guide questions [Appendix 2] were reviewed a number of times by the researchers to ensure rigor and credibility.

Analysis. The focus group analysis was done in a sequential manner. Unlike the in-depth interviews, each focus group was analyzed immediately after it was conducted and transcribed. The analysis process was carried out by a long-table approach (Krueger & Casey, 2000), where specifically, the list of the subdomains for each main domain is placed apart and combined with the results of the other lists generated by other focus groups. Subdomains also emerged during interviews in phase one and were added to the long list. Then, the list of teaching subdomains from interviews was combined with the list of teaching subdomains from focus groups and the same procedure was applied to the other subdomain lists. This step was useful in amassing all of the items in each list. Duplications were removed, and similar concepts were combined. All these steps were conducted by two researchers independently (S. A. and S. O.) to ensure dependability and trustworthiness. After each step, the two researchers met to discuss the analysis until all the subdomains were clearly identified. Under each domain, respective subdomains were placed to create a proposed faculty portfolio [Appendix 3]. Regular meetings between these researchers were conducted after each step to ensure dependability. By the end of these two phases, a proposed faculty portfolio was developed, which was comprised of five main domains and multiple subdomains [Appendix 3].

Phase Three

Phase three of this research was implemented to answer the third research question in regard to the validation of the newly developed faculty portfolio. In this section, the conversion of the portfolio to a questionnaire format is explained along with the process of its distribution to all of the eligible faculty.

Participants. From the total of 227 full time faculty at KSAU-HS, 116 faculty and administrators fulfilled the selection criteria, (i.e., full time faculty members that have been in an academic position for at least five years, or administrators in a leadership role for at least three years). In this phase, those participants who previously participated in either the in-depth interviews or focus groups were eligible to take part in this study and fill out the questionnaire. The university relations and media office sent the questionnaire via e-mail with the consent form to a total of 116 participants. The e-mail explained the aim of the study with the request to fill out the questionnaire and return it back with the consent form. The questionnaire was distributed to participants at colleges of KSAU-HS in Riyadh, Jeddah and Alhassa.

Procedure. The domains and subdomains identified in the first two phases were converted into a questionnaire and administered to participants. The opening statement of the questionnaire was, “As a faculty member how important is having the following elements for the development of faculty portfolio,” and each domain name was inserted at the end of the question. Under each main domain there was a list of items (subdomains) that were identified in phase one and two.

A scale was assigned for each question with a range from 1-5 (1 = Not at all important, 2 = May be not important, 3 = May be important, 4 = Important, 5 = Very important). The items were formatted and a cover page was written that included: the aim of the questionnaire, the

approximate time needed to complete it, instructions to the participants, a contact number with an e-mail for any queries, and finally, the investigator's name and contact information. The final step was to apply to the ethics review board as an amendment for questionnaire approval [Appendix 4]. The questionnaire was sent to all the eligible 116 participants, and a weekly follow-up reminder e-mail was sent four weeks later. A total of 66 completed questionnaires were returned by participants for a response rate of 57%. Their demographic characteristics are shown in Table 3. There were no clear reasons given from the faculty and administrators as to why they preferred not to participate.

Analyses. Repeated measures of analysis of variance were conducted to determine if participants provided significantly stronger weights of one domain over another. In order to determine if the selection of domains differed across demographic characteristics, such as gender, multivariate analysis of variance (MANOVA) was performed. Finally, a principal component analysis (PCA) using Varimax rotation (vectors rotated at a 90 degree angle) was conducted, to determine if the internal structure of a scale from the 59 questionnaire items that were rated in importance from a scale of 1 to 5, could be obtained (Loevinger, 1957).

Table 3

Demographic Information of Questionnaire Participants

| Demographic | N (%) |
|-----------------------------|-------------|
| Gender | |
| Male | 36 (54.5%) |
| Female | 30 (45.5%) |
| Age (yr) | |
| Mean±SD | 46.05±8.384 |
| Median | 45 |
| Minimum and maximum | 31 and 72 |
| Rank | |
| Professor | 16 (24.2%) |
| Associate Professor | 22 (33.3%) |
| Assistant Professor | 28 (42.4%) |
| Years of experience (yr) | (1-49) |
| Mean±SD | 14.27±9.046 |
| Median | 11 |
| Minimum and maximum | 1 and 49 |
| Role | |
| Clinical | 22 (33.3%) |
| Non-clinical | 19 (28.7%) |
| Administrative | 25 (37.8%) |
| College | |
| Medicine | 19 (28.7%) |
| Dental | 8 (12.1%) |
| Pharmacy | 16 (24.2%) |
| Allied Health Science (AHS) | 11 (16.6%) |
| Nursing | 12 (18.1%) |

Chapter Four: Results

This chapter presents a detailed description of the study results. It will first describe the qualitative results from the in-depth interviews and focus group phases of the study, and how the five main domains and their subdomains emerged. Interviewees were asked to explore the domains of faculty portfolio and also propose subdomains for each defined domain. The subdomains identified by the focus groups will be described next, followed by a presentation of the results of phase three quantitative data collection using the structured questionnaire.

Phase One

In-depth Interviews. The suggested number of faculty portfolio domains by participants varied from as few as two (research and education) to as many as seven (academia, research, funding, administration, community service, career development, faculty development). The majority suggested five to six main domains (teaching and learning, administration, research and scholarship, community, training and self-development, and advising and mentoring). From reviewing the transcriptions, it was apparent that all interviewees agreed about what the identified roles and activities of faculty should be; however, some disagreements, conflicts, difficulties and challenges emerged, and these are described at the end of the in-depth interview results.

During the interviews, it became apparent that respondents (clinical faculty, non-clinical faculty and administrators) presented roles that reflected their own daily activities. For example, clinicians primarily reported that in-and out-patients assessed and treated on a daily basis is a major role that needs to be recorded in their portfolio under service domain. Teaching faculty reported that mentoring and solving academic problems of students are daily work activities,

which are linked to the education domain. Another faculty member reported extra-curricular activities, including participation in cultural club for social interactions, and the need for this to be documented under the service domain. Administrators reported that they respond daily to documents circulated from within and outside the institution, a component of administrative service. Some administrators reported that they attend several meetings daily, to be recorded under academic management and leadership. These and other roles and activities are subdomain items of each domain within the faculty portfolio.

The process of analyzing the interviews was as follows: first open coding, which is the process of analyzing the qualitative, textual data for building up significant constructs, dimensions and categories. In qualitative data analysis, it is recommended (Creswell, 2009; Kandhkar, 2009; Pandit, 1996) that the text be read several times line-by-line and word-by-word, and that meaningful ideas be identified (marked), collected, and reflected upon to give the precise open codes to the text. Thus, using the comparative method described by Creswell (2009), the investigator (S.A.) went back and forth through the text to compare existing or emerging new concepts. Once no new concepts emerged, and the existing, collected concepts repeatedly appeared, then the text analysis came to an end (Creswell, 2009; Kandhkar, 2009; Pandit, 1996). The investigator and a research assistant independently and simultaneously used this analytic open coding technique to identify themes (five) and their subthemes related to a faculty portfolio, embedded in the text of 18 interviews. After completing the open coding of the transcript, data from the interviews were categorized in suggested domains and their subdomains. During the entire process of open, axial and selective coding, the investigator selected some remarkable quotes of the interviewees, which seemed to best represent the individual domains. For a more detailed explanation of the analysis process please refer to [Appendix 5].

This process of open coding was followed by axial coding, which refers to the process of developing main categories and their sub-categories (Pandit, 1996), which consists of identifying relationships among the open codes, suggested themes, and subthemes of a faculty portfolio. For example, when the education theme was identified, the analyst searched for related, tentative subthemes in the open codes that were in common with education. For more details on the axial coding process employed, refer to [Appendix 6].

The last step in the interview data analysis was selective coding [Appendix 7], which refers to the process of identifying the core variable (e.g., education as a domain). The researcher and the research assistant reread the transcripts and selectively coded any data related to the core variable identified (Creswell, 2009). The process of selective coding is important because it determines the core domains and related subdomains, which in the present study reflected faculty members' roles, activities, attitudes, and beliefs. As a result, selective coding led to the identification of core variables from the suggested open and axial codes. While open coding breaks the data into concepts and categories, axial coding synthesizes those data in new ways by making connections between a category and its sub-categories. In selective coding, connections are made between discrete categories (Pandit, 1996). The qualitative data analysis of the present study revealed that a faculty portfolio can cover most daily activities and roles when it is designed to encompass five major identified themes (domains). These domains are education, service, research, professional development, and academic management and leadership.

Table 4 presents interviewees' perspectives on the importance of each domain. As shown in the first four columns, all of the 18 participants identified education, service, and research. As shown in the fifth column, three participants did not mention or disagreed with the addition of professional development to the portfolio, and two participants did not agree with the inclusion

of management as a domain. Looking at the last column, the first interviewee identified four out of five domains, so the percentage in the indicated column was 80%. Overall, education, service, and research received 100% endorsement, as shown in the last row, whereas professional development and management received lower endorsement.

Table 4

Participants' Identification of Domains (n = 18)

| Participants | Education | Service | Research | Development | Management | Indicated |
|--------------|-----------|---------|----------|-------------|------------|-----------|
| 1 | ✓ | ✓ | ✓ | X* | ✓ | 80% |
| 2 | ✓ | ✓ | ✓ | ✓ | X* | 80% |
| 3 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 4 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 5 | ✓ | ✓ | ✓ | X* | X* | 60% |
| 6 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 7 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 8 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 9 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 10 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 11 | ✓ | ✓ | ✓ | X* | ✓ | 80% |
| 12 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 13 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 14 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 15 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 16 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 17 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| 18 | ✓ | ✓ | ✓ | ✓ | ✓ | 100% |
| Indicated | 100% | 100% | 100% | 83.3% | 88.9% | |

*Not indicated or disagreed

Education. This domain was suggested by all of the interviewees. Moreover, it was the domain that most of the participants indicated first (Table 4). When asked to give a weight for each domain (Table 5), education was given the greatest weighting. Participants used a variety of terms to identify this domain (i.e., education, academia, and teaching), however, for the portfolio, “education” was selected by the investigator to represent the domain, as this term is broad and relates to best practices of both teaching and learning. All interviewees elaborated on teaching activities (subdomains) in detail:

All the educational activity they are doing should be included in the faculty portfolio development. These daily activities include their lectures, the tutorial, and the number of general and specific sessions they are giving with the dates, duration, and even the title (participant #2).

This quotation was selected because it identifies many activities within the education domain.

Another person stated,

If you are presenting, or lecturing, preparation of lecture, conducting the lecture, and if you are a tutor in PBL, if you are instructor in a course, if you are also supervising students. Also, if you are attending student-led sessions that you are also observing and thereafter you give feedback to students. All these are teaching [*activities*]” (participant #3).

This quotation describes additional activities that constitute the role of education.

Service. Service was the second most frequently indicated domain. Participants with clinical responsibilities introduced terms like clinical service and nonclinical service, while faculty referred to university and institutional service. Faculty and administrators with a public

health mandate reported community service, which is offered outside academic and hospital settings, especially to a larger population in the community. As seen in Table 5, the service domain carries a high weight, which reflects its importance to the faculty, and, therefore, to the portfolio. One interviewee reported that: “there are many activities need to be recorded under clinical domain, which are number of clinics one does, how many patients one consults, and how many on-calls one attends and clinical teaching” (participant #15). This quotation was selected because it identified some primary responsibilities of clinical service.

According to a number of interviewees, both clinical and community service was considered highly important. Community service engagement, which tend to be rendered outside the academic setting to a large group of people, reflects a faculty role that extends beyond the university campus. One participant stated, “I really believe it’s important, we are looking for [community] initiatives” (participant #6). This quotation shows the importance of community service. Most interviewees supported “continuing campaigns for enhancing literacy of the public in health issues, especially the chronic non-communicable diseases including obesity” (participant #9). This quotation highlights the significance of non-communicable diseases, which are on the increase worldwide.

Research. Although the education domain was given the highest weighting than any other domain, research was assigned a weight by every participant, indicating that it is also very important. Indeed, all participants agreed and emphasized its significance for a portfolio. Few of the participants used the word research scholarship for research. One participant expressed that,

Research should be of good quality and innovative with rigor and lead to new inventions. Research needs to be published in high quality peer reviewed journals with a high impact factor. Research certainly has good impact on faculty development. Culture of research

needs to be developed in all universities in Saudi Arabia or else it will remain in its infantile stage (participant #11).

Another quotation, exemplifying the importance of research stated, “research activity – in two roles, either as a supervisor or as the main investigator. I think we should put lot of weight in this domain” (participant #16). These quotations were selected because they signify the importance placed on innovation and rigor in research scholarship, and involvement in publications in esteemed journals.

Professional development. Professional development, the portfolio’s fourth domain, was suggested as an independent theme by a number of faculty members. Some of them used the term “staff development”, “continuous education”, “self-development” or “self-learning”. Others considered the term self-development to be more appropriate, but they were consistent in noting that it should not be assigned a high weight of importance. For example, “I don’t read really when I employ someone what he or she attended. I read what he or she presented, I read what they published. But what he/she attended doesn’t make anything [sense] for me” (participant #17). Participants that do not consider this issue to be an independent domain, suggested that it should be placed under other domains.

Based on the type of faculty enhancement, if it is to enhance my clinical and education and teaching then put it in my educational teaching. If it is in research, I will put it there. I will distribute it like the mentorship (participant #7).

On the other hand, 15 out of 18 participants (as shown in Table 6) considered self-development or continuous education as an independent domain. “How many workshops in the area of staff development, education, and methods of teaching, whatever, are just to develop their

capabilities [and skills]. I think that this [professional development] is a very important thing” (participant #12). These quotations were selected because they highlight the differing opinions of participants about professional development.

Academic management and leadership. The last domain that emerged from the interview data was academic management and leadership. It was expressed by a large percentage of the participants (88.9%), with half of them as administrators in leadership positions at the universities. The majority believed that the daily roles and responsibilities of chairing committees, attending meetings, working on taskforces, and evaluating junior staff needed to be included in the portfolio. This perspective was expressed in the following quotation: “administrative responsibilities, any position or contributing to group work or team work, for example member of a task force or committee, or curriculum development review [panel or board]” (participant #5). Some interviewees raised a concern that not every faculty member has an opportunity to chair or become a member of a committee, so the weight dedicated to this domain is low, and some participants ($n = 2$) did not give this domain any weight at all. One interviewee expressed that “administrative activities are important roles but these are not obligatory for all because many of them don’t have administrative [positions and hence] duties” (participant #14). These quotes point out differences of opinion among participants about academic management and leadership.

Domain Weights

The investigator asked participants to assign a weight to each domain in the value of a percentage or number, wherein the total weights of the five domains could not exceed 100. For example, the first interviewee gave a weight of 30 to education, which also represents 30%.

Table 5 demonstrates the weights the interviewees assigned to the importance of each domain.

The range, mean, and standard deviation of the assigned weights are also reported to determine the distribution of weight allocation given by participants.

Identification of the importance of each domain, as requested in the interview, seemed to vary according to the participant's background. For example, if they were mainly clinicians, they considered clinical service (service domain) to be most important. If the participant was research oriented, the person was likely to assign a high weight to the research domain. There was a similar finding for administrators giving a high weight to administration.

Table 5

Weight Assigned by Interviewees for each Domain (n=18)

| Participants | Education | Service | Research | Development | Management | Total |
|--------------|-----------|-----------|----------|-------------|------------|-------|
| 1 | 30 | 20 | 30 | * | 20 | 100 |
| 2 | 40 | 30 | 30 | * | * | 100 |
| 3 | 50 | 20 | 20 | * | 10 | 100 |
| 4 | 25 | 30 | 20 | 10 | 15 | 100 |
| 5 | 50 | 20 | 30 | * | * | 100 |
| 6 | 45 | * | 30 | 20 | 5 | 100 |
| 7 | 15 | 45 | 15 | 5 | 20 | 100 |
| 8 | 10 | 40 | 10 | 10 | 30 | 100 |
| 9 | 30 | 10 | 25 | 10 | 25 | 100 |
| 10 | 50 | * | 30 | 5 | 15 | 100 |
| 11 | 50 | 10 | 30 | * | 10 | 100 |
| 12 | 40 | 10 | 30 | * | 20 | 100 |
| 13 | 50 | * | 30 | 15 | 5 | 100 |
| 14 | 45 | 15 | 25 | 5 | 10 | 100 |
| 15 | 40 | 15 | 10 | 20 | 15 | 100 |
| 16 | 25 | 25 | 20 | 15 | 15 | 100 |
| 17 | 35 | 10 | 35 | 10 | 10 | 100 |
| 18 | 40 | 20 | 20 | 10 | 10 | 100 |
| Range | 10-50% | 0-45% | 10-35% | 0-20% | 0-30% | |
| M±SD | 37.2±12.4 | 17.8±12.9 | 26.4±7.5 | 7.5±6.9 | 13.1±8.1 | |

The mean for the education domain was the highest, followed by research, then service, academic management and leadership, and finally, professional development. A repeated measure analysis of variance (ANOVA) was conducted to determine which of the domains were given significantly higher ratings than the others. Results showed that the mean differences were significant, $F(2.01) = 19.42, p < 0.001$, partial eta squared = 0.53. That is, education (Mean = 37.2, SD = 12.4) had a higher weight than any other domain. Also, service (Mean = 17.8, SD =

12.9) and research (Mean = 26.4, SD = 7.5) were rated higher than professional development (Mean = 7.5, SD = 6.9) and academic management and leadership (Mean = 13.1, SD = 8.1). Notably, academic management and leadership (Mean = 13.1, SD = 8.1) was rated higher than professional development (Mean = 7.5, SD = 6.9).

Demographic differences in weighting. A multivariate analysis of variance (MANOVA) was conducted to reveal whether people with specific demographic characteristics are more likely to endorse specific domains. One significant difference emerged, with women (Mean = 30.0, SD = 3.16) reporting a higher weighting for research than men (Mean = 21.7, SD = 7.49), $F = 6.67$, $p = 0.02$, partial eta squared = 0.29. Concerning the other demographic characteristics, none were found to be significant, $p > 0.05$.

Interviews and detected difficulties, conflicts, disagreements and solutions. When analyzing the 18 transcripts, several difficulties emerged. First, nomenclature was not always consistent across participants. That is, some alternative terms were used for education, including teaching, academic (adjective), and academic work. Similarly, different terms such as career development, professional development, self-development and self-learning were used for professional development. The related terms like administration, academic management or managerial work were used for the academic management and leadership domain; however, the latter term was most suitable for faculty. With regard to research and service domains, no interviewees suggested other terms, and, hence, they were retained as such. Overall, all 18 interviewees gave priority to the education, service, and research domains. Furthermore, agreement was reached on the professional development, and academic management and leadership domains.

Second, there were difficulties in deciding the relative importance of these domains.

According to some participants, the sequential order of the domains should align with the mission and vision of the institution. The majority of the participants in the study setting were faculty and clinician-educators, and hence they suggested teaching should be the first domain, followed by service and research. After research, interviewees identified either professional development or academic management and leadership, as this was difficult to decide. Few participants indicated that professional development was as important as management and leadership. Others reported that continuing professional development leads to enhanced knowledge and competencies of faculty, and has multiple applications including effective teaching, student learning and faculty promotion.

Third, the identification of subdomains for each domain varied across interviewees. The most challenging activity was mentoring, as it was discussed in the context of both research and education. The significance of mentoring was expressed by some participants, who reported that mentoring is a broad concept. Participants recommended that when a faculty member mentors students in teaching, it be recorded under education. Since in academic settings, mentoring is applicable to different topics within education, the majority of participants suggested placing mentoring under education. Therefore, this is where it was placed. Similarly, there were different opinions about whether communication skills should be proposed under education, or service, or academic management and leadership. One participant suggested recording it under the education domain, but this was not supported by the majority of participants. Overall, despite some minimal disagreement, the final five domains were well substantiated across the majority of participants, along with their subdomain items.

Some interviewees presented issues which were not directly relevant to the development of a portfolio. For example, one interviewee commented that since faculty members spend a lot of time on administrative tasks and have less time for teaching and research, they are less likely to be promoted. In this context, the participant expressed that faculty time spent on such tasks needs to be considered for faculty promotion. This point was considered an outlier because setting faculty promotion criteria was not an objective of this study. Another interviewee expressed that intellectual leisure activities, such as painting and poetry, need to be considered under the professional development domain. These were considered odd points because they are not directly relevant to health sciences university work. One of the interviewees commented on the implementation phase of the portfolio as, “a strategic plan needs to be developed for its successful implementation” (participant #5). In this context, another participant said, “those who resist its implementation should be proactively identified” (participant #1). Again, these points were considered to be outside the scope of this study.

In summary, this phase of the study identified five main domains for the faculty portfolio. These include education, service, research, professional development, and academic management and leadership.

Phase Two

Focus groups. The subdomains of each defined domain were determined from the focus group data and are reported next. Focus group participants (faculty, administrators and final year students) were given five domains of faculty portfolio identified in phase one, but they were not shown the proposed subdomains by the 18 interviewees [Appendix 8] in order not to bias their opinions. In relation to each domain, they were asked to identify their daily activities and roles performed, which constitute subdomains (subthemes), and accordingly list those activities under

the respective domains (education, service, research, professional development and academic management and leadership).

All focus group participants attended the group session until the session was over. They identified many subdomains for each domain that had been identified during phase one. During the focus group discussions, faculty and administrators presented several general subthemes. Similarly, students also contributed to the pool of subthemes of each domain, though they were observed to have limited knowledge of subthemes during the discussion. All of the 24 participants were asked to identify subdomains for the given domains of a faculty portfolio that emerged from the 18 interviews. Faculty and administrators provided substantial details of each domain and generated long lists of subdomains, as shown in [Appendix 9].

The majority of participants focused primarily on education, and the list of subdomains generated for this domain was the longest from among the five domains (i.e., 20 items out of a total of 59 suggested items, which represents 33.9%). Some of the important subdomain items of education were: teaching didactic courses, number of lectures and problem-based learning (PBL), small group teaching, lab sessions, bedside and clinical teaching, number of tutorials, developing PBL problems, curriculum mapping and design, utilization of evidence, and updates to improve teaching skills.

Clinical, university and community services were listed under the service domain. The participants with clinical positions deeply valued and emphasized the subdomains related to clinical activities and other roles they perform in their clinical settings. On the other hand, faculty who taught the basic sciences focused on university service, in order to enhance its image and prestige in the eyes of the public. The majority of participants expressed that faculty need to

be involved in community services related to public health campaigns for enhancing health literacy among people.

The research domain was then discussed, and subdomains that were repeated in all the focus groups included the number of publications, writing research proposals and manuscripts, and received research funding and grants. Few participants commented about teaching and training students to conduct research. According to some discussants, this activity should be placed under research, while others suggested it be placed under education. Finally, mentoring as a faculty activity was placed under research because the majority of participants were in agreement:

Mentoring has two sides, one side is education the other is research, you can divide it in two subdomains, in relation with your supervisor this part is mentoring and the content is teaching so mentoring students is an education activity. Mentoring and engaging with students for research activities is a research subdomain (focus group #4).

Another concern of participants was about presenting research in national or international conferences, and, they indicated it belonged either under professional development or research. For instance,

But if he or she presented his or her research, it is very essential that you report it under research. Sometimes I attended workshops or conferences but I didn't present anything, I just develop myself, so attending alone can be reported under professional development (focus group #3).

Professional development subdomains were identified without any disagreement. This domain reached saturation from the second focus group, and all the participants articulated the

need for having a list of professional development activities in their portfolio. Many of them commented that this area includes several activities, such as attending workshops, conferences, seminars, training programs), and that all of this academic work helps in the professional development of faculty.

Academic management and leadership was the portfolio's last domain. In this part of the discussion, most participants stated that a lot of time is spent on these activities, but performance in these roles is of little value. For example, preparing for committees, meetings, and councils takes more time than attending these administrative activities. Time spent on a task force and in meetings takes hours, as does resolving conflict and having one-on-one discussions. Although these activities are not tracked, participants viewed the quantity of time as significant enough to be included in the portfolio.

Besides contributing to subdomains for each domain, students presented various points of view on diverse issues that were beyond the questions asked. The first issue they identified was that the time faculty spends with them is very important for the purpose of teaching, research and service. They stated that faculty members need to give considerable time to mentoring, solving student academic problems, giving insights into research topics, and asking them to participate in research and publications. Second, students talked about what they look for in a good teacher, with faculty involvement in social media identified. That is, students stated that they preferred to be taught by faculty members who are active and express interest in new social media programs, like twitter, where they express their opinions and discuss up-to-date issues with their student followers. Students also stated that they like to know faculty research interests and publications. Overall, all of the participants ($n = 24$) in the four focus groups provided limited input to guide the investigator in building the subdomain lists.

Focus group and detected difficulties, conflicts, disagreements and solutions. Notably, some disagreements, queries, conflicts and difficulties emerged while conducting focus group discussions, and some of them emerged when analyzing the qualitative data. One point of conflict was contribution to curriculum development, with some suggesting it belongs to the administrative domain and others identifying a fit within the education domain. Finally, curriculum development was aligned with education due to its major link to teaching and course content. Another controversial point that the participants had conflicting opinions about was whether proposals that have been written and submitted to funding agencies but rejected, counted in the portfolio, considering the amount of time and effort spent on them. In the end, the researcher determined that research proposals for funding be placed under the research domain.

Some additional points also emerged while analyzing the focus group data. There was disagreement, for example, about whether clinical rotations need to be considered under education or service. Clinical rotations mainly involved bedside teaching; therefore, the majority decided to keep this activity under education.

I would consider clinical teaching as a practical but teaching process because clinical teaching for me is still a teaching responsibility. Clinical rotations for interns and residents can be looked to as a part of clinical services because it is a job where they still learn and work (focus group #1).

Some participants in the focus groups discussed and raised the issue of recognition, appreciation and awards, but those who did, recommended it be under the professional development domain. Others, however, stated that it was the role of academic administrators and leaders to evaluate faculty for giving awards and appreciation certificates, thereby placing it under management. Another point of conflict identified was coordination of courses; some

considered it to be an educational activity, while others stated it was an administrative function. These conflicts were resolved by further discussion in the second and third focus groups, and some participants convinced dissenting members to agree with the opinion given by the majority of participants. Furthermore, the inclusion of developing a course syllabus not seconded by other participants was excluded from the subdomain. [see Appendix 3] for a full list of the subdomains.

There were some outliers identified in the focus groups. The standardization of tools for measuring faculty teaching (effectiveness) was raised by some participants in the third and fourth focus groups. Another exception was invigilation time, considered to be a service role by faculty. This was considered an odd point and not within the scope of this faculty portfolio because invigilation is primarily done by non-faculty in this study's settings. One more outlier was the quantification of coordination time. Although coordination work is under academic management and leadership, the quantification of time devoted to multiple tasks by faculty was not deemed a relevant point to be incorporated in the portfolio.

Phase Three

Questionnaire. The mean, standard deviation, minimum, and maximum values of all the questionnaire items are shown in Table 8. The minimum score was one and the maximum score was five. As shown by the mean scores, most participants gave high scores to all questionnaire items.

Table 6

The mean, SD, Minimum, Maximum Values of Questionnaire Items

| Domains | Item No. | Mean | SD | Min. | Max. |
|-----------|----------|------|------|------|------|
| Education | 1 | 4.54 | 0.56 | 3 | 5 |
| | 2 | 4.24 | 0.79 | 1 | 5 |
| | 3 | 4.30 | 0.78 | 1 | 5 |
| | 4 | 4.40 | 0.68 | 3 | 5 |
| | 5 | 4.56 | 0.53 | 3 | 5 |
| | 6 | 4.37 | 0.72 | 2 | 5 |
| | 7 | 4.51 | 0.73 | 2 | 5 |
| | 8 | 4.50 | 0.75 | 2 | 5 |
| | 9 | 4.27 | 0.81 | 2 | 5 |
| | 10 | 4.46 | 0.71 | 3 | 5 |
| | 11 | 4.36 | 0.80 | 2 | 5 |
| | 12 | 4.34 | 0.77 | 2 | 5 |
| | 13 | 4.22 | 0.94 | 2 | 5 |
| | 14 | 4.28 | 0.87 | 2 | 5 |
| | 15 | 4.34 | 0.77 | 2 | 5 |
| | 16 | 4.45 | 0.75 | 2 | 5 |
| | 17 | 4.40 | 0.68 | 3 | 5 |
| | 18 | 4.39 | 0.63 | 3 | 5 |
| | 19 | 4.09 | 0.92 | 2 | 5 |
| | 20 | 4.18 | 0.82 | 2 | 5 |
| Service | 21 | 4.44 | 0.83 | 2 | 5 |
| | 22 | 4.55 | 0.72 | 2 | 5 |
| | 23 | 4.57 | 0.58 | 3 | 5 |
| | 24 | 4.46 | 0.58 | 3 | 5 |
| | 25 | 4.04 | 0.87 | 2 | 5 |
| | 26 | 4.10 | 1.04 | 1 | 5 |
| | 27 | 4.01 | 0.89 | 2 | 5 |
| | 28 | 4.28 | 0.82 | 2 | 5 |
| | 29 | 4.12 | 0.97 | 2 | 5 |
| Research | 30 | 4.45 | 0.79 | 2 | 5 |
| | 31 | 4.56 | 0.73 | 2 | 5 |
| | 32 | 4.48 | 0.83 | 1 | 5 |
| | 33 | 4.57 | 0.61 | 3 | 5 |
| | 34 | 4.42 | 0.84 | 2 | 5 |
| | 35 | 4.21 | 0.89 | 2 | 5 |
| | 36 | 4.56 | 0.61 | 3 | 5 |
| | 37 | 4.53 | 0.61 | 3 | 5 |
| | 38 | 4.39 | 0.84 | 2 | 5 |
| | 39 | 4.42 | 0.72 | 2 | 5 |
| | 40 | 4.22 | 0.99 | 1 | 5 |

| | 41 | 4.27 | 0.87 | 1 | 5 |
|------------------------------------|----|------|------|---|---|
| Professional development | 42 | 4.46 | 0.50 | 4 | 5 |
| | 43 | 4.51 | 0.71 | 2 | 5 |
| | 44 | 4.50 | 0.56 | 3 | 5 |
| | 45 | 4.40 | 0.80 | 1 | 5 |
| | 46 | 4.31 | 0.73 | 2 | 5 |
| | 47 | 4.37 | 0.65 | 3 | 5 |
| | 48 | 4.25 | 0.77 | 2 | 5 |
| | 49 | 4.04 | 0.75 | 3 | 5 |
| Academic management and leadership | 50 | 3.84 | 1.10 | 1 | 5 |
| | 51 | 3.75 | 1.05 | 2 | 5 |
| | 52 | 4.13 | 0.78 | 3 | 5 |
| | 53 | 4.03 | 0.96 | 1 | 5 |
| | 54 | 4.01 | 1.07 | 1 | 5 |
| | 55 | 4.03 | 0.96 | 2 | 5 |
| | 56 | 4.00 | 0.93 | 2 | 5 |
| | 57 | 4.01 | 1.05 | 1 | 5 |
| | 58 | 3.80 | 0.90 | 2 | 5 |
| | 59 | 3.89 | 0.84 | 2 | 5 |

Reliability of domains. Cronbach's alpha was used to measure the reliability (internal consistency) of the items in each of the five domains (Table 7). The alpha coefficients for the individual domains reflected relatively high internal consistency. Overall, the reliability coefficient of all 59 items of the faculty portfolio also indicated good internal consistency. Since, a reliability coefficient of 0.70 or higher is considered good (Lance et al., 2006), it was determined that the developed faculty portfolio item scores had good reliability.

Table 7

Reliability of Items within each Domain

| Domain | Number of items | Cronbach's alpha |
|--|-----------------|------------------|
| Education | 20 | 0.82 |
| Service | 9 | 0.76 |
| Research | 12 | 0.86 |
| Professional development | 8 | 0.85 |
| Academic management & leadership | 10 | 0.92 |
| Overall reliability coefficient of faculty portfolio | 59 | 0.87 |

The questionnaire had five domains and 59 questions (items) related to the subdomains (Table 8). There were 20 items under education, but as few as nine items under service. The responses were scored on a 5-point scale (1 = Not at all important, 2 = May be not important, 3 = May be important, 4 = Important, 5 = Very important). Those who marked 1 or 2 (<3) showed their disagreement on that item, and those who indicated ≥ 3 (3, 4 & 5) demonstrated their agreement about the individual subdomain item. The frequency analysis of their responses showed that most participants (86.3% to 100%) agreed on all the suggested subdomain items.

Table 8

Participants' Responses on 5-Point Scale Subdomains (n = 66)

| Domain | Subdomain questions | # of responses <3 (disagreement) | # of responses ≥ 3 (agreement) |
|-----------|---------------------|-------------------------------------|-----------------------------------|
| Education | 1 | 0 (0 %) | 66 (100 %) |
| | 2 | 1 (1.5 %) | 65 (98.4 %) |
| | 3 | 1 (1.5 %) | 65 (98.4 %) |
| | 4 | 0 (0 %) | 66 (100 %) |
| | 5 | 0 (0 %) | 66 (100 %) |
| | 6 | 3 (4.5 %) | 63 (95.4 %) |
| | 7 | 2 (3.0 %) | 64 (96.9 %) |
| | 8 | 3 (4.5 %) | 63 (95.4 %) |
| | 9 | 2 (3.0 %) | 64 (96.9 %) |
| | 10 | 0 (0 %) | 66 (100 %) |
| | 11 | 2 (3.0 %) | 64 (96.9 %) |
| | 12 | 1 (1.5 %) | 65 (98.4 %) |
| | 13 | 4 (6.0 %) | 62 (93.9 %) |
| | 14 | 2 (3.0 %) | 64 (96.9 %) |
| | 15 | 3 (4.5 %) | 63 (95.4 %) |
| | 16 | 2 (3.0 %) | 64 (96.9 %) |
| | 17 | 0 (0 %) | 66 (100 %) |
| | 18 | 0 (0 %) | 66 (100 %) |
| | 19 | 3 (4.5 %) | 63 (95.4 %) |
| | 20 | 3 (4.5 %) | 63 (95.4 %) |
| Service | 21 | 2 (3.0 %) | 64 (96.9 %) |
| | 22 | 2 (3.0 %) | 64 (96.9 %) |
| | 23 | 0 (0 %) | 66 (100 %) |
| | 24 | 0 (0 %) | 66 (100 %) |
| | 25 | 2 (3.0 %) | 64 (96.9 %) |
| | 26 | 4 (6.0 %) | 62 (93.9 %) |
| | 27 | 2 (3.0 %) | 64 (96.9 %) |
| | 28 | 2 (3.0 %) | 64 (96.9 %) |
| | 29 | 6 (9.0 %) | 60 (90.9 %) |
| Research | 30 | 2 (3.0 %) | 64 (96.9 %) |
| | 31 | 2 (3.0 %) | 64 (96.9 %) |
| | 32 | 3 (6.0 %) | 63 (95.4 %) |
| | 33 | 0 (0 %) | 66 (100 %) |
| | 34 | 4 (6.0 %) | 62 (93.9 %) |
| | 35 | 4 (6.0 %) | 62 (93.9 %) |
| | 36 | 0 (0 %) | 66 (100 %) |
| | 37 | 0 (0 %) | 66 (100 %) |
| | 38 | 3 (4.5 %) | 63 (95.4 %) |
| | 39 | 1 (1.5 %) | 65 (98.4 %) |

| | | | | | | |
|---------------------------|----|---|----------|--|----|----------|
| | 40 | 5 | (7.5 %) | | 61 | (92.4 %) |
| | 41 | 2 | (3.0 %) | | 64 | (96.9 %) |
| Professional development | 42 | 0 | (0 %) | | 66 | (100 %) |
| | 43 | 2 | (3.0 %) | | 64 | (96.9 %) |
| | 44 | 0 | (0 %) | | 66 | (100 %) |
| | 45 | 2 | (3.0 %) | | 64 | (96.9 %) |
| | 46 | 2 | (3.0 %) | | 64 | (96.9 %) |
| | 47 | 0 | (0 %) | | 66 | (100 %) |
| | 48 | 1 | (1.5 %) | | 65 | (98.4 %) |
| | 49 | 0 | (0 %) | | 66 | (100 %) |
| Management and leadership | 50 | 7 | (10.6 %) | | 59 | (89.3 %) |
| | 51 | 9 | (13.6 %) | | 57 | (86.3 %) |
| | 52 | 0 | (0 %) | | 66 | (100 %) |
| | 53 | 2 | (3.0 %) | | 64 | (96.9 %) |
| | 54 | 6 | (9.0 %) | | 60 | (90.9 %) |
| | 55 | 4 | (6.0 %) | | 62 | (93.9 %) |
| | 56 | 2 | (3.0 %) | | 64 | (96.9 %) |
| | 57 | 2 | (3.0 %) | | 64 | (96.9 %) |
| | 58 | 2 | (3.0 %) | | 64 | (96.9 %) |
| | 59 | 1 | (1.5 %) | | 65 | (98.4 %) |

Demographic Variables, Domains and Questionnaire scores

To determine if the questionnaire responses differed according to demographic characteristics of the sample, four ANOVAs were conducted (Table 9). No significant differences were demonstrated in the mean scores of men and women, and similarly no significant differences were observed in the mean scores of participants by rank, working area, and colleges after a Bonferroni correction of $p = 0.002$ was applied.

Table 9

Differences in Domains According to Demographic Characteristics

| Domains | Gender | | | Rank | | | Discipline | | | College | | |
|-------------|--------|------|------|------|------|------|------------|------|------|---------|------|------|
| | df | F | p | df | F | P | df | F | p | df | F | p |
| Education | 1 | 0.76 | 0.39 | 2 | 4.55 | 0.01 | 2 | 0.21 | 0.81 | 4 | 1.52 | 0.21 |
| Service | 1 | 0.00 | 0.99 | 2 | 1.38 | 0.26 | 2 | 2.60 | 0.08 | 4 | 1.77 | 0.15 |
| Research | 1 | 0.13 | 0.73 | 2 | 0.70 | 0.50 | 2 | 0.20 | 0.82 | 4 | 2.46 | 0.06 |
| Development | 1 | 1.56 | 0.22 | 2 | 1.57 | 0.22 | 2 | 0.09 | 0.92 | 4 | 3.37 | 0.02 |
| Management | 1 | 0.02 | 0.88 | 2 | 5.50 | 0.01 | 2 | 2.48 | 0.09 | 4 | 2.41 | 0.06 |

Correlation between age and years of experience and questionnaire total scores. Given that age and years of experience are continuous variables, a Pearson's Product Moment correlation was calculated for age and years of experience with the total questionnaire score. Age was not correlated significantly with questionnaire total scores, $r = 0.10, p = 0.45$. Similarly, years of experience was not correlated significantly with questionnaire total scores, $r = 0.09, p = 0.49$.

Given that one of the purposes of this research was to develop a faculty portfolio, further analysis of the ratings of the portfolio items was undertaken. A large number of items ($n = 59$) was identified from the interviews and focus groups. To determine if it was possible to reduce these items and derive subscales, principal component analyses (PCA) were conducted. In step one, all of the 59 items that had been rated on a scale of importance from 1 to 5 were entered into a PCA, using Varimax rotation (vectors rotated at a 90-degree angle). The results revealed 15 components that converged in 25 iterations (see Table 10). There was a total of 32 cross-loadings (see Matsunaga, 2010), and the items within each component were uninterpretable. Due to the high number of cross-loadings these items were not removed, as the remaining items might not adequately represent the scale (Costello & Osborne, 2005). A second attempt was made to reduce the number of questionnaire items to obtain a clearer factor structure. That is, items in each of the five domains were subjected to PCA. As shown in Table 11, no meaningful themes were generated from the components. The results converged in 17 iterations and the reliability of the items within each component was reported in the table along with the amount of explained variance. The Cronbach's alpha was found to be low for items in some components, and little variance was explained in other components. There were also 17 cross-loadings across the tables. Thus, it was determined that no meaningful themes could be derived and no further attempts

were made to examine the structure of the scale. In other words, it was not possible to obtain structural validity of the measure.

Table 10

Principal Component Analysis for all 59 items

| Items | Component | | | | | | | | | | | | | | |
|--|-------------|--------------|--------------|-------|-------|-------|-------|--------------|-------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Meetings and taskforce | 0.79 | -0.39 | -0.19 | -0.11 | 0.14 | 0.08 | -0.11 | -0.05 | 0.09 | -0.18 | -0.13 | -0.04 | 0.08 | 0.09 | 0.00 |
| Academic committees | 0.72 | -0.46 | -0.22 | 0.01 | 0.08 | 0.08 | -0.07 | -0.14 | 0.19 | -0.09 | 0.01 | 0.00 | 0.18 | 0.24 | 0.05 |
| Contribution in training courses | 0.72 | 0.18 | -0.16 | 0.22 | -0.09 | -0.33 | -0.26 | -0.08 | 0.09 | 0.24 | 0.14 | 0.08 | 0.02 | -0.04 | 0.02 |
| PBL problem develop | 0.70 | 0.07 | 0.24 | 0.16 | -0.18 | 0.10 | -0.25 | -0.03 | -0.08 | -0.34 | -0.08 | -0.15 | -0.17 | 0.07 | -0.20 |
| Contribution in international conferences | 0.67 | -0.08 | -0.28 | 0.32 | -0.14 | -0.21 | 0.01 | 0.07 | -0.23 | 0.27 | 0.23 | -0.08 | -0.04 | -0.7 | 0.06 |
| Mentoring of students | 0.69 | 0.12 | -0.17 | 0.03 | 0.16 | 0.19 | -0.06 | -0.43 | 0.15 | 0.08 | -0.13 | 0.00 | -0.10 | -0.22 | -0.08 |
| Contribution in international workshops | 0.66 | 0.17 | -0.23 | 0.34 | 0.22 | -0.26 | 0.13 | -0.06 | -0.27 | 0.17 | -0.01 | -0.16 | 0.07 | -0.05 | 0.13 |
| Membership in block planning groups | 0.65 | -0.46 | 0.02 | -0.28 | 0.29 | 0.08 | -0.15 | -0.11 | 0.07 | -0.21 | -0.04 | -0.02 | 0.07 | 0.12 | 0.11 |
| Oral presentations (original research presented) | 0.61 | 0.35 | -0.05 | 0.25 | 0.10 | -0.26 | -0.12 | 0.21 | -0.02 | -0.22 | -0.21 | -0.17 | -0.02 | 0.24 | -0.06 |
| Participation in college council | 0.61 | -0.42 | -0.03 | -0.03 | 0.26 | 0.27 | -0.06 | 0.03 | -0.14 | 0.10 | -0.15 | -0.19 | 0.29 | -0.28 | -0.16 |
| Mentoring junior faculty members | 0.61 | -0.50 | -0.30 | 0.10 | 0.14 | 0.01 | -0.18 | 0.17 | 0.05 | 0.04 | 0.15 | 0.03 | -0.10 | 0.13 | -0.00 |
| Ongoing research projects | 0.61 | 0.25 | -0.38 | -0.06 | 0.17 | -0.22 | 0.06 | 0.10 | 0.30 | 0.28 | -0.13 | 0.15 | -0.01 | 0.11 | -0.12 |
| Receiving research awards | 0.60 | 0.44 | 0.17 | 0.25 | 0.01 | -0.29 | -0.11 | 0.16 | 0.04 | -0.26 | -0.04 | -0.16 | 0.02 | -0.08 | 0.05 |
| Poster presentations (original research presented) | 0.60 | 0.50 | -0.02 | 0.13 | 0.05 | -0.22 | -0.18 | 0.24 | -0.06 | -0.19 | -0.19 | -0.06 | 0.17 | 0.20 | 0.09 |
| Proposal funded or research grants | 0.60 | 0.11 | -0.47 | 0.10 | 0.11 | -0.02 | -0.13 | 0.12 | 0.13 | 0.30 | 0.02 | 0.20 | -0.16 | -0.05 | 0.19 |
| Utilization of evidence and updates to improve teaching skills | 0.56 | -0.10 | -0.16 | -0.08 | -0.30 | 0.00 | 0.35 | -0.30 | 0.12 | 0.11 | -0.25 | 0.14 | -0.01 | 0.30 | 0.17 |
| Membership in scientific and professional associations and societies | 0.53 | -0.26 | 0.33 | -0.01 | 0.00 | -0.16 | 0.29 | 0.16 | -0.20 | -0.17 | -0.12 | 0.38 | 0.19 | -0.10 | 0.02 |
| Exam item reviewing | 0.53 | 0.07 | -0.38 | -0.10 | -0.30 | -0.02 | 0.32 | -0.17 | 0.17 | -0.28 | 0.30 | -0.02 | -0.03 | -0.05 | -0.14 |
| Small group teaching | 0.52 | -0.16 | 0.42 | -0.20 | -0.15 | 0.28 | -0.23 | 0.04 | -0.16 | -0.13 | 0.20 | 0.21 | -0.20 | -0.13 | -0.05 |
| Contribution in national workshops | 0.50 | -0.12 | 0.41 | -0.07 | 0.05 | -0.18 | 0.10 | 0.13 | -0.32 | 0.25 | 0.27 | -0.16 | -0.22 | -0.23 | 0.12 |
| Participation in academic | 0.46 | -0.34 | -0.12 | 0.34 | 0.13 | 0.16 | 0.19 | -0.10 | -0.00 | 0.21 | -0.26 | -0.07 | 0.30 | -0.30 | -0.20 |

| | | | | | | | | | | | | | | | |
|---|-------------|--------------|--------------|--------------|--------------|-------|-------|--------------|--------------|-------|-------|-------------|-------|-------|-------|
| leadership | | | | | | | | | | | | | | | |
| Contribution in national conferences | 0.44 | 0.01 | 0.16 | 0.36 | 0.12 | -0.27 | 0.28 | -0.08 | -0.43 | 0.09 | 0.25 | -0.04 | -0.19 | 0.07 | 0.04 |
| Staff administered/supervised | 0.34 | -0.66 | 0.25 | -0.24 | 0.31 | 0.21 | -0.16 | 0.27 | 0.02 | -0.05 | 0.00 | -0.01 | 0.02 | -0.05 | 0.02 |
| Years in highest administrative position | 0.39 | -0.58 | -0.31 | 0.10 | 0.27 | 0.34 | -0.23 | 0.05 | -0.00 | 0.09 | 0.14 | 0.08 | -0.12 | 0.13 | 0.07 |
| PBL as tutor | 0.41 | 0.16 | 0.52 | 0.07 | -0.23 | 0.38 | -0.02 | 0.29 | -0.29 | -0.05 | -0.07 | -0.21 | -0.09 | 0.10 | -0.20 |
| Counseling students | 0.35 | 0.32 | 0.17 | -0.50 | 0.30 | 0.17 | 0.03 | -0.37 | -0.25 | -0.04 | -0.10 | 0.13 | -0.25 | -0.14 | 0.00 |
| Providing students with academic advice | 0.53 | 0.30 | -0.15 | -0.22 | 0.16 | 0.10 | -0.10 | -0.64 | 0.01 | 0.01 | -0.04 | 0.08 | -0.09 | -0.02 | 0.02 |
| Involvement in extracurricular activities | 0.21 | 0.67 | 0.24 | -0.49 | -0.09 | 0.26 | -0.03 | -0.10 | -0.01 | 0.11 | -0.12 | -0.02 | 0.10 | 0.07 | -0.05 |
| Participation in community awareness program | 0.09 | 0.59 | -0.48 | 0.34 | -0.20 | 0.11 | -0.19 | -0.07 | -0.18 | -0.23 | -0.01 | 0.05 | -0.03 | -0.05 | 0.12 |
| Manuscripts reviewed | 0.35 | 0.56 | 0.18 | -0.22 | 0.13 | -0.03 | -0.21 | 0.29 | 0.33 | 0.08 | -0.12 | 0.01 | 0.01 | -0.31 | 0.08 |
| Contribution in curriculum development | 0.28 | 0.56 | 0.04 | -0.41 | -0.03 | 0.25 | 0.17 | -0.14 | -0.04 | 0.24 | -0.25 | -0.03 | 0.20 | 0.18 | -0.10 |
| Participation in community organizations promoting health | 0.21 | 0.49 | -0.32 | 0.49 | -0.15 | 0.38 | -0.24 | 0.04 | -0.04 | -0.04 | 0.19 | 0.06 | 0.08 | -0.08 | -0.13 |
| Providing students with career advice | 0.28 | 0.48 | 0.39 | -0.22 | -0.21 | 0.06 | -0.26 | -0.26 | -0.01 | 0.02 | 0.12 | -0.03 | -0.32 | 0.01 | -0.03 |
| Undergraduate students supervised in research | 0.17 | 0.40 | -0.12 | -0.58 | 0.17 | 0.20 | 0.09 | 0.16 | -0.31 | 0.04 | 0.16 | -0.25 | 0.24 | 0.07 | 0.19 |
| Postgraduate students supervised in research | 0.11 | 0.46 | -0.19 | -0.51 | 0.14 | 0.28 | 0.05 | 0.27 | -0.31 | 0.14 | 0.30 | 0.03 | 0.10 | 0.07 | 0.10 |
| Membership in academic committees | 0.31 | -0.53 | 0.33 | -0.28 | 0.20 | 0.02 | -0.16 | -0.32 | -0.07 | -0.13 | 0.04 | -0.21 | 0.09 | -0.04 | 0.17 |
| Bedside teaching | 0.31 | -0.01 | 0.69 | 0.29 | -0.27 | -0.01 | -0.07 | -0.20 | 0.05 | 0.09 | 0.20 | -0.18 | 0.07 | 0.26 | -0.04 |
| Clinical teaching | 0.20 | -0.01 | 0.62 | 0.28 | -0.36 | -0.12 | -0.15 | -0.14 | 0.18 | 0.27 | 0.18 | -0.12 | -0.04 | 0.19 | -0.19 |
| Utilization of research and evidence to improve performance | 0.40 | -0.34 | 0.53 | 0.04 | -0.03 | -0.28 | 0.17 | 0.06 | -0.02 | -0.14 | 0.08 | 0.47 | 0.04 | -0.16 | 0.12 |
| Recognition and appreciation certificates | 0.40 | -0.22 | 0.53 | -0.05 | -0.16 | -0.23 | 0.30 | 0.10 | 0.16 | -0.15 | 0.14 | 0.19 | 0.09 | -0.02 | -0.27 |
| Proposals reviewed for peers | 0.40 | 0.35 | 0.51 | -0.29 | 0.06 | -0.12 | -0.23 | 0.07 | 0.27 | 0.25 | 0.08 | 0.09 | 0.06 | -0.15 | -0.04 |
| Clinical guidelines development or update | -0.08 | 0.27 | 0.50 | 0.50 | 0.44 | 0.35 | 0.23 | 0.00 | 0.18 | 0.03 | 0.04 | -0.02 | 0.03 | -0.00 | 0.07 |
| Practical sessions | 0.11 | -0.37 | 0.44 | 0.08 | -0.52 | 0.02 | -0.21 | -0.05 | -0.09 | -0.02 | -0.24 | 0.24 | 0.07 | 0.10 | 0.20 |
| Participation in ambulatory care | -0.08 | 0.21 | 0.50 | 0.55 | 0.53 | 0.20 | 0.16 | -0.06 | 0.15 | -0.01 | -0.03 | -0.02 | -0.01 | 0.03 | 0.12 |
| Utilization of evidence based care | -0.08 | 0.24 | 0.50 | 0.52 | 0.46 | 0.33 | 0.23 | -0.01 | 0.10 | -0.03 | -0.00 | -0.01 | -0.03 | 0.02 | 0.09 |
| Development of health education materials for public | 0.01 | 0.48 | -0.33 | 0.50 | -0.22 | 0.11 | -0.05 | 0.04 | -0.20 | -0.24 | 0.15 | 0.21 | 0.21 | 0.05 | -0.13 |

| | | | | | | | | | | | | | | | |
|--|-------------|--------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|-------|-------|-------------|
| Research proposals developed | 0.03 | 0.43 | -0.07 | -0.33 | 0.56 | 0.02 | 0.03 | 0.02 | -0.03 | -0.28 | 0.02 | -0.34 | -0.26 | -0.01 | -0.02 |
| Participation in inpatient care | -0.08 | 0.27 | 0.50 | 0.50 | 0.52 | 0.20 | 0.21 | -0.06 | 0.20 | 0.05 | 0.01 | 0.01 | 0.01 | 0.07 | 0.05 |
| Achievement during leadership years | 0.01 | -0.68 | -0.11 | 0.05 | 0.22 | 0.35 | -0.23 | 0.09 | -0.01 | 0.11 | 0.17 | 0.12 | -0.23 | 0.28 | -0.13 |
| Participation in registries | 0.20 | 0.30 | -0.21 | 0.46 | -0.22 | 0.55 | -0.18 | 0.11 | 0.10 | -0.10 | 0.16 | 0.21 | 0.03 | -0.18 | 0.01 |
| Development of exam items | 0.19 | 0.04 | 0.12 | -0.37 | -0.35 | 0.21 | 0.72 | -0.01 | -0.05 | -0.18 | 0.03 | 0.01 | -0.12 | 0.14 | -0.02 |
| Exam item writing | 0.53 | 0.07 | -0.38 | -0.10 | -0.30 | -0.02 | 0.32 | -0.17 | 0.17 | -0.28 | 0.30 | -0.02 | -0.03 | -0.05 | -0.14 |
| Contribution to OSCE | 0.12 | -0.13 | 0.11 | -0.31 | -0.21 | 0.32 | 0.40 | 0.26 | 0.38 | -0.24 | 0.16 | -0.28 | -0.04 | -0.13 | 0.26 |
| Membership in editorial board of journal | 0.38 | 0.41 | 0.41 | -0.28 | -0.18 | -0.10 | -0.21 | 0.43 | 0.10 | 0.15 | -0.24 | 0.06 | -0.17 | 0.05 | 0.06 |
| Contribution to OSPE | 0.28 | -0.07 | -0.39 | -0.13 | -0.26 | 0.10 | 0.11 | 0.11 | 0.64 | 0.02 | 0.22 | -0.12 | -0.16 | -0.11 | -0.02 |
| Lecture teaching | -0.14 | -0.38 | 0.03 | 0.08 | -0.29 | 0.38 | 0.16 | 0.28 | -0.18 | 0.43 | -0.32 | 0.08 | -0.16 | -0.02 | -0.24 |
| Publications | 0.04 | 0.36 | -0.06 | -0.38 | 0.40 | -0.01 | 0.14 | 0.14 | 0.11 | 0.17 | 0.40 | 0.21 | 0.29 | 0.27 | -0.20 |
| Lab session | -0.01 | -0.11 | 0.26 | -0.05 | -0.59 | 0.26 | -0.22 | -0.29 | -0.01 | 0.15 | 0.23 | 0.13 | 0.34 | -0.04 | 0.19 |
| Participation in student admission process | 0.15 | 0.10 | -0.12 | 0.34 | -0.32 | 0.37 | 0.17 | 0.14 | 0.00 | 0.14 | -0.16 | 0.15 | -0.12 | 0.14 | 0.40 |
| Cronbach's alpha | 0.93 | 0.80 | 0.80 | 0.73 | 0.20 | 0.03 | 0.73 | 0.51 | -0.32 | NA | NA | NA | NA | NA | NA |
| Eigenvalue | 10.96 | 7.61 | 6.27 | 5.24 | 4.08 | 3.06 | 2.78 | 2.25 | 2.14 | 1.84 | 1.69 | 1.44 | 1.29 | 1.25 | 1.06 |
| % Variance | 18.57 | 12.90 | 10.63 | 8.89 | 6.91 | 5.18 | 4.71 | 3.82 | 3.63 | 3.12 | 2.86 | 2.44 | 2.18 | 2.12 | 1.80 |

NA = Not Applicable

Table 11

Principal Component Analysis

Education

| | Component 1 | Component 2 | Component 3 | Component 4 | Component 5 | Component 6 | Component 7 |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Counseling students | 0.66 | 0.39 | -0.12 | -0.32 | 0.36 | -0.10 | 0.05 |
| Providing students with career advice | 0.55 | 0.18 | 0.00 | 0.27 | 0.39 | -0.30 | 0.18 |
| Involvement in extracurricular activities | 0.93 | 0.06 | 0.06 | 0.09 | 0.12 | -0.09 | 0.02 |
| Contribution in curriculum development | 0.88 | 0.21 | 0.03 | 0.08 | -0.08 | 0.17 | -0.12 |
| Utilization of evidence and updates to improve teaching skills | 0.15 | 0.65 | 0.27 | 0.14 | -0.22 | 0.44 | 0.27 |
| Mentoring of students | 0.17 | 0.81 | 0.05 | 0.06 | 0.22 | -0.07 | -0.15 |
| Providing students with academic advice | 0.42 | 0.80 | -0.03 | -0.12 | 0.11 | -0.25 | 0.08 |
| Development of exam items | 0.40 | 0.03 | 0.58 | -0.04 | 0.08 | 0.53 | 0.12 |
| Exam item reviewing | 0.00 | 0.57 | 0.65 | -0.01 | 0.04 | 0.05 | -0.06 |
| Contribution to OSCE | 0.12 | -0.23 | 0.84 | -0.03 | 0.14 | 0.07 | 0.10 |
| Contribution to OSPE | -0.16 | 0.25 | 0.78 | 0.00 | -0.08 | -0.09 | -0.06 |
| Clinical teaching | 0.03 | -0.01 | -0.04 | 0.93 | 0.11 | -0.05 | 0.21 |
| Bedside teaching | 0.08 | 0.04 | -0.02 | 0.87 | 0.23 | -0.14 | 0.28 |
| PBL problem development | 0.01 | 0.45 | 0.06 | 0.42 | 0.68 | 0.05 | -0.08 |
| PBL as tutor | 0.30 | -0.12 | 0.03 | 0.42 | 0.74 | 0.34 | -0.06 |
| Small group | 0.09 | 0.13 | 0.11 | 0.04 | 0.82 | -0.04 | 0.41 |
| Lecture teaching | -0.12 | -0.23 | -0.13 | -0.01 | 0.03 | 0.76 | 0.16 |
| Exam item writing | -0.03 | 0.41 | 0.43 | -0.08 | 0.17 | 0.68 | -0.20 |
| Practical session | -0.15 | -0.03 | -0.14 | 0.32 | 0.24 | 0.30 | 0.70 |
| Lab session | 0.07 | -0.03 | 0.09 | 0.22 | 0.05 | -0.03 | 0.85 |
| Cronbach's alpha | 0.85 | 0.77 | 0.74 | 0.95 | 0.82 | 0.62 | 0.67 |
| Eigenvalue | 5.07 | 3.34 | 2.69 | 1.72 | 1.36 | 1.27 | 1.10 |
| % Variance | 25.36 | 16.70 | 9.2 | 13.46 | 8.60 | 6.78 | 5.50 |

Service

| | Component 1 | Component 2 |
|---|-------------|-------------|
| Participation in inpatient care | 0.98 | 0.02 |
| Participation in ambulatory care | 0.98 | 0.03 |
| Utilization of evidence based care | 0.98 | 0.11 |
| Clinical guidelines development or update | 0.98 | 0.11 |
| Participation in student admission process | 0.09 | 0.51 |
| Participation in community awareness program | -0.13 | 0.88 |
| Development of health education materials for public | 0.01 | 0.87 |
| Participation in community organizations promoting health | 0.10 | 0.92 |
| Participation in registries | 0.16 | 0.85 |
| Cronbach's alpha | 0.99 | 0.87 |
| Eigenvalue | 4.14 | 3.14 |
| % Variance | 46.00 | 34.90 |

Research

| | Component 1 | Component 2 | Component 3 |
|--|-------------|-------------|-------------|
| Proposal funded or research grants | 0.73 | -0.06 | 0.20 |
| Ongoing research projects | 0.76 | 0.10 | 0.25 |
| Oral presentations (original research presented) | 0.85 | 0.28 | -0.08 |
| Poster presentations (original research presented) | 0.78 | 0.42 | 0.09 |
| Receiving research awards | 0.67 | 0.54 | -0.12 |
| Membership in editorial board of journal | 0.23 | 0.86 | 0.12 |
| Manuscripts reviewed | 0.22 | 0.85 | 0.18 |
| Proposals reviewed for peers | 0.08 | 0.84 | 0.20 |
| Research proposals developed | 0.16 | 0.08 | 0.62 |
| Publications | 0.10 | 0.03 | 0.81 |
| Undergraduate students supervised in research | 0.02 | 0.20 | 0.80 |
| Postgraduate students supervised in research | 0.02 | 0.14 | 0.90 |
| Cronbach's alpha | 0.87 | 0.88 | 0.80 |
| Eigenvalue | 4.74 | 2.33 | 1.43 |
| % Variance | 39.51 | 19.38 | 11.95 |

Professional development

| | Component 1 | Component 2 |
|--|-------------|-------------|
| Contribution in national conferences | 0.71 | 0.33 |
| Contribution in international conferences | 0.90 | 0.07 |
| Contribution in national workshops | 0.55 | 0.51 |
| Contribution in international workshops | 0.93 | -0.03 |
| Contribution in training courses | 0.81 | 0.22 |
| Recognition and appreciation certificates | 0.04 | 0.86 |
| Utilization of research and evidence to improve performance | 0.12 | 0.92 |
| Membership in scientific and professional associations and societies | 0.25 | 0.83 |
| Cronbach's alpha | 0.87 | 0.85 |
| Eigenvalue | 4.07 | 1.86 |
| % Variance | 50.78 | 23.24 |

Academic management and leadership

| | Component 1 | Component 2 | Component3 |
|--|-------------|-------------|-------------|
| Membership in academic committees | 0.86 | 0.07 | 0.05 |
| Academic committees | 0.60 | 0.40 | 0.52 |
| Meetings and taskforce | 0.70 | 0.30 | 0.60 |
| Membership in block planning groups | 0.84 | 0.40 | 0.30 |
| Staff administered/supervised | 0.70 | 0.50 | 0.20 |
| Mentoring junior faculty members | 0.40 | 0.65 | 0.42 |
| Years in highest administrative position | 0.30 | 0.90 | 0.32 |
| Achievement during leadership years | 0.15 | 0.93 | -0.21 |
| Participation in academic leadership | 0.02 | 0.09 | 0.93 |
| Participation in college council | 0.50 | 0.20 | 0.80 |
| Cronbach's alpha | 0.91 | 0.86 | 0.88 |
| Eigenvalue | 5.98 | 1.21 | 1.01 |
| % Variance | 59.79 | 12.09 | 10.06 |

Summary

In summary, interviewees identified five domains and subdomain items, which were supported by four focus groups, indicating good content validity. In addition to a frequency analysis of participants' responses (Table 4), the weight assigned to each identified domain resulted in the prioritization of education, followed by service, research, academic management and leadership and professional development. Similar results were yielded when assigned weights were given in accordance to participants' gender, role, discipline, and college. The results of repeated measures ANOVA showed that the mean scores of assigned weights by participants were not significantly different from one another. MANOVA results showed that there were no significant differences (between-group effects of rank, role, and colleges) in mean scores of five domains assigned by 18 interviews.

Chapter Five: Discussion

This study contributes to the published research by examining stakeholders' perspectives about the development of a faculty portfolio. While the existing research has identified some concerns and advantages of portfolio use, the present study also addressed the reliability and validity of portfolio scores. This study clarified the current roles of faculty members at a health sciences university in Saudi Arabia, which informed the development of domains and subdomains of a faculty portfolio, and first steps in its validation. That is, this research explored the views, roles, daily practices, activities and experiences of faculty, leaders and senior students in order to develop the faculty portfolio in King Saud bin Abdulaziz University for Health Sciences. Responses from the in-depth interviews in phase one identified five domains and their subdomains of a faculty portfolio. Subsequently, discussions during four focus groups in phase two substantiated the five domains that emerged from the interviews, and further identified subdomains for a faculty portfolio. In phase three, the study revealed evidence for the validity of the domains and subdomains, based on participants' questionnaire responses.

In this chapter, a critical discussion of the results will be presented, from the in-depth interviews and focus groups, followed by quantitative results of the importance of the different areas of the portfolio. It is appreciated that some conflicts, disagreements, queries, and outliers often emerge in qualitative research, and these are discussed before the section on weaknesses and strengths of the study.

Results of Interviews and Focus Groups

Portfolio domains. According to this study, five main roles (domains or themes) of a faculty portfolio were identified, specifically, education, service, research, professional

development, and academic management and leadership. The weight allocation to domains by interviewees differed, with education receiving a higher weight than any other domain. Also, service and research were rated higher than professional development, and academic management and leadership. Thus, education, service and research were prioritized, which is consistent with other studies (Boyer, 1990). Also, academic management and leadership were rated higher than professional development.

Education was the first domain suggested by all the participants as the most important. This finding was substantiated by other research (Boyer, 1990; Granville & Houde, 2004; Kuhn, 2004; Lamki & Marchand, 2006; Medina et al., 2011). For example, Boyer (1990) also gave preference to education in his framework of educational scholarship. Similarly, Lamki and Marchand (2006) identified education to be the first domain in medical-educator teaching portfolios. Other researchers also considered teaching scholarship as the first domain of portfolios (Granville & Houde, 2004; Kuhn, 2004; Medina et al., 2011). It is not surprising that education was identified as the most important given that the respondents worked at education institutions. Another explanation is that education is the top priority, purpose, and the mission of most or all higher educational institutions.

Teaching is the backbone of academic universities. Education prepares students to take a suitable job and lead an independent, mature life. Education also enables students to contribute to the economic development of the nation. Furthermore, teaching and learning are currently the most frequent types of scholarship pursued mostly through digital products (Thoma, Chan, Benitez, & Lin, 2014). Furthermore, education is important to many faculty members and administrators because education theory is represented by many topics and disciplines such as pedagogy, andragogy (adult teaching and methods), curriculum, learning, education policy,

organization and leadership, and history, philosophy, sociology, psychology and health sciences. Education is the seeking to know, and understand. It enlightens a person to take a leading role in the society, and can challenge deep-rooted maladaptive patterns of behaviors.

Service was the second domain identified for several potential reasons. First, the majority of interviewees were clinician-educators in this study. Second, they may have felt that serving patients is their moral responsibility and their sole charge. In addition, they may gain satisfaction from helping patients and learn from them to improve their clinical acumen. Similarly, institutional image is enhanced when institutional services are unique and evidence based. Faculty performance, excellent services, and customer satisfaction are connected to each other and all stakeholders benefit from this work relationship. A quote from William Osler reminds us of the holistic approach of serving a patient: "The good physician treats the disease; the great physician treats the patient who has the disease." Several researchers have emphasized that a faculty portfolio should document teaching and learning as the primary activity of faculty followed by research scholarship and clinical, administrative and community services (Paul 2004; Seldin, Miller, & Seldin, 2010). Notably, Paul (2004) emphasized the importance of recording teaching philosophy, responsibility, and learning in the faculty portfolio. A faculty portfolio is considered a recording tool of selected information on teaching, research and service activities, and effectiveness in these areas is supported by empirical evidence (Seldin, Miller, & Seldin, 2010).

Research was the third domain identified by participants; however, all participants suggested education, service and research to be an essential and vital part of the portfolio. Thus, all three are ranked above the other two domains and among those three, teaching received the highest weighting. At the university campuses where this study took place, research is a criterion

for promotion. Another reason why research may have been identified as a domain is that the development of research projects for grants, electronic searches of literature, and writing research manuscripts for submission help faculty to update their knowledge. Also, publications enhance the image of the university, and, hence, its members. This finding is consistent with other studies (Boyer, 1990; Calleson, Jordan, & Seifer, 2005; Reece et al., 2001). According to Boyer (1990), research is considered one of the important components of the tripartite mission. The faculty portfolio should meet all important dimensions of faculty activities, including effective teaching, research scholarship, creative activities, and clinical or administrative service with community participation (Calleson, Jordan, & Seifer, 2005). Reece et al. (2001) emphasized that the faculty portfolio should contain evidence of effective teaching and learning, research scholarship, and service and leadership.

The professional development domain was the fourth most important role identified, and determined to encompass specialized training, formal education, or advanced professional learning intended to help administrators, leaders, teachers and faculty improve their professional knowledge, competencies, attitudes, and skills to be effective in all academic work. As such, faculty achieve multiple purposes, including promotion, credentials, and analytical skills of how to assess students' performance, course management, and teaching effectiveness. Notably, theories of professional development include, cognitive and social aspects of learning (Watson & Evans, 2012). The cognitive component tends to focus on notions of changes in teachers' beliefs or knowledge. Social perspectives have considered professional learning through participation. Social learning theory provides a theoretical approach that integrates cognitive aspects and social effects in learning. Social cognitive theory, a learning theory based on the idea that people learn by observing others, can be explained by Bandura's schematization of triadic reciprocal

causation. The schema shows how the reproduction of an observed behavior is influenced by the interaction of the three determinants: (i) personal (cognition), i.e., encourage the learner to believe in his or her personal abilities to correctly complete a task; (ii) behavioral (the response an individual receives after performing a behavior), and (iii) environmental (aspects of the environment or setting that influence the individual's ability to successfully complete a behavior). Participation of faculty members in professional development programs is essential to advance self-efficacy. According to Bandura (1977), our accomplishments, observations of others, and encouragement from others can either promote or hinder our self-efficacy. Gaining personal success, seeing others succeed, and receiving encouragement all increase our self-efficacy – all of which can be promoted through professional development programs.

Academic management and leadership was the last domain identified in this study. There are several suggestions for why it was identified as an important role. Unlike academic universities in the Western world where the movement of academic leadership started, the Eastern world has yet to realize its full potential and implications. For example, if the leader of a university is strong and proficient, he/she can help develop the image of the university. Academic leaders tend to have expertise in teaching, research and service. Academic leaders initiate and bring about change with the help of their colleagues, which is often rewarding for themselves, faculty and the institution. Similar findings are reported in other studies (Arreola, 2007; Davis & Ponnampерuma, 2010; Hovenga & Bricknell, 2006; Reece et al., 2001; Seldin, Miller, & Seldin, 2010).

The academic management and leadership domain was given the least importance in this study. Perhaps faculty have biased opinions against academic leaders or they have yet to understand the significance of academic management and leadership. Other reasons may be that

the majority of their work is not immediately visible to another faculty. Although half of the participants were leaders themselves, they gave greater importance to research, service and education. Nevertheless, individuals who take on leadership positions within academic health science organizations play a crucial role in society (Detsky, 2011). Moreover, in academic medicine, leaders are often chosen based on their success in the core activities related to education, patient care, and research. Thus, selection of the academic management and leadership domain may be an acknowledgement of these other roles.

As there are many types of portfolios in health sciences and medicine, the number of domains also varies. For example, nursing portfolios may contain conventional domains such as a curriculum vitae (overview of biographical information, educational background, education and employment details, licenses and certifications), clinical practice (such as patient safety initiatives, team work, case studies, and cultural competence), professional development (continuous education programs, orientations, and certification programs), research or evidence-based practice (participation in research and journal clubs), leadership (professional advocacy, awards and promotion), and service (community, unit and organizational services) (Smith, & McDonald, 2013). The American Nurses Credentialing Center (ANCC, 2013) currently requires four domains for nursing specialty certifications, which include professional development, professional/ethical nursing practice (service), teamwork/collaboration, and quality/safety. In another study, Lamki and Marchand (2006) suggested four main components of medical-educator teaching portfolio (METP), which were categorized in four parts: 1) evaluation of teaching, clinical, administrative, and educational development; 2) personal professional development which included philosophy of education and self-assessment; 3) learning process which defined areas of needed professional growth; and 4) the appendix (the attachments) which

were tests and curriculum. Notably, the suggested content of METP overlaps with the items of our faculty portfolio. Currently, there are no rules for setting the number of domains and their subdomains of a faculty portfolio. Future research could endeavor to implement a portfolio, such as the one developed in this study or in other health sciences institutions, gain feedback from leaders and faculty, implement it to determine its usability, and then implement it in other programs.

Paradigm Shift of Faculty Roles

The present study reveals the main roles of faculty to be teaching, research and service; the "tripartite mission" of higher educational institutions (Boyer, 1990). It was also determined that these are essential components or domains of a faculty portfolio. In the past century, there was greater emphasis and more time spent on research scholarship than teaching. However, in the last 50 years, teaching became as important as research (Gallagher & Martin, 2000). Marsh and Hattie (2002) have critically discussed the relationship between teaching effectiveness and research productivity and also argued whether the two are complementary, antagonistic, conflicting, or independent in different settings. All three faculty roles are mutually supportive but discrete activities (Marsh & Hattie, 2002). According to Seldin and colleagues (2010), a faculty portfolio is considered as a recording tool of selected information rather than indiscriminate materials on teaching, research and service activities, and their effectiveness is supported by empirical evidence. However, verification of effectiveness of teaching requires the design of appropriate assessment activities that will produce useful evaluative information about student learning. In a related context, teaching effectively, faculty development, and assessment of teaching effectiveness are closely interwoven. Faculty development is described in various ways, and as Wilkerson and Irby (1998, p. 387-396) stated, "Academic vitality is dependent

upon faculty members” interest and expertise; faculty development has a critical role to play in promoting academic excellence and innovation, and it is a tool for improving the educational vitality of our institutions through attention to the competencies needed by individual teachers and to the institutional policies required to promote academic excellence”. Faculty development tends to improve teaching performance reflected in better outcomes for students. Such improvements include but are not limited to development and use of new teaching methods and evaluation techniques, enhanced processes for analyzing, planning, and implementing curricula, and increased commitment to educational scholarship (Steinart et al., 2006).

Overall, the goals of faculty development can be based on three theories; behaviorism, T-Group (sensitivity training), and an eclectic application of principles of learning and individual differences (McKeachie, 1991). According to Skinner, the founder of behaviorism, instructional design is based upon the principles of behaviorally defined goals, consisting of small learning steps, gradually presenting progressively advanced learning material with positive reinforcement (such as appreciation certificates, promotions, and financial incentives to program developers and junior faculty who attend the faculty development programs). In the T-Group (T stands mainly for training but also for techniques, testing and taxonomy), faculty members receive sensitivity training such as becoming aware of personal prejudices. The eclectic application of principles of learning and individual differences is derived from research in psychology and education. Faculty adapt to students' learning styles, and the theory suggest that their feedback would motivate improvement in faculty teaching. Other theories based on cognition, motivation, cooperation, interpersonal and socio-psychological relationships, and peer learning could contribute to faculty development. Faculty development, one of the domains identified in the present study, tends to improve practice in three important academic areas including teaching

and learning, research, and service and also to manage organizational capacities and the overall culture of the institutions (Bligh, 2005; Steinart et al., 2006). Furthermore, faculty development programs are tangible indicators of the institutions' inner faith in their academic workforce (Bligh, 2005). As professional development, will result in the improvement in teaching effectiveness and learning, curriculum development using state-of-the-art IT, teaching instructions, peer cooperation, training programs development, and assessment processes and outcomes. Therefore, each health sciences college and academic university should establish a Medical Education Unit to accomplish such important tasks including faculty development. Subsequently, several researchers have delved into whether or not faculty development improves teaching effectiveness, learning, and other outcomes, and recommended various strategies such as curricular modifications, instructional effectiveness, teaching instrument development and incorporating new technologies and new learning methods, train the trainer model, problem-based learning, distance-based consultation, and continuing education for further enhancing teaching effectiveness (Bligh, 2005; Hendricson et al., 2007; Steinart et al., 2006). It is imperative to carefully assess the needs of faculty prior to conducting created programs with specific content and concepts that are more likely to be successful, largely attended, and given positive evaluations, with transferability into daily practices of faculty (Cole et al., 2004; Gruppen et al., 2006). It is also crucial to assess faculty development programs to further improve teaching effectiveness, planning strategies, and outcome measures.

Faculty roles have been changing and expanding over the past 25 years, and the domains of faculty portfolio need to be regularly reviewed with a move towards globalization of higher education, IT advancements, diversity within society and cultures to which students belong, and the public's demand that the tax payers' money be used effectively in higher education (HLC,

2003). Indeed, faculty roles will continue to change further in order to conform to the newer teaching methods, unique curricula development and implementation, and modern faculty assessment methods. Some studies reported three main faculty roles embedded in three domains (Boyer, 1990) and others studies reported four or more such roles (Lamki & Marchand, 2006). The main roles of faculty may be explained in light of institutional portfolio purposes, globalization of higher education, type of institution and demands of students from diverse cultures (Brown et al., 2006; HLC, 2003; Medina et al., 2011). For example, in a research organization, faculty will attach a significant portion of their time and activities to research and minimal time to teaching, clinical or community services, self-development, and administration. Presumably, the sequence of domains in such a scenario tends to change to research, teaching, professional development, academic management and leadership, and service. Faculty researchers would have some responsibility of teaching research related topics to students, performing administrative service and self-learning. In such institutions, however, education of research including teaching research methods and analytic methods would be at the top of the agenda of faculty teaching. Similarly, clinicians and administrators give high importance to service and management and they would also engage in some professional development, as highlighted by Lamki and Marchand (2006). Clinician-teacher or educator paradigms are important especially in academic health science settings such as KSAU-HS that inspire a clinician to be also a teacher and researcher. Interestingly, this triple role is known as a “triple threat”, which, according to Manabe et al (2009), is difficult to sustain. Possessing excellent skills in three main areas does not acknowledge that most faculty will have strengths in particular roles.

Demographic Differences

With regard to differences in domains identified according to participants' demographic differences, the only significant finding is gender. That is, men reported a lower weighting to the importance of research than did women. This result has not been reported in previous research, and, thus, requires further study. An explanation for this finding is not readily apparent. Perhaps women feel overlooked in research and funding (McCarthy, 2015), and give it a stronger weighting because it is more difficult for them to achieve. This is a dubious explanation at best.

Although the participants in the interviews seemed to identify an important role that matched their own, this result was not found when examining the demographic characteristics of role in the weightings. For example, administrators did not give a higher weight to the administrative domain compared to the other domains. This may have occurred for several reasons. First, there may have been too few interviewees that informed the researcher's impression that many interviewees identified the roles that they were themselves involved in. For a quantitative difference to emerge, many interviewees would have had to follow this pattern. Another possibility is that when considering the weights, participants may have identified roles other than their own as more important when assigning a quantitative value to them.

Subdomains of Faculty Portfolio

The identified five domains were supported by the focus group participants, though they were not asked to give their opinions about them specifically. They voluntarily showed interest in commenting and discussing these domains and implicitly agreed to them. They identified diverse roles and daily activities of faculty within each domain. These substantiated the subdomains identified in the interviews. These techniques of supporting qualitative information from phase one by data from phase two or multiple sources is referred to as triangulation

(Caracelli & Greene, 1997; Gibbs, 1997; Morgan & Spanish, 1984). It should be noted, however, that the focus group participants provided implicit rather than explicit support for the domains. Nevertheless, the focus group data contributed to the dependability, trustworthiness, and credibility (validity) of the domains by creating subdomains for them. According to this study, all of them agreed on the 59 subdomain items of education, service, research, professional development and academic management and leadership domains, respectively. The larger number of teaching and research activities were prioritized to be documented under respective domains as also found in other studies (Lamki & Marchand, 2006), whereas three other individual subdomains roles (service, professional development, and academic management and leadership) were relatively limited in numbers. These findings suggest that both teaching and research subdomains remain the top concern of participants, consistent with other studies (Boyer, 1990; Lamki & Marchand, 2006). However, service and its subdomains found second place in the domain sequence because the majority of faculty members are first clinicians, then teachers. Clinician-educators are predominant in the health science colleges of KSAU-HS where this study was conducted.

The identified domains and items of subdomains in the present study reflect the faculty's preference in teaching, clinical service, research scholarship and achievements, professional career development, and leadership roles. The developed faculty portfolio also contains purposes, goals, and reflections on teaching, beliefs and values, and faculty feedback. Teaching curricula and innovative methods, teaching instructions, mentoring, peer review, course evaluation and portfolio assessment are other subdomains of the education domain in the faculty portfolio. In addition, student feedback, learning, and assessment are also included in the subdomains of education. Under research scholarship, scientific publications, developing

research protocols for grants, and presenting research results in local or international conferences and other items are some of faculty members' related activities. Community service like health campaigns and institutional services are mentioned under service domains. Some of the activities related to professional development and leadership roles include attending meetings and representing universities. These subdomain items of five identified domains are consistent with other studies (Calleson, Jordan, & Seifer, 2005; Lamki & Marchand, 2006; Paul, 2004; Reece et al., 2001; Seldin, Miller, & Seldin, 2010; Simpson et al., 2004; Tofade, Abate, & Fu, 2014). According to this study, the developed portfolio matches the qualities of reflective portfolios as they inspire reflection, feedback, and connecting academic knowledge with clinical practice (Klenowski & Lunt, 2008; Kostrzewsk, Dhillon, Goodsman & Taylor, 2008). Reflective portfolios also help in the assessment of interprofessional competence and understanding of collaborative interprofessional behaviour associated with reflective thinking and better healthcare outcomes (Domac, Anderson, O'Reilly & Smith, 2015). They are typically used to enhance reflective practice, learning, peer review, and personal values and presumptions in personal and professional lives (Domac et al., 2015; Fida & Shamim, 2016; Klenowski & Lunt, 2008). However, reflective portfolios have poor test-retest reliability. Overall, the uses of a faculty portfolio are diverse, and serve many purposes and, thus, they are important tools for teaching and learning, faculty assessment, and employment.

The variability in subdomain items suggests that activities related to individual domains are also consistent with other research (Brennan & Lennie, 2010; Plaza et al., 2007; Skrabal et al., 2012). The variable number of domains and subdomains found in the present study is acceptable as there are no standardized number of domains and their subdomains of a faculty portfolio (Brennan & Lennie, 2010; Plaza et al., 2007; Skrabal et al., 2012). Hence, the selection

of domains and items related to their subdomains by faculty is based on individual faculty judgment, and this affects the internal consistency of faculty portfolio (Yu, 2003). Other factors that drive this variability in domain and subdomain content are the purposes and forms of portfolios. One of the purposes of our study was to identify the roles of faculty, which affects the number of subdomains under each defined domain. For example, a teaching portfolio will have mainly a teaching domain with many of its subdomain items. Also, faculty choice or preferences and judgment regarding what to record in a portfolio and institutional characteristics will contribute to the variability in domains and subdomain items (Driessen et al., 2007a; Gannon et al., 2001), which is consistent with our study. For example, a faculty clinician may opt more for clinical activities to be recorded under the service domain. Researchers disagree on the amount of portfolio content that should be included. It should, at least, contain the domains that apply to all faculty activities. Notably, teaching portfolios differ in content, use, purpose, structure, reliability and validity (Driessen et al., 2007a; Driessen et al., 2005b; Gannon et al., 2001). Heuristically, portfolios cannot be all encompassing and, hence, need to be short and concise to prevent faculty resistance, burnout and administrative apathy. However, portfolios are tools globally used and theorized for multiple domains and subdomain content in academic educational institutions around the world. The tension created by supporters of succinct portfolios versus its opponents who opt for voluminous portfolios may continue to dominate the academic institutions around the world. Each listed content area in faculty portfolio needs justification for inclusion in a portfolio. Perhaps each domain identified in this study is its own portfolio; the field of portfolio types is indeed vast and further expanding, with teaching portfolios (Center for Learning and Professional Development, 2005), research portfolios,

service portfolios, professional development portfolios, academic program portfolios (academic portfolio), and leadership portfolios.

Reliability and Validity Scores of Faculty Portfolio

According to this study, all the participants in interviews and focus groups generally agreed on the identified domains and subdomain items of a faculty portfolio, providing some evidence of validity, credibility, dependability and trustworthiness. The reliability and validity information on a faculty portfolio are important because portfolios are used as assessment tools in academia, and, hence, they must show good evidence of reliability and validity. As stated by Seldin (1993), the originator of the teaching portfolio, it should be relevant, reliable, practical and flexible. Chang (2002) stated that consistency of assessment results should be examined among different portfolios, raters, test time, and situations because this is what portfolio reliability involves. Portfolio assessment, to be authentic, requires good reliability and validity in higher education programs such as effective teaching and learning evaluation, faculty promotion, and faculty retention. The multifaceted nature of portfolios allows for the demonstration of a variety of strengths and weaknesses. The latter need to be rectified by adopting several mechanisms that help enhance reliability of scores. When used to make promotion and tenure decisions for individual faculty members, it is critical that adequate reliability and validity be obtained. This is a challenge for researchers given their variability.

According to this study, the inter-rater reliability (internal consistency) of domains, subdomains and faculty portfolio was good to excellent, which is consistent with other studies (Gelina, 1998; Gadbury-Amyot et al., 2003; Oskay, Schallies, & Morgil, 2008; Pitts, Coles, Thomas, & Smith, 2002; Plaza et al., 2007; Rees & Sheard, 2004; Tochel et al., 2009). The wide range of reliability coefficients revealed in these studies is likely due to multiple reasons

including its inherent subjectivity of portfolio, variable content and training of raters. Some studies showed poor to excellent reliability (Gelina, 1998; Tochel et al., 2009; Yu, 2003; Yueh & Wang, 2000). In contrast, Yueh and Wang (2000) found that portfolio assessment in regard to personalized learning often show poor reliability. In the absence of a well-defined scoring or grading system, raters tend to use their own judgement in the evaluation of portfolios. Thus, they may introduce bias in assessing portfolios, which will affect the reliability of scores. In a systematic review of the inter-rater reliability of portfolios for post-graduate summative assessment, Tochel et al. (2009) reported that the summative evaluation of portfolio content could be reliable among multiple raters. According to this review, the level of rater agreement showed that the portfolios were rated consistently and provided an accurate measure of teaching competency.

The reliability of domains, subdomains and overall faculty portfolio found in the present study is similar to those reported by other researchers (Anna-Marie, 1998; Gadbury-Amyot et al., 2003; Gelina, 1998; Oskay, Schallies, & Morgil, 2008). In these studies, the level of inter-rater agreement was good to excellent, reflecting high reliability scores attributed to discussions among trained raters prior to testing reliability of portfolios (Anna-Marie, 1998; Oskay, Schallies & Morgil 2008; Pitts et al. 2002). Some reports of low reliability do exist in the research (Driessen et al. 2006; Pitts et al. 2002) perhaps as a result of limited training discussions of ratings between raters rather than individual ratings, a large number of raters, and subjectivity inherent in rating portfolios. Overall, research suggests that there is at least a moderate degree of reliability across the different types that have been examined (Oskay, Schallies, & Morgil, 2008) and this conclusion is consistent with our study. Like the findings of reliability of domains and subdomain items in the present study, Driessen et al. (2006) found inter-rater agreement ranging

from moderate to excellent agreement. This finding suggests that all items of faculty portfolio were related. Thus, the developed faculty portfolio is associated with dependability or consistency, the essential criteria for quality (Seale, 1999).

Concerning validity, this study did not find any differences in the participants' scores of importance assigned to each subdomain of faculty portfolio (59 questionnaire items). The finding that most participants gave high scores to all questionnaire items, provides evidence of agreement to these items that had been identified in the focus groups. This provides evidence for content validity. Also, no significant differences were observed between participants' demographics and domain scores. Overall, these findings suggest that people's perceptions of what constitutes a good portfolio are consistent across demographic characteristics. Similarly, Gadbury-Amyot et al. (2003) found that seven subscales in the scoring rubric of a portfolio were all closely related to the overall portfolio score, suggesting good reliability. Oskay and colleagues (2008) reviewed several studies that focused on validity. They found good support for validity in interpreting portfolio scores when certain conditions such as clear instructions to assessors, and content uniformity were in place (Oskay, Schallies, & Morgil, 2008). A systematic review of the validity of portfolio scores for post-graduate summative assessment across multiple health professions showed discrepant accuracy across the studies. However, validity was improved when portfolios were combined with other assessment methods including peer assessment, self-assessment, students' assessment and administrators' ratings (Tochel et al., 2009). The present findings do not suggest that decisions be based solely on portfolio scores, but rather the converging results across two or more sources (one of them being portfolio) should be sought. Indeed, research suggests that portfolio scores are a good indicator of faculty evaluation (Arreola, 2007; Hovenga & Bricknell, 2006; McCready, 2007; McMullan, 2006). Moreover,

these scores are associated with improvements in teaching, critical thinking, research, and service (Arreola, 2007; Boyer, 1990; Seldin, Miller, & Seldin, 2010). This developed faculty portfolio with good reliability and validity of scores could have many applications in health sciences colleges, which include comprehensive evaluation of faculty, teaching effectiveness, research scholarship, service, promotion, rewards, management organization, continuous medical education and professional development, peer review and faculty retention – especially when used alongside other measures.

In the light of Kane's validity argument (1992, 2006), validity was considered during the development of the faculty portfolio by obtaining input from stakeholders regarding the proper content of a faculty portfolio. The faculty portfolio score claims must be stated clearly. Thus, the arrangement of all inferences, assumptions and implications that are important for reaching conclusions about the faculty portfolio and eventually making decisions based on them has to be clarified by future research.

Challenges of Qualitative Data

Like other qualitative research, this study revealed responses that were challenging to reconcile. One difficulty was limited resolution around implementation. It was not a focus of this study, but some participants raised concern about how to effectively begin the use of faculty portfolio. It was suggested that barriers be identified in advance, and that the process be monitored and modified as needed. Some of these points were subsequently discussed with other participants, but not in a systematic way as they were not part of the original aim of the research. Indeed, most participants stated that implementation is not related to the development of the domains or subdomains, at least not initially.

A point of conflict was the task of curriculum development, and whether it belonged to the administrative or education domain. Some participants expressed that curriculum development is the task of faculty. Others defended their views that this item belongs to academic management and leadership. Finally, based on the majority support, curriculum development was aligned with education, as it has a major link to teaching and course content. Their opinions also conflicted about attending and presenting research findings in a conference, whereby some said it belonged under self-development and others identified the research domain. In view of the majority support for research, the investigator decided that if a presented paper is from original research, this item should be placed under research. However, attending conferences, workshops and advanced courses will only qualify faculty to record such activities under professional development.

There were different opinions about whether communication skills should be proposed under education, or service, or academic management and leadership. One participant suggested recording it under the education domain, but this was not supported by the majority of participants. Nonetheless, the value of meaningful, clear and effective communication cannot be overemphasized in teaching and learning, service, research and management, so perhaps it should have been placed in all of them. The investigator did not include it in any domain of faculty portfolio development. Another perspective is that communication – verbal and nonverbal – relates to language and is a skill that is the foundation of all roles and activities, rather than any one per se.

Another debated point was invigilation time, some faculty wanted to consider it as a service role, others disagreed since most of the invigilation is a duty done by non-faculty members. This point was flagged as an odd point, since it is beyond the objective of this faculty

portfolio research. One interesting outlier was the quantification of coordination time. Although coordination work is under academic management and leadership, the quantification of time devoted to multiple tasks by faculty is not a relevant point to be incorporated in the portfolio. According to some experts, communication and coordination may be enablers to the activities that constitute each domain and these are the skills rather than activities, which are measured in the portfolio.

There were some inconsistencies in the terms used by participants to describe the domains. For education, academia, learning and teaching were suggested terms. However, the majority of participants voted for education as it is broad, imparts knowledge to students, and prepares them to take job responsibilities and lead an independent life. For service, some used the word clinical, others expressed university or institutional service, and some others suggested community service. The term service was retained, because all the three types of service are subsumed under the service domain. For research, the majority of participants used the term research, but a minority suggested research scholarship. The term scholarship is used in different contexts such as teaching scholarship; therefore, the term research was finally considered. Several terms such as self-development, career development, and self-learning were suggested for professional development. The term professional development was finally considered for inclusion because the majority of them agreed with it on the understanding that the word professional is broad and inclusive, and applies to different professions such as nursing, pharmacy, dental and faculty. For academic management and leadership, several terms such as academia, manager, and leadership were suggested by the participants. Following discussion with the investigator, the phrase academic management and leadership was retained because it

included two components, i.e., management and leadership, which are meaningfully linked together.

Study Limitations

Weaknesses and strengths of the mixed-methods approach. The mixed-methods approach used in the present study integrates qualitative and quantitative methods to derive considerable information from each method for exploring complex phenomena such as domains and subdomains of faculty portfolio. Guba and Lincoln (2005) suggested that positivists (quantitative researchers) and post-positivists' (qualitative researchers) views can be reconciled through mixed methods and can be:

Retrofitted to each other in ways that make the simultaneous practice of both possible.

We have argued that at the paradigmatic or philosophical level, commensurability between positivist and post-positivist worldviews is not possible, but that within each paradigm, mixed methodologies may make perfect sense. (p. 200)

For a differentiation purpose, a quantitative researcher requires separation of the researcher to the researched while a qualitative explorer entails a close interaction between the researcher and the researched (Caulley, 1994). When both are combined, these approaches complement each other to unearth valuable, trustworthy, credible, rich, thick and dependable data. The present study accomplished this by using qualitative (in-depth interviews and focus group) and quantitative (questionnaire) approaches. In the quantitative approach, the qualitative information was then presented in a questionnaire form for ratings of importance to be applied to ensure that both methods showed that the identified areas are indeed important to faculty members. The advantage of obtaining quantitative scores about the relative weights was to be able to determine the relative importance of domains and subdomains.

A quantitative approach as shown in our study has some limitations. With a small sample size and low response rate, it is difficult to generalize the results to other universities. This low rate may be due to busy schedules, lack of interest in the topic, limited awareness of or information about portfolios, and burnout of participating in other research projects. Also, a randomly selected sample, rather than a purposeful sample, would be necessary for greater confidence in the results. However, the purposeful sampling technique was useful for sample selection, as used in most qualitative studies, as it ensured that the objectives and purposes of this study are achieved satisfactorily. In regards to validity, there is no gold standard available to assess the validity of faculty portfolio scores against the findings of our portfolio questionnaire. Other types of reliability also need to be examined. Overall, our results are reliable with good validity evidence of faculty portfolio.

Study Strengths - Methods

This study is unique in its utilization of the sequential mixed method approach to create a faculty portfolio. The design allowed triangulation of data from multiple sources including interviews, weightings, focus groups and scale ratings, giving credibility to the identified domains and their subdomains. Another strength of this research is that the newly developed faculty portfolio will likely be readily adopted by stakeholders affiliated with health sciences institutions because their opinions were considered in its development. Furthermore, the designed faculty portfolio appears compatible with cultural and academic sensitivities of Saudi Arabia (e.g., all faculty portfolio items are agreed upon by three main stakeholders), which could be used locally as well as trans-nationally including other Gulf countries. There are no students from diverse cultures in Saudi Arabia, and, hence, this portfolio is customized to the Saudi culture. Similarly, the majority of faculty and administrators are Saudi nationals, and they

participated in developing the faculty portfolio. All items under each defined domain are culturally acceptable.

This study also used a hybrid approach of inductive (quantitative) and deductive (quantitative) to thematically analyze qualitative and quantitative data for the purpose of step-by-step coding and overarching themes and subthemes development of faculty portfolio. Ultimately, the entire interactive process of analysis captured domains and subdomains of faculty portfolio.

This hybrid approach is sound (Schutz, 1970), and commonly used in qualitative research.

Furthermore, this study explored the experiences, roles and views of faculty, administrators and senior students about faculty portfolio development, and this strategy will facilitate implementation and acceptance of the developed faculty portfolio in KSAU-HS, especially when it is introduced with this development background. This portfolio may be converted into an e-format, and used in several academic institutions in Saudi Arabia. In this context, these universities may save substantial cost because they need not go through the process of developing one. Another advantage of this faculty portfolio is the rigorous methodology used in this study, which might be replicated at other academic centers. Our portfolio is systematic and well organized because it encompasses most, if not all, faculty and administrative roles, activities and practices performed in health sciences institutions as seen by the quick saturation reached in our study.

This study employed the two most commonly used qualitative techniques: in-depth interview (Legard, Keegan, & Ward, 2003) and focus groups (Gibbs, 1997; Kidd, & Parshall, 2000). In-depth interviews are considered the “miner metaphor” that reflects social science research seeing knowledge as ‘given’. As such, Kvale (1996) said that:

Knowledge is understood as buried metal and the interviewer is a miner who unearths the valuable metal, the knowledge is waiting in *the participant's* interior to be uncovered, uncontaminated by the miner. The interviewer digs the nuggets of data or meanings out of a *participant's* pure experiences, unpolluted by any leading questions. (p. 48)

On the other hand, the "traveler's metaphor" relates to the constructivist research model in which knowledge is created and negotiated (not given), and the transformative element is added to the journey. In the words of Kvale (1996, p. 139), "the traveler (interviewer), asks questions that lead the subjects to tell their own stories of their lived world, and converses with them in the original Latin meaning of *conversation* as 'wandering together with'. The adoption of face-to-face in-depth interviews in the present study is reasonably sound because this approach is theory based, knowledge generative, unstructured or semistructured and flexible. It explores interactively the true experiences, feelings, reasons, beliefs and opinions of participants, thereby producing meaningful, trustworthy and dependable information about domains and subdomains of a faculty portfolio. Focus groups involve organized discussions, collective activity, psychosocial, educational and medical events including interventions and interactions with a selected group of individuals, i.e., dynamic discussions within a group, in order to capture their personal experiences, attitudes, beliefs, opinions, reactions, insights and reasons about the topic under research investigation such as in the present study of faculty portfolio development (Kidds & Parshall, 2000; Kitzinger, 1995; Powell, Single, & Lloyd, 1996). Focus groups were used to complement in-depth interview data for triangulation and validity checking (Gibbs, 1997; Morgan & Spanish, 1984). Individual interviews helped in building domains and their tentative subdomains, and multiple participants in focus group substantiated identified domains and their subdomains.

Implications

There are several implications of this study. The developed faculty portfolio could be a source for documenting effective teaching, an institutional priority (Seldin, Miller, & Seldin, 2010) with emphasis on showing excellence (O'Neil & Wright, 1992), student learning, innovative and rigorous research, publications, rewards, clinical, institutional, and community services, and leadership roles (Brown, et al., 2006; Medina et al., 2011; Simpson et al., 2006). In addition, it could be a means of empowering faculty, administrators and students to gain dominion over their professional lives (Seldin, 1991), and a method of individualizing faculty development (Seldin, 1993; Shore et al., 1986). It could be a useful guide as to how to establish and achieve career goals (Williams & Jordan, 2007). The clear organizational format may be useful for faculty assessment (Driessen et al., 2007a), teacher education and practices, formative assessment and accountability (Divall et al., 2014; Tsingos, Bosnic-Anticevich, & Smith, 2014), and personal and professional development (Ryan, 2011). In addition, this faculty portfolio could help in the assessment of faculty academic management and leadership.

Recommendations

The next step of development of this faculty portfolio is to implement it in KSAU–HS in Riyadh. Currently, no faculty portfolio is used in this institution, and implementation will create awareness about roles that form the domains as well as the activities that form the subdomains of faculty portfolio. Second, its use will streamline the recording of activities by faculty under each domain. Third, variability in recording will decrease, as the portfolio items will serve as an outline and guide. Last, faculty and administrators will likely support its implementation and use because they contributed to its development. Subsequently, it may also be put into practice in other higher education institutions in Saudi Arabia. Prior to that, a pilot study needs to be

conducted in those universities. If the results demonstrate success or suggest some modifications, after considering revision only then should this portfolio be implemented in other academic universities. Another recommendation is to evaluate the impact of faculty portfolio on faculty and administrators affiliated with academic institutions in Saudi Arabia. The usefulness of this portfolio in guiding decision makers regarding faculty assessment, promotions, effective teaching, students learning, research scholarship, services, faculty development, and leadership roles needs to be assessed. A study needs to be conducted for exploring the knowledge, attitudes, and practice of three main stakeholders (faculty, administrators and students) towards this newly developed faculty portfolio. Finally, the faculty portfolio needs to be developed to reflect the mission and goals of the university.

Conclusion

In summary, this study used a sequential mixed method design to develop five main domains and their fifty-nine subdomains for a faculty portfolio. The individual domains and subdomains, identified in interviews and focus groups, were prioritized using assigned weightings to identify education, service, research, professional development and academic management and leadership with a variable number of subdomains. Furthermore, ratings of the importance of faculty portfolio domain and sub-domain items showed good inter-rater reliability (trustworthiness) and content validity (credibility) scores. This study has contributed to new knowledge by providing an example of the step-by-step process of applying mixed methods to creating faculty portfolios in the health sciences institutions. It may be implemented successfully in KSAU-HS colleges because its development is based on the opinions of all stakeholders affiliated to five colleges of health sciences. With further research on the impact of its implementation, it may serve as a strong example for other institutions.

References

- Allen, D. E., Ploeg, J., & Kaasalainen, S. (2012). The relationship between emotional intelligence and clinical teaching effectiveness in nursing faculty. *Journal of Professional Nursing*, 28(4), 231-240.
- Alpert, J. S., & Coles, R. (1988). Careers in academic medicine: Triple threat or double fake. *Archive of Internal Medicine*, 148(9), 1906-1907.
- Akselrod, H. (2010). The physician-researcher's dilemma. *Virtual Mentor*, 12(3), 192-196.
- American Educational Research Association, American Psychology Association, & National Council on Measurement in Education. (1999). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.
- American Educational Research Association, American Psychology Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.
- American Heritage® Dictionary of the English Language, 5th edition (2013) Retrieved from:
<http://www.yourdictionary.com/portfolio - h5gfaPRQ DrrDu3YY.99>
- Anderson, G. (2012). Equity and critical policy analysis in higher education: A bridge still too far. *The Review of Higher Education*, 36(1), 133-142.
- Angelo, T., & Cross, K. (1993). *Classroom assessment techniques: A handbook for college teachers* (2nd ed.). San Francisco, CA: Jossey-Bass.
- Anna-Marie, G. (1998). Issues of reliability and validity in using portfolio assessment to measure foreign language teacher performance. Retrieved from <https://etd.ohiolink.edu/>
- Aronson, J. (1995). A pragmatic view of thematic analysis. *The Qualitative Report*, 2(1), 1-3. Retrieved from: <http://nsuworks.nova.edu/tqr/vol2/iss1/3>

Arreola, R. (2007). *Developing a comprehensive faculty evaluation system: A guide to designing, building, and operating large-scale faculty evaluation systems* (3rd ed.). Bolton, MA: Anker Publishing.

Asian Development Bank. (2011). Higher education across Asia: An overview of issues and strategies. Mandaluyong, Philippines: Asian Development Bank. Retrieved from:
<http://www.adb.org/sites/default/files/publication/29407/higher-education-across-asia.pdf>

Astin, A., & Oseguera, L. (2004). The declining "equity" of American higher education. *The Review of Higher Education*, 27(3), 321-341.

Atwood, C., Taylor, J., & Hutchings, P. (2000). Why are chemists and other scientists afraid of the peer review of teaching? *Journal of Chemical Education*, 77(2), 239-243.

Bainbridge, L., & Wood, V. (2012). The power of prepositions: Learning with, from and about others in the context of interprofessional education. *Journal of Interprofessional Care*, 26(6), 452-458.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.

Barnes, SP., Torrens, A., George, V., & Brown, KM. (2007). The use of portfolios in coordinated school health programs: Benefits and challenges to implementation. *Journal of School Health*, 77(4), 171-179.

Bensimon, E., & Bishop, R. (2012). Introduction: Why "critical"? The need for new ways of knowing. *The Review of Higher Education*, 36(1), 1-7.

Beran, T., Donnon, T., & Hecker, K. (2012). A review of student evaluation of teaching: Applications to veterinary medical education. *Journal of Veterinary Medical Education*, 39(1), 71-78.

- Beran, T., Violato, C., Kline, D., & Frideres, J. (2006). The utility of student ratings of instruction for students, faculty, and administrators: A “consequential validity” study. *Canadian Journal of Higher Education*, 35(2), 49-70.
- Berk, R. (2005). Survey of 12 strategies to measure teaching effectiveness. *International Journal of Teaching and Learning in Higher Education*, 17(1), 48-62.
- Birman, B., Desimone, L., Porter, A., & Garet, M. (2000). Designing professional development that works. *Educational Leadership*, 57(8), 28–33.
- Bligh, J. (2005). Faculty development. *Medical Education*, 39, 120–122.
- Bokken, L., Rethans, J., Van Heurn, L., Duvivier, R., Scherpbier, A., & Van der Vleuten, C. (2009). Students' views on the use of real patients and simulated patients in undergraduate medical education. *Academic Medicine*, 84(7), 958-963.
- Boon, H. (2011). Raising the bar: Ethics education for quality teachers. *Australian Journal of Teacher Education*, 36(7). Retrieved from: <http://dx.doi.org/10.14221/ajte.2011v36n7.2>
- Boyer, E. (1990). Scholarship reconsidered: Priorities of the professoriate. Princeton, NJ: Carnegie Foundation for the advancement of Teaching.
- Braskamp, L., & Ory, J. (1994). Assessing faculty work: Enhancing individual and institutional performance (pp. 305-333). San Francisco, CA: Jossey-Bass.
- Brennan, K., & Lennie, S. (2010). Students' experiences and perceptions of the use of portfolios in UK preregistration dietetic placements: A questionnaire-based study. *Journal Human Nutrition and Diet*, 23(2), 133-143.
- Brown, D., White, J., & Leibbrandt, L. (2006). Collaborative partnerships for nursing faculties and health service providers: What can nursing learn from business literature? *Journal of Nursing Management*, 14(3), 170-179.

Brualdi, A. (1999). Traditional and modern concepts of validity. Retrieved from:

<http://www.ericdigests.org/2000-3/validity.htm>

Buckley, S., Coleman, J., Davison, I., Khan, K.S., Zamora, J., Malick, S., & Sayers, J. (2009). The educational effects of portfolios on undergraduate student learning: A best evidence medical education (BEME) systematic review. BEME Guide No. 11. *Medical Teacher*, 31(4), 282-298.

Byrne, M., Schroeter, K., Carter, S., & Mower, J. (2009). The professional portfolio: An evidence-based assessment method. *Journal of Continuing Education in Nursing*, 40(12), 545-52.

Cameron, R. (2009). A sequential mixed model research design: Design, analytical and display issues. *International Journal of Multiple Research Approaches*, 3(2), 140–152.

Candela, L., Dalley, K., & Benzel-Lindley, J. (2006). A case for learning-centered curricula. *Journal of Nursing Education*, 45(2), 59-66.

Caracelli, J., & Greene, V. (1997). Crafting mixed-method evaluation designs. In J. Greene & V. Caracelli (Eds), *Advances in mixed-method evaluation: The challenges and benefits of integrating diverse paradigms* (pp. 19-30). San Francisco, CA: Jossey-Bass.

Caulley, D. (1994). Notes on the basic characteristics of postpositivist interpretive inquiry. In B. Neville, P. Willis & M. Edwards (Eds), *Qualitative Research in adult education: A colloquium on theory, practice, supervision and assessment* (pp. 3 - 20). Adelaide, South Australia: University of South Australia.

Carson, B. (1999). Bad news in the service of good teaching: Students remembering ineffective professors. *Journal on Excellence in College Teaching*, 19(1), 91-105.

- Chang, C. (2002). Reliability and validity analysis of portfolio assessment: A case of composition portfolio in an elementary school. *Research in Education and Psychology*, 25, 1-34.
- Citaku, F., Violato, C., Beran, T., Donnon, T., Hecker, K., & Cawthorpe, D. (2010). Leadership competencies for medical education and healthcare professions: Population-based study. *British Medical Journal*, 2(2). doi:10.1136/bmjopen-2012-000812
- Cole, K., Barker, L., Kolodner, K., Williamson, P., Wright, S., & Kern, D. (2004). Faculty development in teaching skills: An intensive longitudinal model. *Academic Medicine*, 79(5), 469–780.
- Colthart, I., Bagnall, G., Evans, A., Allbutt, H., Haig, A., Illing, J., & McKinstry, B. (2008). The effectiveness of self-assessment on the identification of learner needs, learner activity, and impact on clinical practice: BEME Guide no. 10. *Medical Teacher*, 30(2), 124-145.
- Cook, D., Brydges, R., Ginsburg, S., & Hatala R. (2015). A contemporary approach to validity arguments: A practical guide to Kane's framework. *Medical Education*, 49(6), 560–575.
- Corry, M., & Timmins, F. (2009). The use of teaching portfolio to promote excellence and scholarship in nurse education. *Nurse Education in Practice*, 9(6), 388-392.
- Costantino, P., & De Lorenzo, M. (2009). *Developing a professional teaching portfolio: A guide for success* (3rd ed.). Upper Saddle River, NJ: Pearson.
- Costello, A., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research and Evaluation*, 10(7), 1-9.
- Creswell, J. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Washington, DC: Sage.
- Curious, S. (2011). Five purposes of higher education: Classroom as microcosm. Retrieved from:

<http://siobhancurious.com/2011/11/10/five-purposes-of-higher-education/>

- Dagley, V., & Berrington B. (2005). Learning from an evaluation of an electronic portfolio to support general practitioners' personal development planning, appraisal and revalidation. *Education for Primary Care, 16*(5), 567-574.
- Dannefer, E., & Prayson, R. (2013). Supporting students in self-regulation: Use of formative feedback and portfolios in a problem-based learning setting. *Medical Teacher, 35*(8), 655-660.
- Davis, M., & Ponnamperuma, G. (2010). Examiner perceptions of a portfolio assessment process. *Medical Teacher, 32*(5), 211-215.
- Davis, M., & Ponnamperuma, G. (2005). Portfolio assessment. *Journal of Veterinary Medical Education, 32*(3), 279-284.
- Detsky, A. (2011). How to be a good academic leader. *Journal of General Internal Medicine, 26*(1), 88–90. Retrieved from: <http://doi.org/10.1007/s11606-010-1486-7>
- DiVall, M., Alston, G., Bird, E., Buring, S.M., Kelley K., Murphy, N., & Szilagyi J. (2014). A faculty toolkit for formative assessment in pharmacy education. *American Journal of Pharmaceutical Education, 78*(9), Article 160.
- Domac, S., Anderson, L., O'Reilly, M., & Smith, R. (2015). Assessing interprofessional competence using a prospective reflective portfolio. *Journal of Interprofessional Care, 29*(3), 179-187
- Donnon, T., Delver, H., & Beran, T. (2010). Student and teaching characteristics related to ratings of instruction in medical sciences graduate programs. *Medical Teacher, 32*(4), 327-332.
- Dornan, T., Carroll, C., & Parboosingh, J. (2002). An electronic learning portfolio for reflective continuing professional development. *Medical Education, 36*(8), 767-769.

- Dornan, T., Littlewood, S., Margolis, S. A., Scherpbier, A., Spencer, J., & Ypinazar, V. (2006). How can experience in clinical and community settings contribute to early medical education? A BEME systematic review. *Medical Teacher*, 28(1), 3-18.
- Dorsch, J., Aiyer, M., & Meyer, L. (2004). Impact of an evidence-based medicine curriculum on medical students' attitudes and skills. *Journal of the Medical Library Association*, 92(4), 397-406.
- Draugalis, J., & Slack, M. (1999). A continuous quality improvement model for developing innovative instructional strategies. *American Journal of Pharmaceutical Education*, 63(3), 354-358.
- Draye, M., Acker, M., & Zimmer, P. (2006). The practice doctorate in nursing: Approaches to transform nurse practitioner education and practice. *Nursing Outlook*, 54(3), 123-129.
- Driessens, E. (2009). Portfolio critics: Do they have a point? *Medical Teacher*, 31(4), 279-281.
- Driessens, E., Muijtjens, A., Van Tartwijk, J., & Van der Vleuten, C. (2007a). Web- or paper-based portfolios: Is there a difference? *Medical Education*, 41(11), 1067-1073.
- Driessens, E., Overeem, K., van Tartwijk, J., van der Vleuten, C., & Muijtjens, A. (2006). Validity of portfolio assessment: Which qualities determine ratings? *Medical Education*, 40(9), 862-866.
- Driessens, E., Van Tartwijk, J., Overeem, K., Vermunt, J. , & Van der Vleuten, C.P.(2005a). Conditions for successful reflective use of portfolios in undergraduate medical education. *Medical Education*, 39(12), 1230-1235.
- Driessens, E., Van Tartwijk, J., Van der Vleuten, C., & Wass, V. (2007b). Portfolios in medical education: Why do they meet with mixed success? A systematic review. *Medical Education*, 41(12), 1224-1233.

- Driessen, E.W., Van der Vleuten, C., Schuwirth, L., Van Tartwijk, J., & Vermunt, J. (2005b). The use of qualitative research criteria for portfolio assessment as an alternative to reliability evaluation: A case study. *Medical Education*, 39(2), 214–220.
- Ejieh, M. (2004). Egalitarianism and management of education. *Journal of Social Sciences*, 9(1), 43-48.
- Fida, N., & Shamim, M. (2016). Portfolios in Saudi medical colleges: Why and how? *Saudi Medical Journal*, 37(3), 245-248.
- European Commission. (2013). Education and training: Supporting education and training in Europe and beyond. Available at: http://ec.europa.eu/education/policy/international-cooperation/world-education_en.html
- Feldman, K., (1998). Identifying exemplary teachers and teaching: Evidence from student ratings. In K. A. Feldman & M. B. Paulsen, *Teaching and learning in the college classroom* (2nd ed., pp. 391-414). Needham Heights, MA: Simon & Schuster.
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80-92.
- Fleak, S., Romine, J., & Gilchrist, N. (2003). Portfolio peer review: A tool for program change. *Journal of Education for Business*, 78(3), 139-146.
- Frisby, A., Lane, J., Carr, A., Ross, E., & Gottlieb, R. (2006). Development and evaluation of an interactive multimedia clinical skills teaching program designed for the paediatric clerkship. *Teaching and Learning in Medicine*, 18(1), 18-21.
- Evens, M., Verburgh, A., & Elen, J. (2013). Critical thinking in college freshmen: The impact of secondary and higher education. *International Journal of Higher Education*, 2(3):139-151.

- Fallows, S., & Steven, C. (2000). Building employability skills into the higher education curriculum: A university-wide initiative. *Journal of Education Training*, 42(2), 75-82.
- Fulton, J., & Jasper, M. (2005). Marking criteria for assessing practice-based portfolios at masters' level. *Nurse Education Today*, 25(5), 377-389.
- Gadbury-Amyot, C., Kim, J., Palm, R., Mills, G., Noble, E., & Overman, P. (2003). Validity and reliability of portfolio assessment of competency in a baccalaureate dental hygiene program. *Journal of Dental Education*, 67(9), 991-1002.
- Gallagher, E., & Martin, M. (2000). Faculty Development Handbook [Preface]. Society for Academic Emergency Medicine. Retrieved from:
http://173.230.132.16/sites/default/files/Faculty_Development_Handbook_10-19-11.pdf
- Gannon, F., Draper, P., Watson, R., Proctor, S., & Norman, I. (2001). Putting portfolios in their place. *Nurse Education Today*, 21(7), 534-540.
- Gelinas, A. (1998). *Issue of reliability and validity in using portfolio assessment to measure foreign language teacher performance*. Retrieved from Ohio State University Electronic Theses & Dissertation Center.
- Gibbs A. (1997). Focus groups. *Social Research Update*. Retrieved from:
<http://sru.soc.surrey.ac.uk/SRU19.html>
- Gigliotti, R., & Buchtel, F. (1990). Attributional bias and course evaluation. *Journal of Educational Psychology*, 82(2), 341–351.
- Granville, I., & Houde, S. (2004). The scholarship of teaching: Implications for nursing faculty. *Journal of Professional Nursing*, 20(1), 7-14.

- Gruppen, L., Simpson, D., Searle, N., Robins, L., Irby, D., & Mullan, P. (2006). Educational fellowship programs: Common themes and overarching issues. *Academic Medicine*, 81(11), 990–994.
- Guba, E., Lincoln, Y. (2005). Paradigmatic controversies, contradictions & emerging confluences. In V. Knight, & L. Habib, *The sage handbook of qualitative research* (3rd ed., pp. 97 - 128). Thousand Oaks, CA: Sage.
- Gunderman, R. (2014). A Prescription for what ails medical education. *The Chronicle of Higher Education*. Retrieved from: <http://chronicle.com/article/A-Prescription-for-What-Ails/143623/>
- Hall, D. (1992). Professional development portfolios for teachers and lecturers. *British Journal of In-Service Education*, 18(2), 81-860.
- Hammick, M., Freeth, D., Koppel, I., Reeves, S., & Barr, H. (2007). A best evidence systematic review of interprofessional education: BEME Guide no.9. *Medical Teacher*, 29(8), 735-751.
- Harper, S. (2012). Race without racism: How higher education researchers minimize racist institutional norms. *The Review of Higher Education*, 36(1), 9-29.
- Harper, C., & Yeung, F. (2013). Perceptions of institutional commitment to diversity as a predictor of college students' openness to diverse perspectives. *The Review of Higher Education*, 37(1), 25-44.
- Harwell, S. (2003). Teacher professional development: It's not an event, it's a process. Retrieved from: <http://www.cord.org/uploadedfiles/HarwellPaper.pdf>
- Hayward, L., Blackmer, B., Canali, A., Dimarco, R., Russell, A., Aman, S., & Sloane, L. (2008). Reflective electronic portfolios: A design process for integrating liberal and professional studies and experiential education. *Journal of Allied Health*, 37(3), 140-59.

- Hebert, R., Elasy, T., & Canter, J. (2000). The Oslerian triple threat: An endangered species? A survey of department of medicine chairs. *American Journal Medicine*, 109(4), 346–349.
- Hendricson, W., Anderson, E., Andrieu, S., Chadwick, D., Cole, J., George, M., & Young, S. (2007). Does faculty development enhance teaching effectiveness? *Journal Dental Education*, 71(12), 1513-1533.
- Hespenheide, M., Cottingham, T., & Mueller, G. (2011). Portfolio use as a tool to demonstrate professional development in advanced nursing practice. *Clinical Nurse Specialist*, 25(6), 312-320.
- Higuchi, K., Hagen, B., Brown, S., & Zieber, M. (2006). A new role for advanced practice nurses in Canada: Bridging the gap in health services for rural older adults. *Journal of Gerontological Nursing*, 32(7), 49-55.
- Holowchak, M. (2013). The diffusion of light: Jefferson's philosophy of education. *Democracy & Education*, 21(2), 1-15. Available at:
<http://democracyeducationjournal.org/home/vol21/Iss2/4>
- Hovenga, E., & Bricknell, L. (2006). Changing academic roles--new approaches to teaching and distance learning in Australia. *Methods of Information in Medicine*, 45(3), 288-93.
- Hu, S., & Wolniak, G. (2013). College student engagement and early career earnings: Differences by gender, race/ethnicity, and academic preparation. *The Review of Higher Education*, 36(2), 211-233.
- Hubley, A., Zumbo, B. (2011). Validity and the consequences of test interpretation and use. *Social Indicators Research*, 103, 219–230.

- Hurtado, S., Clayton-Pedersen, A., Allen, W., & Milem, J. (1998). Enhancing campus climates for racial/ethnic diversity: Educational policy and practice. *The Review of Higher Education*, 21(3), 279-302.
- Issenberg, S., McGaghie, W., Petrusa, E., Lee Gordon, D., & Scalese, R. (2005). Features and uses of high-fidelity medical simulations that lead to effective learning: A BEME systematic review. *Medical Teacher*, 27(1), 10-28.
- Jones, R., & Thomas, L. (2005). The 2003 UK government higher education white paper: A critical assessment of its implications for the access and widening participation agenda. *Journal of Education Policy*, 20(5), 615-630.
- Kalata, L., & Abate, M. (2013). A mentor based portfolio program to evaluate pharmacy students' self-assessment skills. *American Journal of Pharmaceutical Education*, 77(4), 81- 90.
- Kane, M. (2013). Validating the interpretations and uses of test scores. *Journal Educational Measurement*, 50(1), 1-73.
- Kezar, A. (2004). Obtaining integrity? Reviewing and examining the charter between higher education and society. *The Review of Higher Education*, 27(4), 429-459.
- Khandkar, S. (2009). *Open coding*. Available at: <http://pages.cpsc.ucalgary.ca/~saul/wiki/uploads/CPSC681/opencoding.pdf>
- Kidd, P., & Parshall, M. (2000). Getting the focus and the group: Enhancing analytical rigor in focus group research. *Quality Health Research*, 10(3), 293-308.
- Kitzinger, J. (1995). Qualitative research: Introducing focus groups. *British Medical Journal*, 311(7000), 299-302.
- Klenowski, V., & Lunt, I. (2008). Enhancing learning at doctoral level through the use of reflection? *Assessment and Evaluation of Higher Education*, 33(2), 203–217.

Korin, T. L. (2008). Who are the clinician educators? *Academic Physician & Scientist*, 67(1), 7-9.

Retrieved from: <https://www.aamc.org/download/265060/data/aps2008-10korinwhoaretheclinicianeducators.pdf>

Kostrzewski, A., Dhillon, S., Goodsman, D., & Taylor, K. (2008). The impact of portfolios on health professionals' practice: A literature review. *International Journal of Pharmaceutical Practice*, 16(6), 339–345.

Krueger, R., & Casey, M. (2000). *Focus groups: A practical guide for applied research*. Thousand Oaks, L A: Sage.

Kuhn, G. (2004). Faculty development: The educator's portfolio: Its preparation, uses, and value in academic medicine. *Academic Emergency Medicine*, 11(3), 307-311.

Kurpinski, K., Johnson, T., Kumar, S., Desai, T., & Li, S. (2014). Mastering translational medicine: Interdisciplinary education for a new generation. *Science Translational Medicine*, 6(218), 1-3.

Kurtz, G., Beaudoin, M., & Sagee, R. (2004). From campus to web: The changing roles of faculty from classroom to online teaching. *The Journal of Educators Online*, 1(1), 1-28.

Kvale, S. (1996). *Interviews: An introduction to qualitative research interviewing*. Thousand oaks, California: Sage.

Kyrkjebø, J. (2006). Teaching quality improvement in the classroom and clinic: Getting it wrong and getting it right. *Journal of Nursing Education*, 45(3), 109-16.

Lamki, N., & Marchand, M. (2006). The medical educator teaching portfolio. *Sultan Qaboos University Medical Journal*, 6(1), 7-12.

Lance, C., Butts, M., Michels, L. (2006). The sources of four commonly reported cutoff criteria what did they really say. *Organizational Research Methods*, 9(2), 202-220.

- Legard, R., Keegan, J., & Ward, K. (2003). In-depth interviews. In J. Ritchie & J. Lewis (Eds.), *Qualitative research practice: A Guide for Social Science Students and Researchers* (pp.138-169). London, UK: Sage.
- Lester, J. (2013). Work-life balance and cultural change: A narrative of eligibility. *The Review of Higher Education*, 36(4), 463-488.
- Lester, S. (2014). Professional standards, competence and capability. *Higher Education, Skills and Work-based Learning*, 4(1), 31-43.
- Lin, Y., McKeachie, W., & Tucker, D. (1984). The use of student ratings in promotion decisions. *Journal of Higher Education*, 55(5), 583-589.
- Loevinger, J. (1957). Objective tests as instruments of psychological theory: Monograph supplement 9. *Psychological Reports*, 3(3) 635–694.
- Manabe, Y., Jacob, S., Thomas, D., Quinn, T., Ronald, A., Coutinho, A., Mayanja-Kizza, H. & Merry, C. (2009). Resurrecting the triple threat: Academic social responsibility in the context of global health research. *Clinical Infectious Diseases*, 48(10), 1420-1422.
- Marsh, H. (1987). Students' evaluations of university teaching: Research findings, methodological issues, and directions for future research. *International Journal of Educational Research*, 11(3), 253–388.
- Marsh, H., & Hattie, J. (2002). The relation between research productivity and teaching effectiveness: Complementary, antagonistic, or independent constructs? *The Journal of Higher Education*, 73(5), 603-641.
- Matsunaga, M. (2010). How to factor-analyze your data right: Do's, don'ts, and how-to's. *International Journal of Psychological Research*, 3(1), 97-110.

- McCarthy, M. (2015). Female doctors and scientists in US lag in faculty promotions and research funding, studies find. *British Medical Journal*, 351, 4947.
- McConnell, M., & Eva, K. (2012). The role of emotion in the learning and transfer of clinical skills and knowledge. *Academic Medicine*, 87(10), 1316-1322.
- McCready, T. (2007). Portfolios and the assessment of competence in nursing: A literature review. *International Journal of Nursing Studies*, 44(1), 143-151.
- McCullough, B., Marton, G., & Ramnanan, C. (2015). How can clinician-educator training programs be optimized to match clinician motivations and concerns? *Advances in Medical Education and Practice*, 6, 45–54.
- McDuffie, C., Sheffield, M., Miller, M., Duke, L., & Rogers, S. (2010). Web-based portfolios for pharmaceutical care plans during advanced pharmacy practice experiences. *American Journal of Pharmaceutical Education*, 74(4), 59. doi: 10.5688/aj740459.
- McInnis, C. (2000). Changing academic work roles: The everyday realities challenging quality in teaching. *Quality in Higher Education*, 6(2), 143-152.
- McKeachie, W. (1991). What theories underlie the practice of faculty development? To improve the academy. Retrieved from: <http://digitalcommons.unl.edu/podimproveacad/219>
- McLaughlin, C. (2010). Mentoring: What is it? How do we do it and how do we get more of it? *Health Services Research*, 45(3), 871–884. <http://doi.org/10.1111/j.1475-6773.2010.01090.x>.
- McMullan, M. (2006). Students' perceptions on the use of portfolios in pre-registration nursing education: A questionnaire survey. *International Journal of Nursing Studies*, 43(3), 333-343.
- McPherson, G., & Thorne, S. (2006). Exploiting exceptions to enhance interpretive qualitative health research: Insights from a study of cancer communication. *International Journal of*

- Qualitative Methods*, 5(2). Retrieved from:
http://www.ualberta.ca/~iiqm/backissues/5_2/pdf/mcpherson.pdf
- McRobbie, J. (1992). Using portfolios to assess student performance. *Knowledge Brief*, 9, 2-11.
Retrieved from: <http://files.eric.ed.gov/fulltext/ED351378.pdf>
- Medina, M., Hammer, D., Rose R., Scott, S., Creekmore, F., Pittenger A., & Piascik, P. (2011). Demonstrating excellence in pharmacy teaching through scholarship. *Currents in Pharmacy Teaching and Learning*, 3(4), 255-259.
- Messick, S. (1995). Validity of performance assessment. Validation of inferences from persons' responses and performances as scientific inquiry into score meaning. *American Psychologist*, 50(9), 741-749.
- Messick, S. (1998). Test validity: A matter of consequences. *Social Indicators Research*, 45, 35–44.
- Morgan, D., & Spanish, M. (1984). Focus groups: a new tool for qualitative research. *Qualitative Sociology*, 7, 253-70.
- Morris, L. (2013). MOOCs, emerging technologies, and quality. *Innovative Higher Education*, 38(4), 251-252. Doi: 10.1007/s10755-013-9263-2.
- Morse, D., Braden, K., Harrell, K., Holcroft, C., Reiss, C., Guerrero, S., & Hamsher, D. (2013).
Retrieved from: http://www.asccc.org/sites/default/files/publications/Principles_Faculty-evaluation2013_0.pdf
- Moseley, C. (2005). The value of professional teaching portfolios to prospective employers: School administrators' views. *Professional Educator*, 27(1), 58-72.
- Mossop, L., & Senior, A. (2008). I'll show you mine if you show me yours! Portfolio design in two UK veterinary schools. *Journal of Veterinary Medical Education*, 35(4), 599-606.
- Neumann, A. (2014). Staking a claim on learning: what we should know about learning in

- higher education and why. *The Review of Higher Education*, 37(2), 249-267.
- Newton, P., & Shaw, S. (2012). The validity symposia. Available at:
<http://www.cambridgeassessment.org.uk/images/122544-the-meaning-of-validity-consensus-what-consensus-.pdf>
- Norman, G. (2008). Are learning portfolios worth the effort? No. *British Medical Journal*, 337, 320-514.
- Omary, M. (2008). Mentoring the mentor: Another tool to enhance mentorship. *Gastroenterology*, 135(1), 13-16.
- O'Neil, C., & Wright, A. (1993). Recording teaching accomplishment: *A Dalhousie guide to the teaching dossier* (4th ed.). Halifax, Nova Scotia: Dalhousie University.
- Oskay, O., Schallies, M., & Morgil, I. (2008). Reliability of Portfolio: A closer look at findings from recent publication. *Hacettepe University Journal of Education*, 35, 263-272.
- Owens, M. (2013). The feeling's mutual: Student participation in leadership as a cooperative effort. *The Review of Higher Education*, 36 (4), 435-462.
- Plaza, C., Draugalis, J., Slack, M., Skrepnek, G., & Sauer, K. (2007). Use of reflective portfolios in health sciences education. *American Journal of Pharmaceutical Education*, 71(2), 34.
- Pandit, N. (1996). The creation of theory: A recent application of the grounded theory method. *The Qualitative Report*, 2(4), 1-15. Available at: <http://nsuworks.nova.edu/tqr/vol2/iss4/3>
- Pangaro, L. (2012). Commentary: Getting to the next phase in medical education-a role for the vice-chair for education. *Academic Medicine*, 87(8), 999-1001.
- Paul, M. J. (2004). Teaching and learning portfolios: Thoughtfully presenting yourself for a successful faculty career. Available at: <http://www.delta.wisc.edu/>

- Pearson, D., & Heywood, P. (2004). Portfolio use in general practice vocational training: A survey of GP registrars. *Medical Education*, 38(1), 87-95.
- Peck, C., McCall, M., McLaren, B., & Rotem, T. (2000). Continuing medical education and continuing professional development: International comparisons. *British Medical Journal*, 320, 432-435.
- Pitts, J., Coles, C., Thomas, P., & Smith, F. (2002). Enhancing reliability in portfolio assessment: Discussions between assessors. *Medical Teacher*, 24(2), 197-201.
- Powell, R., Single, H., Lloyd, K. (1996). Focus groups in mental health research: Enhancing the validity of user and provider questionnaires. *International Journal of Social Psychology*, 42(3), 193-206.
- Roberts, D., Schwartzstein, R., & Weinberger, S. (2014). Career development for the clinician–educator-optimizing impact and maximizing success. *Annals of American Thoracic Society*, 11, 254–259.
- Pratt, D. (1997). Reconceptualizing the evaluation of teaching in higher education. *Higher Education*, 34(1), 23-44.
- Prince, M., Felder, R., & Brent, R. (2007). Does faculty research improve undergraduate teaching? An analysis of existing and potential synergies. *Journal of Engineering Education*, 96(4), 283-294.
- Redmond, P. (2011). The future of graduate employability: Looking forward to 2012, *The Higher Education Network London*. Available at:
<http://www.guardian.co.uk/HigherEducationNetwork/2011/Oct/24/graduate-employability-2012?INTCMP=ILCNETTX T3487>

- Reece, S., Pearce, C., Melillo, K., & Beaudry, M. (2001). The faculty portfolio: Documenting the scholarship of teaching. *Journal of Professional Nursing*, 17(4), 180-186.
- Rees, C. & Sheard, E. (2004). The reliability of assessment criteria for undergraduate medical students' communication skills portfolios: The Nottingham experience. *Medical Education*, 38(2), 138–144.
- Reis, N., & Villaume, S. (2002). The benefits, tensions, and visions of portfolios as a wide scale assessment for teacher education. *Action in Teacher Education*, 23(4), 10-17.
- Roberts, C., Shadbolt, N., Clark, T., & Simpson P. (2014). The reliability and validity of a portfolio designed as a programmatic assessment of performance in an integrated clinical placement. *BMC Medical Education*, 14, 197.
- Rogers, R. (2001). Reflection in higher education: A concept analysis. *Innovative Higher Education*, 26(1), 37-57.
- Ross, S., MacLachlan, A., & Cleland, J. (2009). Students' attitudes towards the introduction of a personal and professional development portfolio: Potential barriers and facilitators. *BMC Medical Education*, 9(1), 69-75.
- Ryan, M. (2011). Evaluating portfolio use as tool for assessment and professional development in graduate nursing education. *Journal of Professional Nursing*, 27(2), 84-91.
- Sambunjak, D., Straus, S., & Marusic, A. (2006). Mentoring in academic medicine: A systematic review. *Journal of the American Medical Association*, 296(9), 1103-1115.
- Schafer, A. (2010). The vanishing physician-scientist? *The Journal of Laboratory and Clinical Medicine*, 155(1), 1–2.
- Schindel, T., Kehrer, J., Yuksel, N., & Hughes, C. (2012). University-based continuing education for pharmacists. *American Journal of Pharmaceutical Education*, 76(2), 20-27.

- Scholes, J., Webb, C., Gray, M., Endacott, R., Miller, C., Jasper, M., & McMullan M. (2004). Making portfolios work in practice. *Journal of Advanced Nursing*, 46(6), 595-603.
- Schroeder, J. (2013). Electronically transmitted threats and higher education: Oppression, free speech, and Jake Baker. *The Review of Higher Education*, 36(3), 295-313.
- Schutz, A. (1970). On phenomenology and social relations: *Selected writings* H. Wagner (Ed.). Chicago: University of Chicago Press.
- Seale, C. (1999). Quality in qualitative research. *Qualitative Inquiry*, 5(4), 465-478.
- Segrott, J., McIvor, M., & Green, B. (2006). Challenges and strategies in developing nursing research capacity: A review of the literature. *International Journal of Nursing Studies*, 43(5), 637-651.
- Seib, C., English, R., & Barnard, A. (2011). Teaching undergraduate students' community nursing: Using action research to increase engagement and learning. *Journal of Nursing Education*, 50(9), 536-539.
- Seldin, P. (1991). The teaching portfolio. Bolton, MA: Anker Publishing.
- Seldin, P. (1993). Successful use of teaching portfolios. Bolton, MA: Anker Publishing.
- Seldin, P., Miller, J., & Seldin, C. (2010). *The teaching portfolio: A practical guide to improved performance and promotion/tenure decisions* (4th ed.). San Francisco, CA: Josse-Bass Wiley.
- Shore, B., Foster, S., Knapper, C., Nadeau, G., Neill, N., & Sim, V. (1986). *The teaching dossier: A guide to its preparation and use*. Ottawa: Canadian Association of University Teachers.
- Simpson, D., Marcdante, K., Morzinski, J., Meurer, L., McLaughlin, C., Lamb, G., & Currey, L. (2006). Fifteen years of aligning faculty development with primary care clinician-educator

- roles and academic advancement at the medical college of Wisconsin. *Academic Medicine*, 81(11), 945-53.
- Skrabal, M., Turner, P., Jones, R., Tilleman, J., & Coover, K. (2012). Portfolio use and practices in US colleges and schools of pharmacy. *American Journal of Pharmaceutical Education*, 76(3), 46.
- Smith, C., & McDonald, K. (2013). Transition to an electronic professional nurse portfolio: Part I. *Journal of Continuing Education Nursing*, 44(7), 291-292.
- Snadden, D., & Thomas, M. (1998). Portfolio learning in general practice vocational training – Does it work? *Medical Education*, 32(4), 401–406.
- Stanley, C. (2001). The faculty development portfolio: A framework for documenting the professional development of faculty developers. *Innovative Higher Education*, 26(1), 23-36.
- Steinert, Y., Mann, K., Centeno, A., Dolmans, D., Spencer, J., Gelula, M., & Prideaux, D. (2006). A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME Guide No. 8. *Medical Teacher*, 28(6), 497-526.
- Steinert, Y., Naismith, L., & Mann, K. (2012). Faculty development initiatives designed to promote leadership in medical education. A BEME systematic review: BEME Guide No.19. *Medical Teacher*, 34(6), 483-503.
- Supiano, M., Fantone, J., & Grum, C. (2002). A web-based geriatrics portfolio to document medical students' learning outcomes. *Academic Medicine*, 77(9), 937-938.
- Talbot, J., & Lilley, A. (2014). Approaches to supervising work-based learning students' workplace research. *Journal of Higher Education, Skills and Work-based Learning*, 4(1), 44-65.
- Terenzini, P., & Pascarella, E. (1998). Studying college students in the 21st century: Meeting new challenges. *The Review of Higher Education*, 21(2), 151-165.

The Higher Learning Commission. (2003). *Restructured expectations: A transitional workbook*. Chicago, IL: The Higher Learning Commission.

Theall, M., & Feldman, K. (2007) Commentary and update of Feldman's (1997) identifying exemplary teachers and teaching: Evidence from student ratings. In R. P. Perry & J. C. Smart (Eds.), *The scholarship of teaching and learning in higher education: An evidence-based approach* (pp. 130-143). San Francisco, CA: Springer.

Theall, M., Franklin, J., & Ludlow, L. (1990). Attributions and retributions: Student ratings and the perceived causes of performance. *Instructional Evaluation*, 11, 12–17.

Thoma, B., Chan, T., Benitez, J., & Lin, M. (2014). Educational scholarship in the digital age: A scoping review and analysis of scholarly products. *The Winnower*, 1-12.

Thomas, S., Chie, Q., Abraham, M., Raj, S., & Beh, L-S. (2014). A qualitative review of literature on peer review of teaching in higher education: An application of the SWOT framework. *Review of Educational Research*, 84(1), 112–159.

Tochel, C., Haig, A., Hesketh, A., Cadzow, A., Beggs, K., Colthart, I., & Peacock, H. (2009). The effectiveness of portfolios for post-graduate assessment and education: BEME Guide No 12. *Medical Teacher*, 31(4), 299-318.

Tofade, T., Abate, M., & Fu, Y. (2014). Perceptions of a continuing professional development portfolio model to enhance the scholarship of teaching and learning. *Journal of Pharmacy Practice*, 27(2), 131-137.

Tofade, T., Hedrick, J., Dedrick, S., & Caiola, S. (2013). Evaluation of pharmacist continuing professional development portfolios. *Journal of Pharmacy Practice*, 26(3), 237-247.

Tracy, S. Marino, G., Richo, K., & Daly, E. (2000). The clinical achievement portfolio: An outcomes-based assessment project in nursing education. *Nurse Educator*, 25(5), 241-216.

Trigwell, K., & Shale, S. (2004). Student learning and the scholarship of university teaching. *Study of Higher Education*, 29(4), 523-536.

Tsingos, C., Bosnic-Anticevich, S., & Smith, L. (2014). Reflective practice and its implications for pharmacy education. *American Journal of Pharmaceutical Education*, 78(1), 1-10.

Ullian, J., & Stritter, F. (1997). Types of faculty development programs. *Family Medicine*, 29, 237–241.

Van Schaik, S., Plant, J., & O'Sullivan, P. (2013). Promoting self-directed learning through portfolios in undergraduate medical education: The mentors' perspective. *Medical Teacher*, 35(2), 139-144.

Watson, S., & Evans, S. (2012). Observing changes in teachers' practice as a consequence of taking part in professional development: Developing a protocol for the observation of lessons. *Proceedings of the British Society for Research into Learning Mathematics* 32(2), 88–93.

Wedding, D., McCartney, J., & Currey, D. (2009). Lessons relevant to psychologists who serve as mentors for international students. *Professional Psychology: Research and Practice*, 40(2), 189-193.

Wilkerson, L., & Irby, D. M. (1998). Strategies for improving teaching practices: A comprehensive approach to faculty development. *Academic Medicine*, 73(4), 387–396.

Williams, G., Park, J., Traynor, V., Narin, S., O'Brien, E., Chapple. M., & Johnson, S. (2009). Lecturers' and students' perceptions of portfolios in an English school of nursing. *Journal of Clinical Nursing*, 18(8), 1113-1122.

Williams, M., & Jordan, K. (2007). The nursing professional portfolio: A pathway to career development. *Journal of Nurses Staff Development*, 23(3), 125-131.

Wolf, K., & Dietz, M. (1998). Teaching portfolios: Purposes and possibilities. *Teachers Education Quarterly*, 25(1), 9-22.

Yager, J., Waitzkin, H., Parker, T., & Duran, B. (2007). Educating, training, and mentoring minority faculty and other trainees in mental health services research. *Academic Psychiatry*, 31(2), 146-151.

Yao, Y., Thomas, M., Nickens, N., Downing, J., Burkett, R. & Lamson, S. (2008). Validity evidence of an electronic portfolio for preservice teachers. *Educational Measurement: Issues and Practice*, 27(1), 1-57.

Yeasmin, S., & Rahman, K. F. (2012). Triangulation' research method as the tool of social science research. *Bangladesh University of Professionals Journal*, 1(1), 154-163.

Yu, M. (2003). *Educational test and assessment*. Taipei, Taiwan: Psychology Publisher.

Yueh, H., & Wang, Y. (2000). Attitude of implementing e-portfolio. *Journal of Education and Psychology*, 31(2), 65-84.

Zipp, G., & Susan, S. (2010). The role of the academic portfolio in documenting faculty development. *Journal of College Teaching & Learning*, 7(10), 1-5.

Appendix 1

Topic Guide

In depth Interviews

- In your opinion, what are the domains that the faculty portfolio should contain?
- Under each domain, can you propose sub-domains?
- What is your current role as a faculty member (or Administrator)?
- Do you think that faculty portfolio should be used for promotions?

Keep asking follow-up questions, and clarify any points as needed.

Appendix 2

Topic Guide

Focus Groups

Introduction to the research and the purpose of the focus group

Please feel free to make any comment regarding faculty portfolio

Have you created a portfolio for yourself?

Now we want you to give your candid opinion on the following domains identified by your peers and some senior faculty members of KSAU.

- What are the areas/sub domains/items in research that one should include in their portfolio?
 - What would you like to add there?
- What are the areas/sub domains/items in academics that one should include in their portfolio?
 - What is more important for you?
 - How much time do you give to any of these activities?
- What are the areas/sub domains/items in professional development that one should include in their portfolio?
- What are the areas/sub domains/items in service that one should include in their portfolio?
- What are the areas/sub domains/items in academic management and leadership that one should include in their portfolio?
- Do you think that faculty portfolio should be used for faculty promotions?

Appendix 3

PROPOSED FACULTY PORTFOLIO

Name

Gender

Date of Birth

College

Department

Date of appointment

Rank

Qualifications

Academic year

Research interest

Teaching philosophy

Education

Contribution to lecture teaching
Contribution to PBL problems development
Contribution to PBL as a tutor
Contribution to small group teaching
Contribution to practical sessions
Contribution to lab sessions
Contribution to clinical teaching
Contribution to bedside teaching
Contribution to item writing
Development of item for
Contribution to items review
Contribution to OSCE
Contribution to OSPE
Utilization of evidence and updates to improve teaching skills
Number of students mentored
Number of students counseled
Number of students given academic advice
Number of students career advice
Involvement in extracurricular activities
Contribution to curriculum development

Service

Clinical

Participation in (in-patients) care
Participation in ambulatory care
Utilization of evidence based patient care
Number of clinical guidelines developed or updated

University

Participation in the student admission process

Community

Involvement in community awareness programs

Development of health education materials for the public

Involvement in community organizations promoting health

Participation in registries

Research

Number of research proposals developed

Number of proposals funded or research grants

Number of ongoing research

Number of publications

Number of oral presentations from original research in national or international conference

Number of poster presentations from original research in national or international conferences

Number of undergraduate students supervised in research

Number of postgraduate students supervised in research

Membership in editorial board of a journal

Number of manuscripts reviewed

Receiving research awards

Number of proposals reviewed for peers

Professional Development

Contribution to national conferences

Contribution to international conferences

Contribution to national workshops

Contribution to international workshops

Contribution to training courses

Recognition and appreciation certificates

Utilization of research and evidence to improve performance

Membership in scientific and professional associations and societies

Academic management and leadership

Participation in academic leadership
Participation in college council
Membership in academic committees
Number of academic committees
Number of meetings/task forces
Membership in block planning groups
Number of staff administered/supervised
Mentoring junior faculty members
Number of years in highest administrative position
Achievement during leadership years

Appendix 4

Faculty Portfolio Questionnaire

Dear participant(s),

Thank you for agreeing to complete this questionnaire. It will take approximately 15 minutes to complete. Your careful reading and answering is highly appreciated.

The aim of this questionnaire is to validate the newly developed FACULTY PORTFOLIO for King Saud Bin Abdulaziz University for Health Sciences (KSAU-HS).

Please circle the number that represents your opinion.

Upon completion, please return this questionnaire to:

Mrs. Clara Hernandez, administrative assistant, medical education department, COM, ext. 95211.

Or

Send it back to the following e-mail; yousifs@ngha.med.sa

PI: Sarah Alyousif, Pharm D.

PhD Student, University of Calgary

Mobile: 0505451205

e-mail: yousifs@ngha.med.sa

Education

As a faculty member, how important is having the following elements for education (grade the importance from 1 to 5 (1=not at all important and 5=very important)

| | | | | | |
|---|---|---|---|---|---|
| Lecture teaching | 1 | 2 | 3 | 4 | 5 |
| PBL problem development | 1 | 2 | 3 | 4 | 5 |
| PBL as tutor | 1 | 2 | 3 | 4 | 5 |
| Small group teaching | 1 | 2 | 3 | 4 | 5 |
| Practical session | 1 | 2 | 3 | 4 | 5 |
| Lab sessions | 1 | 2 | 3 | 4 | 5 |
| Clinical teaching | 1 | 2 | 3 | 4 | 5 |
| Bedside teaching | 1 | 2 | 3 | 4 | 5 |
| Exam item writing | 1 | 2 | 3 | 4 | 5 |
| Development of exam items (for undergraduates, postgraduates and others) | 1 | 2 | 3 | 4 | 5 |
| Exam item reviewing (for undergraduates, postgraduates and others) | 1 | 2 | 3 | 4 | 5 |
| Contribution to OSCE (station development, organizing, examiner) | 1 | 2 | 3 | 4 | 5 |
| Contribution of OSPE (station development, organizing, examiner) | 1 | 2 | 3 | 4 | 5 |
| Utilization of evidence and updates to improve teaching skills | 1 | 2 | 3 | 4 | 5 |
| Number of students mentored | 1 | 2 | 3 | 4 | 5 |
| Number of students counseled | 1 | 2 | 3 | 4 | 5 |
| Number of students provided with academic advice | 1 | 2 | 3 | 4 | 5 |
| Number of students provided with career advice | 1 | 2 | 3 | 4 | 5 |
| Involvement in extra-curriculum activities | 1 | 2 | 3 | 4 | 5 |
| Contribution in curriculum development | 1 | 2 | 3 | 4 | 5 |

1=Not at all important, 2=May be NOT important, 3=May be important, 4=Important, 5=Very important

Services

| | | | | |
|-----------------|----------------|--------------------------|--|--|
| <u>Clinical</u> | Not applicable | <input type="checkbox"/> | | |
|-----------------|----------------|--------------------------|--|--|

As a faculty member, how important is having the following elements *for service* (grade the importance from 1 to 5 (1=not at all important and 5=very important)

| Participation in (inpatient) care | 1 | 2 | 3 | 4 | 5 |
|--|---|---|---|---|---|
| Participation in ambulatory care | 1 | 2 | 3 | 4 | 5 |
| Utilization of evidence based care | 1 | 2 | 3 | 4 | 5 |
| Number of clinical guidelines developed or updated | 1 | 2 | 3 | 4 | 5 |

| <u>University</u> | | | | | |
|--|---|---|---|---|---|
| Participation in student admission process | 1 | 2 | 3 | 4 | 5 |

Community

| Participation in community awareness program | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Development of health education materials for public | 1 | 2 | 3 | 4 | 5 |
| Participation in community organizations promoting health | 1 | 2 | 3 | 4 | 5 |
| Participation in registries | 1 | 2 | 3 | 4 | 5 |

1=Not at all important, 2=May be NOT important, 3=May be important, 4=Important, 5=Very important

Research

As a faculty member, how important is having the following elements *for education* (grade the importance from 1 to 5 (1=not at all important and 5=very important)

| Number of research proposals developed | 1 | 2 | 3 | 4 | 5 |
|--|---|---|---|---|---|
| Number of proposal funded or research grants | 1 | 2 | 3 | 4 | 5 |
| Number of ongoing research projects | 1 | 2 | 3 | 4 | 5 |
| Number of publications | 1 | 2 | 3 | 4 | 5 |
| Number of oral presentations (original research presented in national and international conferences) | 1 | 2 | 3 | 4 | 5 |
| Number of poster presentations (original research presented in national and international conferences) | 1 | 2 | 3 | 4 | 5 |
| Number of undergraduate students supervised in research | 1 | 2 | 3 | 4 | 5 |
| Number of postgraduate students supervised in research | 1 | 2 | 3 | 4 | 5 |
| Membership in editorial board of journal | 1 | 2 | 3 | 4 | 5 |
| Number of manuscripts reviewed | 1 | 2 | 3 | 4 | 5 |
| Receiving research awards | 1 | 2 | 3 | 4 | 5 |
| Number of proposals reviewed for peers | 1 | 2 | 3 | 4 | 5 |

1=Not at all important, 2=May be NOT important, 3=May be important, 4=Important, 5=Very important

Professional Development

As a faculty member, how important having the following elements *for professional development* (grade the importance from 1 to 5 (1=not at all important and 5=very important)

| | | | | | |
|--|---|---|---|---|---|
| Contribution in national conferences (organizer, scientific, chair, speaker, poster presentation, participant) | 1 | 2 | 3 | 4 | 5 |
| Contribution in international conferences (organizer, scientific, chair, speaker, poster presentation, participant) | 1 | 2 | 3 | 4 | 5 |
| Contribution in national workshops (Developer, organizer, scientific, chair, speaker, poster presentation, participant) | 1 | 2 | 3 | 4 | 5 |
| Contribution in international workshops (Developer, organizer, scientific, chair, speaker, poster presentation, participant) | 1 | 2 | 3 | 4 | 5 |
| Contribution in training courses (trainer, participant) | 1 | 2 | 3 | 4 | 5 |
| Recognition and appreciation certificates | 1 | 2 | 3 | 4 | 5 |
| Utilization of research and evidence to improve performance | 1 | 2 | 3 | 4 | 5 |
| Membership in scientific and professional associations and societies | 1 | 2 | 3 | 4 | 5 |

1=Not at all important, 2=May be NOT important, 3=May be important, 4=Important, 5=Very important

Academic Management and Leadership

As a faculty member, how important is having the following elements *for academic management and leadership* (grade the importance from 1 to 5 (1=not at all important and 5=very important)

| | | | | | |
|--|---|---|---|---|---|
| Participation in academic leadership | 1 | 2 | 3 | 4 | 5 |
| Participation in college council | 1 | 2 | 3 | 4 | 5 |
| Membership in academic committees | 1 | 2 | 3 | 4 | 5 |
| Number of academic committees | 1 | 2 | 3 | 4 | 5 |
| Number of meetings/taskforce | 1 | 2 | 3 | 4 | 5 |
| Membership in block planning groups | 1 | 2 | 3 | 4 | 5 |
| Number of staff administrated/supervised | 1 | 2 | 3 | 4 | 5 |
| Mentoring junior faculty members | 1 | 2 | 3 | 4 | 5 |
| Number of years in highest administrative position | 1 | 2 | 3 | 4 | 5 |
| Achievement during leadership years | 1 | 2 | 3 | 4 | 5 |

1=Not at all important, 2=May be NOT important, 3=May be important, 4=Important, 5=Very important

Participant Name (optional): _____

Age (years): _____

Gender: male female

Academic Title:

Professor Associate Professor Assistant professor

Years of experience: _____

Working Area:

Clinical Non-clinical Administrative

College

Medicine Dental Nursing
 Pharmacy Applied medical/health sciences

Appendix 5

Table 1

| Interview codes | | |
|--|---|--|
| Suggested domains | Suggested subdomains | Participants' quotes |
| Academia | Teaching load Didactic PBL Labs Practical Office hours Mentoring Giving advise Social mentoring Academic mentoring and Undergraduate | “Mentoring is teaching, office hours for giving advice for students in terms of social and academic as well” “Preparing lectures, giving instructions in the class, and explaining the steps of what is PBL and developing syllabus” |
| Research | Grants Publications Oral presentations Poster and Conferences | “Since they do not have clinical work, they are doing more research” |
| Continuing education and Clinical work | Giving lectures at faculty level Attending lectures Attending conferences Clinical teaching Ward rounds Grand rounds | “Teaching activities such as giving lectures are quite different from bedside teaching” |
| Administration | Managerial work Program director Number of committees Position in the committee Task forces Time consumed weekly in administration Number of staff administered | “Time that the committee meet, is it weekly or monthly or less” “All the administration work that the person performs on the behalf of his department” “The title of the administrative position has to be taken into consideration” |

Appendix 6

Axial coding (Sample)

Faculty development, career development, self-development, continues education, personal development, and professional development.

- “Self-development, like the CPD, the professional development that can include all the extra curriculum activity the faculty could be included in. Including his local conference, international conference” (participant #2).
- “Training course, if they have any certificates from attending or participating even in other workshops in other universities for example, so that’s what i mean by continuous professional development for such thing (participant#2).
- “Attending research could be even here or under the professional development, because they can have interest in and attend courses for SPSS, data analysis, systematic review, so it could be under the professional development” (participant #2).
- “All the kind of workshop he attended, participating or presenting a paper which could give more weight to motivate the faculty to present their paper either abstract or oral presentation” (participant#2).
- “I think continuous professional development is related to updating knowledge and skills” (participant#3).
- “Continuing education is actually faculty development or faculty enhancement activities”(participant#5)
- “CMEs should be included in the portfolio, in terms of giving lectures at faculty levels. And attending lectures, attending conferences and overlaps with research where people presenting their poster or oral” (participant#7).
- “Faculty development courses or workshops that is attended nationally or internationally” (participant#9).
- “Attending Conferences internationally, but I give more weight on publication” (participant#8).
- “Attending training courses, self-development and scholarship, seminars, workshops that they attended and or facilitated” (participant#13).
- “Professional development activities is divided into; conferences, workshops, seminars both participating and conducting, whether they conduct or participate” (participant#14).
- “The faculty development is important, workshops and brief sessions” (participant#10).

Appendix 7

Selective Coding

Domains and Subdomains Suggested by In-Depth Interviews

Education

Number of lectures per semester

Propose or implement new teaching strategies

Involved in curriculum development

Propose or implement new teaching strategies

Conduct student counseling, mentoring and supervising

Number of students mentored per semester

Student counseling per semester

Hours spent in academic activities with students (teaching or mentoring or counseling)

Career advising for undergraduate students

Extracurricular activities

Teaching efforts (PowerPoint presentations and curriculum updates)

Compliance with the schedule

Service

Number of clinics conducted

Number of patients seen per clinic

Number of on calls per month

Involvement in clinical teaching

Academic services

Involvement in registry

Rate your presence in rounds to the residents

Involved in awareness programs nationally

Society healthcare advocate

Involved in certain education projects about health

Organizing and conducting general workshop to public

Research

Time to accommodate for research each week

Number of ongoing studies per year

Number of publications

Impact factor of journal published in(quality of research)

Oral presentations in research meetings

Poster presentations in conference

Working with different research methods (e.g., retrospective, randomized)

How many proposals written for funding

Educate students about research

Monitor students in their research

Workshops on research activities

Professional development

Attending training courses

Productivity

Academic training

Attending conferences and workshops nationally

Attending conferences and workshops internationally

Have you design workshop and seminars

Any promotion or recognition at local level

Any promotion or recognition at international level

Membership in scientific societies

Updating your knowledge

Academic management and leadership

How long you have been in administrative position

Time given for administrative activities weekly

Participate in councils

Committee college level

Coordinate/ co-coordinate block

Mentoring junior faculty members

Propose new program for specific service (institutional, clinical or community)

Appendix 8

Subdomains Suggested by Focus Groups

Education

Teaching didactic courses

Number of lectures

Number of PBL

Number of small group teaching

Number of lab sessions

Bedside teaching

Clinical teaching

Number of tutorials

Developing PBL problems

Developing exams

Reviewing exam items

Involvement in OSCE

Involvement in OSPE

Writing exams for post grad

Involvement in extracurricular activities

Number of student advised per year

Teaching philosophy

Student mentoring

Checking of the assignments

Student Counseling

Academic advising

Career advising

Participation in developing new classes

Curriculum mapping and design

Utilization of Evidences & Updates to Improve Teaching Skills

Service

Ambulatory Care clinics

Inpatients Care

Utilization of Evidence-based Patient Care & Clinical Guidelines

Adaptation of clinical guidelines

Involvement in Community Awareness programs

Community Organizations Promoting Health

Student admission process

Development of Health Education Materials

General involvement in university activities

Research

Number of Manuscripts Reviewed

Number of research proposals written

Number of Publications

Impact factor of journals in which Research published

Number of Ongoing Research

Undergraduate Students Supervised in Research

Postgraduate Students Supervised in Research

Number of funded research

Number of grants

Membership in Editorial Board of Journals

Awards

Oral Presentation of research in Conferences

Posters presentation in Research Conferences & Meetings

Involved as a research reviewer for manuscript

Professional development

Training Courses

Workshops

Conferences

Recognition & awards

Appreciation Certificates

Membership in Scientific & Professional Associations, Societies

Attending, facilitating, and organizing conferences.

Using research to improve performance

Membership in associations

Academic management and leadership

Serving in an organization like being head of the department

Meeting outside the college itself

Committee chairman

Task forces

Helping Junior Faculty Members

Administrative Position

Block Planning Group

College Council

Number of Staff Administered/supervised