

Public Administration teaching and interdisciplinarity: Considering the consequences

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Abstract

Public Administration is a highly diverse and evolving field of scientific inquiry. The study domain is characterised further by often-competing paradigmatic perspectives and seemingly endless teaching modalities. There seems to be an increasing realisation that answers to complex societal challenges cannot be solved within the knowledge frameworks of individual disciplines. As a result, interdisciplinary teaching emerged to expose students to approaches, theories and methodologies from various disciplines of the social and natural sciences, in search of potential answers to these challenges. In spite of the qualities and potential contributions of interdisciplinarity, there may be less positive consequences for teaching efforts. This article intends to reflect on the potential consequences, both positive and negative, that interdisciplinary studies have on the teaching of Public Administration. The article will review the possible advantages or contributions of interdisciplinarity to the teaching of Public Administration, and reflect on the possibly less-desired consequences of interdisciplinary collaboration on curriculum design and teaching methods.

Keywords

Public Administration, teaching, interdisciplinarity, curriculum design, disciplines, consequences, collaboration, integration

Introduction

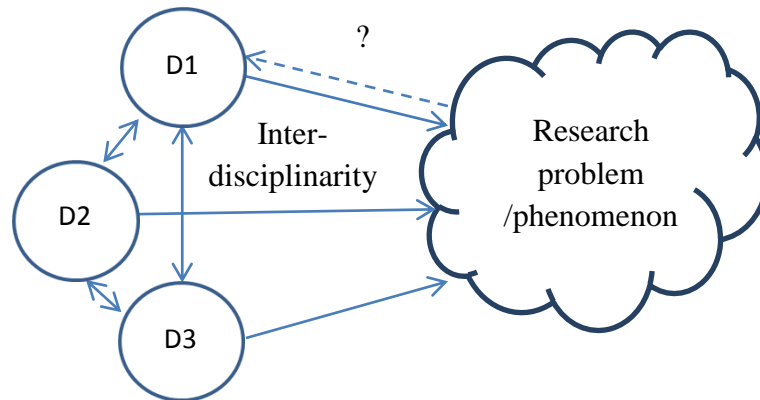
“The true voyage of discovery consists not in seeking new lands, but in seeing
with new eyes.”

– Marcel Proust (1934) *Remembrance of things past*.

As interdisciplinarity gains maturity as teaching methodology at universities, the question could be posed about the potential consequences of this approach for the participation of individual disciplines in the production of knowledge. Teaching in applied social science disciplines such as Public Administration is characterised by fluidity. Public Administration is an extremely diverse and a relative young, evolving discipline. Merging Public Administration teaching with interdisciplinarity does raise a few questions. What, for example, should be included and excluded from existing undergraduate programmes to accommodate interdisciplinary perspectives? What is the best way to disseminate multiple knowledge domains to students? How much provision should be made for efforts of interdisciplinary interaction and collaboration such as

employing interdisciplinary research teams? Answers to these and related questions will guide decisions on the possible incorporation of interdisciplinarity in teaching and curriculum design for Public Administration.

The purpose of this article is to reflect on the potential consequences of interdisciplinarity on the teaching of Public Administration. The following diagram depicts this purpose.



According to the diagram, when disciplines (D1 – D3) collaborate and integrate their insights to investigate a research problem or phenomenon, this is referred to as “interdisciplinarity”. Due to this collaboration new insight will emerge, which could lead to transdisciplinarity – transcending the traditional knowledge domains of individual disciplines. The concern of this article, however, is to examine the (reciprocal) relationship between disciplines and interdisciplinarity with specific reference to Public Administration teaching. The research question can be formulated as follows: How may interdisciplinarity influence Public Administration teaching?

The nature of disciplines and interdisciplinarity

The origins of disciplines functioning as knowledge domains can be traced back to the classical theories of the Greek philosophers Socrates, Plato and Aristotle (*see* Alexander 2011:195). The concept *disciplina* is derived from the Latin *discere* (learning), and it has been used since late antiquity and the early Middle Ages. According to Pierce (1991:22) there exists a long semantic history of *disciplina* as a term describing the ordering of knowledge for the purposes of instruction. The Oxford English Dictionary defines the concept as “a branch of learning or scholarly instruction”. Coletto (2013:7) suggests that the definition of a scientific field of study should identify the unique domain of a specific discipline, not aspects that are in common to other disciplines. To this definition Foucault (1979:223) and Doheny, Cook and Stopper (1987) add that disciplines characterise, classify, specialise, qualify and validate knowledge. Liles *et al.* (1995) contributes by adding that disciplines develop a corpus of knowledge, which are expanded continuously through endeavors of knowledge production (i.e. research). Disciplines attempt to classify knowledge in order to create order and structure (Foucault 1979:223; Doheny Cook and Stopper 1987). Ranney (1971:638) elaborate on this by pointing out that a

discipline can be defined by its focus (i.e. what is studied), its knowledge base (i.e. theory, empirical knowledge), and its methods (i.e. research traditions) of knowledge production.

Rotblatt (1998) points out that universities are the “cradles” of disciplinarity, given their roles as the “machinery for validating suitability for entry to professional academic careers”. As to a method of teaching, Stichweh (2003) postulates that disciplines order knowledge to provide instruction in universities. Disciplines assist with the method and approach to produce and order knowledge for purposes of teaching and learning. To this Van der Waldt (2012:2) adds that a study domain or field of study provides a framework for scholarly activity. Tertiary institutions usually are organised around clusters of similar disciplines. Beyer and Lodahl (1976) further state that disciplines determine the curricula, guide the establishment of professional societies, and its scholarly journals advance professionalism for further research initiatives. Becher (1987) in turn highlights the fact that disciplinary domains provide a structure of knowledge in which the academic fraternity is trained and socialised to carry out tasks of teaching, research, and administration and to produce research and educational output.

Fields of study usually have several sub-fields or branches, and the distinguishing lines between these sub-fields are often both arbitrary and ambiguous (Abbott 2001). From a teaching vantage point, Keen (1980), Salvendy (1982), Snodgrass (1987), Denning (1989), and Liles *et al.* (1995) point to the following elements that define the nature of disciplines:

- focusing the research to be undertaken by scholars in the field;
- producing academic journals that publish research results in the field;
- entailing the functioning of professional bodies and associations;
- establishing the nature and scope of departments and faculties to which theorists belong;
- guiding the content of learning programmes (i.e. curricula); and
- utilising departments or faculties to which its scholars belong.

It should be noted that although the elements highlighted above provide an indication of the nature of a discipline, there seems to be no formal criteria to establish a recognised academic discipline (Pierce 1991:22).

Increasingly scholars such as Klein (1996:22-3), Rowland (2002), and Gasper (2004:309) argue that the scale of complexity that societal (and research) problems shows compels scientists to change the approach of their research. Researchers have to move beyond the confines of their individual disciplines and explore new models for science. In this regard Eddy (2005:3) refers to the “antidisciplinary” nature of science, to emphasise the need for a heterogeneous team focus in research. Brewer (1999:327) coins the phrase the “moreness” advantage of multiple disciplinary perspectives. By this he means that *individual* disciplinary vantage points may lead to the fragmentation of insight and knowledge. To accentuate this need for “moreness” Brewer (1999:328) aptly states that the “world has problems, but universities have departments”. Therefore it is necessary to

uncover the relationship between the “parts” and the “whole” of a problem. The problem arises when disciplines borrow, share, interact, collaborate and integrate theories, approaches, and methodology in search of possible solutions to societal challenges. This purposeful relationship and integration process is referred to as interdisciplinarity.

According to Nissani (1997:202) and Klein (1990), many scholars have attempted to clarify the concept “interdisciplinarity”, but the term still seems to defy a comprehensive definition. Haynes (2002:17) simply conceptualises an interdisciplinary approach as “inquiries which critically draw upon two or more disciplines and which may lead to new insights”. The Oxford Dictionary explicates interdisciplinary as “of or between more than one branch of learning”. The prefix “inter-”, means “between, among, or mutually, reciprocally, and suggests exchange” (Karlqvist 1999). The noun interdisciplinarity, implies relationships between disciplines. The nature and level of such a relationship is a critical feature of interdisciplinarity. This relationship could be seen as a continuum with non-interactive complementarity on the one extreme and destructive bonds on the other extreme. Focusing between these two extremes, scholars such as Kleinberg (2008:11) and Jones (2009:77) also refer to “active”, “antagonistic”, and “co-operative” relationships. The latter refers to a situation in which disciplines learn from each other, to improve themselves or even to build new study domains. Negative relationships can also be delimited. Gasper (2004:334) refers to “imperial-disciplinarity” where an existing discipline tries to absorb or displace another discipline. Rowland (2002) and Gasper (2004:309) expand on this argument and indicate that interdisciplinarity represents a “site of contestation” between different “regimes of truth”. This is a more radical approach, to which Rowland (2002:6) refers as “critical interdisciplinarity”.

Apart from “relationship”, two other prominent features of interdisciplinarity are the level (degree) and the nature of *integration* and *collaboration*. These aspects are critical for purposes of this article since the type, level, and permanency of “inter-ness” significantly may influence individual disciplines, such as Public Administration, by collaborating in interdisciplinarity. More permanent disciplinary influences, for example, may lead to a paradigm shift if the majority of scholars accept the incorporation of a new mental framework. High levels of integration could also influence the traditional boundaries of a discipline and lead to possible re-curriculation and new teaching approaches.

The nature of integration could also be complicated if disciplines from the social sciences collaborate with those from the natural sciences. However, if the relationship between disciplines implies no more than “borrowing” insights or methods from one or more disciplines to interpret problems in another, “integration” could hardly be an apt term. Integration suggests a more substantial and enduring bond. For Pohl (2008:48) and Scholz *et al.* (2006:230) the integration aspect of interdisciplinarity refers to an attempt to “blend” methods and theories. Such integration may be broad or narrow, and may relate to theoretical positions that were developed, or in terms of the methods employed. Furthermore, integration can be highly instrumental, and focused on a solution to a problem, or it may be critical, seeking to understand the reasons for problems arising (Nissani 1997:212). “Bridge building” may occur, when elements of one discipline are

incorporated into other disciplines, or restructuring may occur, when fundamentally new arrangements are established between disciplines (Nissani 1997:212).

Corley and Sabharwal (2010:628) encourage collaboration in research initiatives, which may be regarded as a “softer” form of relationship than that of integration. According to them collaboration is “normal practice” within the framework of most disciplinary activities. Scholars in Public Administration, for example, often borrow theories and insight from disciplines such as economics, political sciences, sociology, and philosophy. Katz and Martin (1997:7) define collaboration as the “working together” of researchers to achieve the common goal of producing new scientific knowledge. Laband and Tollison (2000:636) expand on this notion by distinguishing formal from informal collaboration. Instances of *formal* collaboration, according to them, generally include co-authorships, joint presentations at conferences, seminars, and workshops, whereas instances of *informal* collaboration refer to conversations with colleagues and feedback received from journal editors and manuscript referees. According to Brasso (in Ravaioli 1995:121-122), more formal collaboration, may lead to new sub-disciplinary fields as well as “hybrids”, where new fields arise that offer new methods and research problems. Brasso raises an interesting point about collaboration. His analysis indicates that within the Public Administration fraternity, the most productive scholars who make the highest impact collaborate less than their counterparts. Corley and Sabharwal (2010:645) ascribe this trend to the fact that the field of Public Administration differs somewhat from other academic disciplines. This especially implies the natural sciences, in which several studies repeatedly have shown that the most productive scholars publish jointly (Glanzel 2002:469; Porac *et al.* 2004:672).

The nature of integration and collaboration in interdisciplinarity typically applies to four realms, namely knowledge, research, education and theory (*see* Klein 1996:22-23; Brewer 1999:329). Interdisciplinary *knowledge* involves familiarity with components of two or more disciplines. Interdisciplinary *research* combines components of two or more disciplines in the search for or creation of new knowledge, operations, or artistic expressions. Interdisciplinary *education* merges components of two or more disciplines in a single programme of instruction. According to Benson (1982:43) the applications of integrative studies are centered primarily on instruction rather than on research. As far as education (i.e. teaching) is concerned, interdisciplinary study has at least four unique characteristics. In this sense interdisciplinary studies –

- are organised in comprehensive interdisciplinary or multidisciplinary unit plans that focus on a specific topic, theme or problem;
- are explored by using the skills and techniques associated with any academic disciplines that can inform the topic, theme or problem under investigation;
- place equal emphasis on the mastery of the processes involved in learning about a topic, theme, or problem and the mastery of content, which entails concepts, facts, generalisations, and principles; and
- accommodate a diversity of students by providing for the differentiation between students of investigating and reporting techniques.

Interdisciplinary *theory* takes interdisciplinary knowledge, research, or education as its main objects of study. As far as interdisciplinary knowledge is concerned, some problems of knowledge are neglected because they “fail to fit in with disciplinary boundaries thus falling in the interstices between them” (Kavaloski 1979:132; Huber 1992:286).

Interdisciplinarity should not be confused with other widely-cited forms of disciplinary interaction such as multidisciplinary and transdisciplinarity. Multidisciplinary generally refers to a situation where different disciplines study the same object or problem, but without particular interaction and without cooperation (Brewer 1999:328). The different disciplines remain “untouched”, due to each discipline producing its own research output. The benefit of a multidisciplinary approach compared with a disciplinary approach is that a multi-perspective view is obtained on the same question or phenomenon under investigation. In contrast, interdisciplinarity requires the purposeful integration of various aspects of disciplinary knowledge (*see* Klein 1990; Pohl 2005; Scholz *et al.* 2006).

Transdisciplinarity in turn “transcends” the conventional borders of disciplines (*see* Max-Neef 2005:6). It could be argued that transdisciplinarity is a consequence of interdisciplinarity when new insights and knowledge emerge based on disciplinary interaction, collaboration and integration. The aim is to connect fields and transcend disciplinary barriers to address complex problems (*see* Thompson-Klein *et al.* 2001). Working on real-world problems requires, according to Wickson, Carew and Russell (2006:1050), a focus on the specific situation in its “wholeness”, flexibility in methodology, and the collaboration of a wide variety of disciplines.

There are further permutations of disciplinary interaction. These include pluri- and cross-disciplinarity (*see* Gibbons 2000:161), meta-disciplinarity (*see* Gasper 2004:311), mega-disciplinarity (*see* Norgaard 1994), intra-disciplinarity and supra-disciplinarity (*see* Roe 1998). An explanation of these and other types of disciplinary interaction, however, falls outside the scope of this article.

In order to explore the potential consequences of interdisciplinarity on the teaching of Public Administration, it is necessary to reflect on the most-widely cited arguments for and against interdisciplinarity. In the section below a synopsis is provided of the most prominent contentions.

Arguments *for* and *against* interdisciplinary teaching

Arguably the strongest case that advocates for interdisciplinary put forward is its potential for major breakthroughs in addressing complex problems such as climate change, poverty, and public health. In this regard, Brown, Harris and Russell (2010:16) argue convincingly that disciplinary integration provides the necessary perceptual vantage points to address “wicked” societal problems. Disciplines generally are regarded as “disconnected silos that stifle innovation and restrict inquiry” (Hardy and Williams 2011:405). Referring to the “orchestration of the sciences”, Norgaard (1994:140) in turn makes a persuasive case for eradicating “monism” in disciplines – i.e. the premise that

there is only one correct way to view and understand a phenomenon. Full coherence in the understanding of many aspects of social change, is “impossible for the knowledge of the scientists from separate disciplines cover different variables, different spatial scales, and different time scales”. Integration of the partial, limited perspectives should take place through a “democratic, multi-cultural politics of science” (Norgaard 1994:102).

Concerning teaching methods, Jones (2009:77) is of the opinion that the interdisciplinary approach synthesises more than one discipline and creates teams of teachers and students, which helps to enrich the overall educational experience. Jones strongly argues against the inferior pedagogy of traditional methodologies that concentrate on only a single discipline. The interdisciplinary approach provides many benefits that can develop into much needed lifelong learning skills, which are essential to a student’s future learning. In line with Thomas Kuhn’s argument that science is necessary for “puzzle-solving” (1970:260), Staples (2005:16) notes that the integration of interdisciplinary studies offers students “advanced thinking skills leading to discovery and real-world problem-solving”. Duerr (2008:177) also argues that interdisciplinarity enhances the cognitive development of students and allows them to see relationships among areas of content and to understand principles that cross curricula.

Furthermore, interdisciplinarity may lead to the psychosocial development of students, which enables them to understand contexts, situations and people from various vantage points. Referring to the “disconnect between disciplines” Youngblood (2007:3) and Duerr (2008:176) both agree that teaching methodology is the key to interdisciplinary success, and not study material alone. Youngblood explains that the foundation of interdisciplinary teaching methods could lead to a future of discovery and innovation. Interdisciplinary teaching methods are not only important ways for a student to learn any one single discipline or solve problems in a synthesised manner. These methods also enrich a student’s lifelong learning habits, academic skills, and personal growth (Jones 2009:78).

Sherif (1979:218), Condit (1993:245-246) and Nissani (1997:201) argue strongly in favour of interdisciplinary teaching by highlighting the following particular contributions to scholarship, society, and individuals:

- Creativity often requires interdisciplinary knowledge.
- “Immigrants” often make important contributions to their new field; more so than narrow disciplinarians, interdisciplinarians often treat themselves to the intellectual equivalent of “traveling in new lands”.
- Disciplinarians often commit errors that can be detected best by people who are familiar with two or more disciplines.
- Some worthwhile topics of research fall in the interstices among the traditional disciplines.
- Many intellectual, social, and practical problems require interdisciplinary approaches, due to the complexity of these problems.
- Interdisciplinary knowledge and research serve to remind scholars of the “unity-of-knowledge ideal”.

- Interdisciplinary researchers enjoy a greater flexibility in their research, seeing that various angles of approach can be followed.
- Interdisciplinary researchers may help breach communication gaps in the modern academy, thereby helping to mobilise its enormous intellectual resources in the cause of greater social rationality and justice.
- By bridging fragmented disciplines, interdisciplinary researchers might play a role in the defense of academic freedom. The case against interdisciplinary knowledge and research is made up of many intrinsic drawbacks and practical barriers. Taken together, these rewards, drawbacks, and barriers suggest a mild shift in the contemporary world of learning towards interdisciplinary knowledge and research.

However, interdisciplinarity may have less positive consequences. Therefore various arguments have been raised against its application at universities. Nissani (1997:213), for example, refers to the “impossible ideal” of the unity of knowledge, whilst Levin (1993:33) points to the fact that an interdisciplinary researcher is unlikely to gain as complete a mastery over a broad area as the specialists on whose work his or her own research is based. This may thus result in a scholar becoming “jack of all trades, master of none”. Grant and Riesman (1978:35) and Rowland (2002:56) further warn that the interdisciplinary community can become “cut off from fresh infusions of disciplinary knowledge”. In the same vein, Jones (2009:80) argues that “professors who focus on interdisciplinary studies isolate themselves from the core of their field; interdisciplinary studies lowers an academic’s reputation in the eyes of his peers and hurts his chances for tenure”. Klein (1996:193) states that researchers who identify themselves professionally with cross-disciplinary categories “face the entire panoply of gatekeeping mechanisms, which by and large favour existing disciplinary categories”.

Regarding teaching methods, Gasper (2004:310) points out that according to the interdisciplinary approach, teachers rarely teach subjects in an integrated fashion. As a result all subjects involved suffer. In this regard Kleinberg (2008:8) warns that interdisciplinary studies have become extremely popular. Therefore in order to offer these studies, some universities have sacrificed the quality of their teaching methodology. Kleinberg continues to argue that interdisciplinary studies “became complicit, if not responsible, for the fragmentation of the university into a series of localized specializations isolated from, and in competition with, one another to attract niche students”.

Benson (1982:43-45), Nissani (1997:213), Gasper (2004:338) and Rowland (2002:59-60) further highlight the following arguments against or barriers to interdisciplinarity:

- *Conceptual confusion and competing perspectives.* Interdisciplinary studies generally lack a coherent, defensible sense of purpose. Such studies purport to be concerned with examining and developing significant lines of “connection” between two or more disciplines. However, it is not clear just what it means to “connect” the disciplines, what value such a connection adds, and how it impacts on curriculum design (cf. also issues of integration and collaboration mentioned

earlier). Gasper (2004) argues that disciplines of the social sciences represent competing perspectives, and in this regard Rowland (2002) suggests that such competing perspectives are likely to confirm the suspicion that interdisciplinary studies “lack disciplinary rigour”.

- *Lack of disciplinary foundations and competence.* Benson (1982:44) contends that it is pedagogically doubtful to spend time on interdisciplinary learning projects when the student lacks a mature base in any of the contributing disciplines. Sound educational development requires a proper disciplinary foundation as well as critical engagement by the student. Having no firm hold on the associated disciplinary traditions, the student in interdisciplinary studies can be according to Benson, “little more than a spectator to the marshaling of arguments, research traditions, methods, and insights from the diverse contributing disciplines”.
- *Complex curriculum design issues.* Jones (2009:78) warns that interdisciplinarity leads to confusion about integration and requires time-consuming preparation for the curriculum. Benson (1982:45) also cautions against the relatively high cost of the typical integrative study course. Interdisciplinary curriculums rely heavily on team-teaching methods and in this regard Giri (1998:390) refers to the need for a strong “community of conversers”. Interdisciplinary curricula typically require the need to borrow teachers from the various disciplinary departments, thereby creating a need for part-time replacements.

Other often cited arguments against interdisciplinarity are that departmental boundaries hampers reflective space for the kind of conversations and debate that stimulate critical forms of interdisciplinarity (*see* Rowland 2002, Jacobs 2009), and lead to disciplinary “insecurity”. Adherents of insecure disciplines usually protect and defend their boundaries against incursion. The arguments raised above may explain the rather “hostile reception” that befalls interdisciplinary teaching initiatives (*see* Roy 1979:167).

Teaching public administration as (inter-)discipline

Public Administration transitioned through various paradigmatic phases when it originally emerged from Political Science as a distinct discipline during the 1880s in the Western world. The work of theorists such as Gulick (1937), Simon (1945, 1946), Rowat (1961), Waldo (1956), and Caiden (1991) contributed significantly to establish Public Administration as a distinct discipline. However, since the emergence of Public Administration with the works of Woodrow Wilson (1887), a lively discourse ensued on the scope (i.e. objectives, *locus* of study) and theory (i.e. *focus* of study) of the study field. Discussions about the scientific status, the nature of the field, and its theoretical foundations continued throughout the first 1968 Minnowbrook Conference, through to the emergence of New Public Administration (1980s) and the outlining of the latest governance perspective (*see* Raadschelders 2003).

Rutgers (2010:1) and Lang *et al.* (2012) explain that as an applied social science, Public Administration’s object of study is usually not merely an empirically observable

phenomenon. It is rather interdependent and intertwined with theories and conceptions about, for instance, social justice, law and order, ethical behaviour, governmental responsibility, and other social constructs. During the 1980s the field's point of departure shifted towards a practically relevant, policy-making and public management focus. The New Public Administration (NPA), New Public Management (NPM) and "Reinventing Government" movement became a core topic in the debates in the 1990s. According to Rutgers (2010:2) contemporary scholars increasingly calls for the "broadening of the field".

Based on the information above, Rutgers (2010:2) warns that the term "public administration" can easily cause confusion. This, of course, may not necessarily be a negative development. Chen *et al.* (2008), for example, argue that any study domain is fortunate if it does not develop into a traditional discipline by not restricting itself to a narrow set of procedures. They continue to argue that postmodern study domains should "keep drawing upon multiple disciplines spanning the whole spectrum of hard-pure, hard-applied, soft-pure, and soft-applied sciences." By doing that, study domains might best "thrive as a multi-, inter-, or transdiscipline with the prospect of becoming an academic role model for integrative knowing capable of coping with the complexity of problems and phenomena without unduly simplifying them."

The different contemporary epistemological and ontological perspectives as observed by prominent Western scholars such as Caiden (1971), Frederickson (1976), Stillman (1982), Denhardt (1999) and Rutgers (2010), make a comprehensive and homogenous theoretical foundation virtually impossible. Fragmentation due to issues such as administration, management, and governmental vantage points, seemingly makes the search for some "unifying paradigm" futile (*see* Rutgers 2010:14). In this regard Denhardt (1999:280) contends that the discipline is characterised by a "tremendous richness and complexity, which lacks a sense of identity". Rutgers (2010:1) further confirms the basic futility to search in the study of Public Administration for an identity, paradigm, discipline, or whatever supposed coherent, unifying core of questions, ideas, practices, problems, methods, or approaches. The study field reflects a vast number of subfields, ranging from the nature of the state, society, democratic and normative values, through governmental and governance, law, to service delivery functions (Brewer 1999; Gasper 2004).

According to Thomson and Walker (2010:23) Public Administration "works at the crossroads of several disciplines and a set of practical (public sector) demands". They add that Public Administration is better seen as an interdisciplinary field rather than a conventional scientific discipline. Various scholars such as Ventriss (1991), Forrester (1996), Rodgers and Rodgers (2000), as well as Schroeder, O'Leary and Jones (2004) further have confirmed the interdisciplinary nature of the field of Public Administration. Gasper (2004) contends that Public Administration has to draw on various types of understanding in order to address different pressing and inter-connected societal and governance issues; it links approaches, theories and material from different study fields without unifying them. Frederickson (1997:523) and Rutgers (2010:5) also underscore the fact that there will continue to be arguments that Public Administration does not entail a field, profession, or a discipline. These authors conclude that the study should not

turn into any of these, but that it should exist as an interdiscipline. Barberis (2012:87) questions the “disciplinary” status of Public Administration, and is of the opinion that the study domain can at most hold its place as “a distinct and respectable subject area”.

Teaching Public Administration may be complicated further by peripheral macro (i.e. global) and micro (i.e. national) trends. Such contextual developments and trends may bring about different vantage points to the teaching of Public Administration. In this regard Greenwood and Eggins (1995:143) refer to the “shifting sands” within which Public Administration must be taught. The list below provides a brief overview of some of these potential influencing factors:

- the influence of globalisation on the state and Public Administration (*see* Farazmand 1999:509);
- the nature of the state (i.e. its developmental policies and trajectory, economic growth path, higher education policies, etc.);
- the relative position of the social sciences and the research priorities of the state (influencing e.g. research funding and infrastructure);
- the nature and role of universities in society and more particularly its role to address societal challenges and to reflect the training priorities of the state (*see* Klein 1996; Haynes 2002; Thani & Disoloane 2012:157);
- university policies, teaching infrastructure, admission requirements, etc.; and
- social demographics and student profiles.

There seems to be a general confusion over the scope and nature of the discipline Public Administration, as well as the potential impact of the influencing factors listed above. This condition holds serious implications for interdisciplinarity in general and for the teaching of the subject in particular. In the section below some reflections are made on the potential consequences of interdisciplinarity on the teaching of Public Administration.

Fusing public administration teaching with interdisciplinarity

The potential contributions of interdisciplinarity highlighted above make it obvious that adjustments to existing teaching practices in Public Administration may be necessary. That is why especially applied social sciences build on broadly adopted interdisciplinarity as a “promising teaching paradigm” (*see* Gibbons *et al.* 1994; Scholz 2011). Staples (2005:6) makes a valuable contribution when she postulates that some disciplines are by nature interdisciplinary and require interdisciplinary teaching methods. This argument supports the need for Public Administration to consider and apply interdisciplinary teaching methods.

The aim of this section is to operationalise the research question highlighted earlier, namely to consider the potential consequences of interdisciplinarity on the teaching of Public Administration. In other words, how should Public Administration as interdiscipline embrace the good qualities of interdisciplinarity (arguments *for*) and how should its teaching practices overcome the typical barriers associated with interdisciplinarity (arguments *against*) as highlighted above.

A search for possible solutions to this question is complicated by especially two factors. The first factor is the reality that the study field is “fuzzy” and diverse, which makes it virtually impossible to gauge the potential implications and consequences of interdisciplinarity for the entire field. Secondly, any reflection of this nature should surely consider the potential consequences on all four realms of the discipline highlighted by Klein (1996:22-23) and Brewer (1999:329) above – knowledge, research, education and theory. If this is the case, another potential question comes to the fore, namely, how could the influence on education (i.e. teaching) as one realm be singled out without due cognisance of the potential interrelationship with the other three realms? Further questions flowing from this could also be raised, which warrant further investigation:

- How could the most effective and appropriate teaching methodology be selected to convey the richness of the subject, as well as different approaches, theories and methods from other disciplines in the curriculum of undergraduate programmes? In other words, how could interdisciplinarity facilitate teaching by illuminating the vastness of the study field, and when and how should these perspectives be incorporated in the curriculum?
- If the teaching of Public Administration is already that complex, would students not be overburdened unnecessarily by additional disciplinary perspectives?
- How ready, willing and able are teachers of Public Administration (i.e. university lecturers) to translate interdisciplinary perspectives in conjunction with teachers from other disciplines?
- Which particular approach, paradigm, theory, and method should Public Administration follow when teaching in collaboration with other disciplines?

From the brief orientation above it is evident that there is no simple “answer” to the research question. Based on the theoretical disposition above some consequences could, however, be suggested that interdisciplinarity could have on the teaching of Public Administration. The investigation of these potential consequences will be limited to curriculum design and teaching methods.

Curriculum design

Public Administration mainly studies Government’s functions including the implementation of governmental policies. As it is diverse in scope, it aims at advancing management and policies so that the government can function effectively. With both a theoretical and vocational focus, Public Administration prepares prospective public officials for careers in the public sector. To perform their functions more effectively, values such as equality, professionalism and democracy need to be inculcated in public officials. Furthermore, students should appreciate the complexities associated with governance, society and politics. Particularly on undergraduate level the curriculum of Public Administration should perform the following functions: make provision for the particular system of government prevalent in a country, ideally assist with human development, prepare students for the world of work and provide them with adequate

disciplinary (theoretical) foundations to conduct independent research in governance-related issues.

To incorporate the perspectives named above into a curriculum is not a simple feat since teachers typically will have to deal with what Jacobs (1989:5) refers to as the “potpourri” problem in curriculum design. This problem refers to a situation in which each of the modules or study units may become an “isolated sample” of knowledge from various foci within the discipline. Should interdisciplinarity be added as a permanent curriculum overlay, the mixture naturally will become even more complex. The reason is that modules would then not only reflect the subfoci within the discipline, but also reflect knowledge from other disciplines. In adherence to the principles of pedagogics, curriculum design is complicated even further by the fact that provision should be made for a strong focal point (i.e. course outcomes) and a logical build-up (sequencing) in theoretical sophistication and complexity from first to third years of study. Adherents to disciplines participating in an interdisciplinary curriculum will in all likelihood have their own ideas about course outcomes and the nature of information to which students should be exposed during the course.

Ball (1996) describes the kind of students who are equipped adequately for contemporary governance challenges, as “flexible generalists”. Such generalists, according to Ball, are people endowed with the necessary knowledge, skills and values to adjust readily to multiple changes and who are able to make a significant contribution to their country and the world. In this respect Barnett (1994:70) calls for an education and training system that should be able to support the notion of an adaptable workforce. He (Barnett) continues to state that higher education should strive towards other definitions of knowledge and reasoning. Notions of skill, vocationalism, transferability, competence, outcomes, experiential learning capability and enterprise, when taken together, indicate the view that traditional definitions of knowledge are inadequate to meet the systems-wide problems faced by contemporary society. Barnett (1994:71) urges adherents of higher education to embrace “knowledge-through-action”, particularly for outcomes of a learning transaction and transdisciplinary skills.

This new “language” of higher education gave rise to the notion of outcomes-based education, where qualifications are designed around the intended outcomes (results) that students must be able to accomplish. In outcomes-based education, curriculum design, referring to all the teaching and learning methods, content, and assessment opportunities, should be aimed at equipping students with outcomes, which reflect knowledge, skills and attitudes appropriate for the world of work. The focal point in curriculum design should thus be the final result or outcome that the faculty wants to achieve. Both formative and summative assessment opportunities should be designed in such a way that these test the level of desired outcome which the student (i.e. prospective public manager) has achieved. Outcomes aimed at disciplinary knowledge are typically much easier to assess than outcomes reflecting development of the whole or full person and the attitudes (i.e. behavioural and affective) associated with an educational programme.

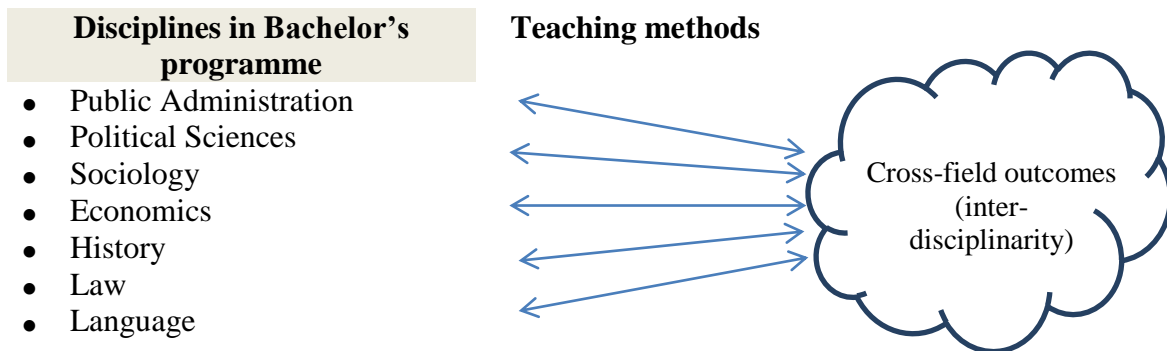
To facilitate outcomes-based education, so-called “cross-field” outcomes are an additional mechanism through which a coherent curriculum could be achieved. These critical outcomes generally describe the qualities necessary to develop students, regardless of the specific discipline or content of learning (SAQA 2006:2). In order to contribute to “full person” development, such cross-field outcomes are generally aimed at making individual students aware of the importance of inter alia the following skills:

- collecting, analysing, organising and critically evaluating information;
- using science and technology effectively and critically, showing responsibility towards the environment and the health of others;
- demonstrating an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation;
- participating as responsible citizens in the life of local, national and global communities; and
- being culturally and aesthetically sensitive across a wide range of social contexts.

It is suggested that these cross-field outcomes significantly could enhance the incorporation of best practice, which is associated with the interdisciplinary teaching of Public Administration.

If members of a faculty hosting Public Administration agree that students should be exposed to other disciplines, the next obvious question is how to integrate interdisciplinary teaching into the existing curriculum. In this regard two possible avenues could be pursued. Diagrams 1 and 2 below illustrate these options for curriculum design.

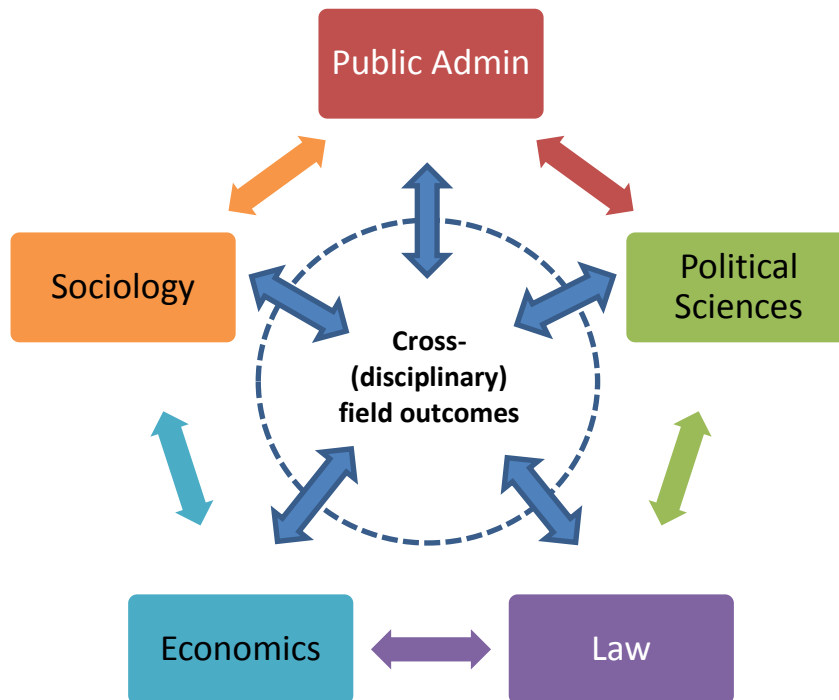
Diagram 1. “Strong” disciplines – “Weak” interdisciplinarity.



“Strong” disciplinarity refers to a situation in which students are grounded actively in a discipline. This foundation has a breadth dimension (involving different subfoci within the discipline) and a depth (i.e. theoretical) dimension. “Weak” interdisciplinarity means that the linking of disciplines is not the main focus, but act in a more supportive capacity – to give students exposure to broader perspectives. In this case there is thus collaboration between disciplines, but limited integration. Cross-field outcomes are not intended to integrate disciplines; merely to facilitate the collaboration between them. In

terms of this option the outcomes are formulated in such a way that they cannot be achieved without collaboration between the disciplines that interlock in the curriculum.

Diagram 2. “Weak” disciplines – “Strong” interdisciplinarity.

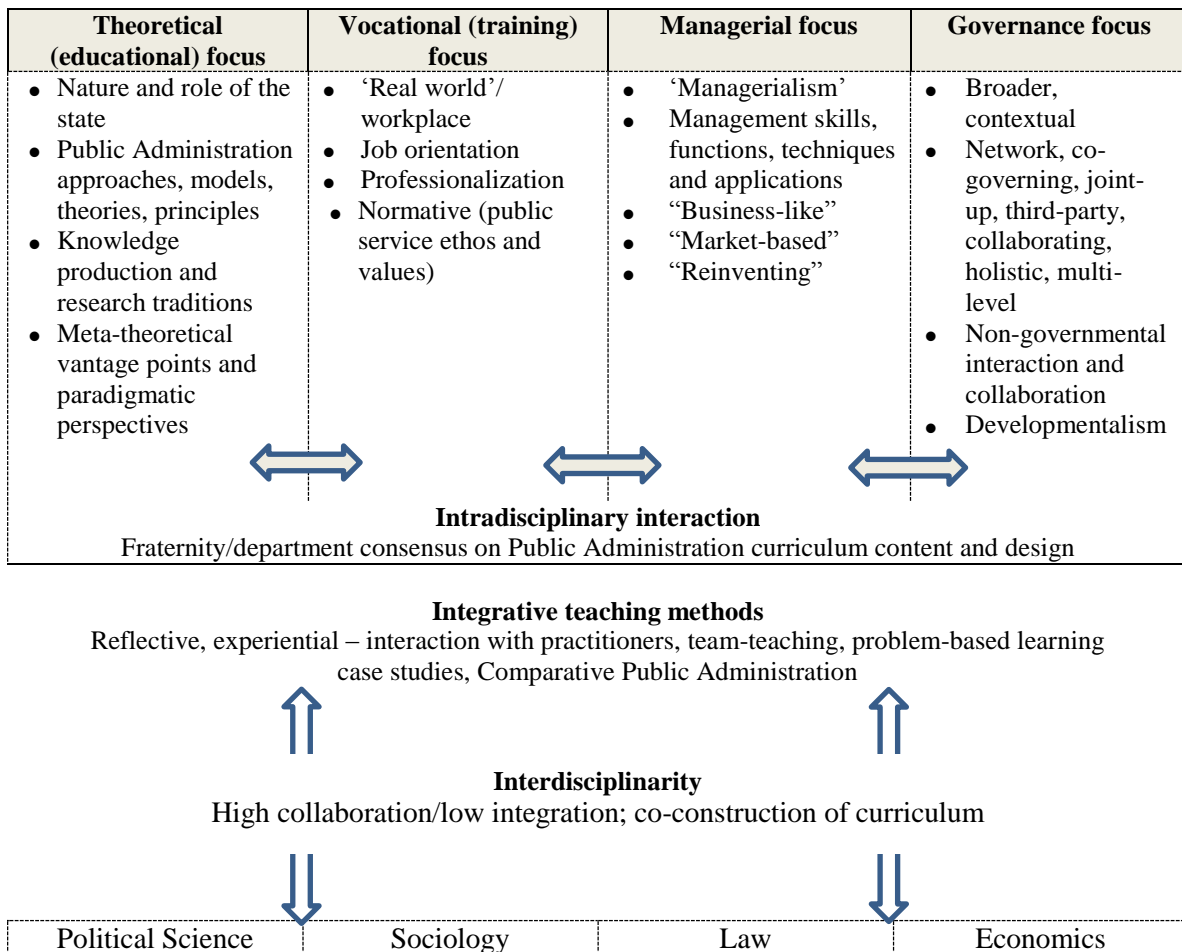


“Weak” disciplinarity refers to a situation in which interdisciplinarity provides the main focus (intended outcome) of the curriculum. Disciplines generally become a means to this end, and students are not exposed to disciplinary grounding and theoretical depth. Instead the curriculum is designed in such a way that disciplines need to integrate content aimed at mastering interdisciplinary outcomes. There is thus purposeful collaboration and strong integration between disciplines. The cross-field outcomes are aimed at articulating the consequences and results of interdisciplinarity. This option is in line with the model suggested by Kleinberg (2008:11), which is project-based. In terms of this model, interdisciplinary teams focus more than one discipline on a specific issue.

The main critique that could be raised against option 2 (*see* Diagram 2) is: the value that each discipline will add to such a project-based team is dependent on solid theoretical foundations in a *particular* discipline. Why else, would a team-member be invited if his/her unique disciplinary insight is not recognised within the team? Critiques thus suggest that students cannot benefit fully from interdisciplinary studies until they acquire a solid grounding in the various disciplines that interdisciplinarity attempts to bridge. An interdisciplinary curriculum should only be used when the nature and complexity of the problem reflect the need to overcome fragmentation and to construct knowledge in such a way that comprehensive “answers” can be found to the problem.

The ideal situation in curriculum design may therefore be a hybrid option, according to which the arguments *for* interdisciplinarity are accommodated optimally in the outcomes of the course or the qualification. In this respect, Jacobs (1989:4) suggests that students should have a range of curriculum experiences that reflect both a discipline-field and an interdisciplinary orientation. Table 1 below illustrates a comprehensive perspective on the accommodation of interdisciplinarity in the teaching of Public Administration.

Table 1. Public Administration teaching’s foci and interdisciplinarity.



The four foci of Public Administration are highlighted in the table above, namely: theory, vocational, managerial and governance. This table attempts to illustrate the necessity of intradisciplinary, in other words, to reach consensus on the integration of these highly-interrelated dimensions and foci. Such a consensus amongst scholars (teachers) in the discipline is critical for purposes of curriculum design and to “speak with one voice” before considering collaboration with other disciplines. The table suggests that one dimension does not have prevalence above the other, but that an integrated approach should be followed. The curriculum as well as teaching methods should pay equal attention to the diverse dimensions, in order to expose students sufficiently to the nature and complexities associated with Public Administration.

The theoretical dimension should provide an in-depth foundationing for core Public Administration theories, approaches, principles and models. More conventional and classical education (i.e. “learning about learning”) should be utilised in contrast with training endeavours earmarked to convey “how to” skills associated with the workplace.

Ventriss (1991:10) deals with the vocational (practice) focus of teaching and criticises the training of students to fill technical professional positions rather than as “thinkers”, or development of the person as a whole. In this vein Hejka-Ekins (1988:885) suggests that teaching efforts should be aimed at prepare students for the workplace. He focused on the teaching of ethics in Public Administration and concluded that its main purpose is to improve moral judgment in decision-making. He, however, further concluded that teachers typically do not have the background and skills to disseminate this knowledge to students. A more holistic and integrative approach is therefore recommended. Barberis (2012:88) warns that only a vocation orientation would “destroy the intellectual integrity and undermine the educational value of Public Administration as a university subject”. Barberis (2012:88) further postulates that the vocational focus is challenged by the diversity within the public sector and the rapid movement of personnel both within and between sectors. Students should realise that Public Administration is mainly a theoretical, intellectual undertaking, which holds vocational applications and implications (Barberis 2012:88).

It is strongly suggested that students should obtain a solid and sound foundation in Public Administration to contribute meaningfully to and participate fully in various intradisciplinary (within) as well as interdisciplinary (between) initiatives. Through appropriate teaching methods students should nurture the traditional academic roots of the study domain. To be relevant, teaching should reflect a strong vocational focus (training), but this should not be at the expense of solid and holistic academic grounding (education). It seems preferable to introduce the undergraduate to the foundations, essential concepts, as well as methods and tradition, of a range of disciplines through undiluted courses on introductory level. As Benson (1982:43) puts it, “Rather than teasing a student with fragmentary exposure to disciplines, they should obtain depth in a particular discipline.”

Interdisciplinary courses or modules should be shared with all participating disciplines in order for these courses to contribute particular knowledge and skills. These courses or modules should further offer students the opportunity to see connections and understand the relevance between topics and thereby provide a variety of perspectives. Jacobs (1989:5) recommends that the development of interdisciplinary study units or modules should involve the following:

- selecting a focus or thematic topic;
- generating ideas or connections between related topics;
- establishing guiding questions for the scope and sequence of the study unit; and
- designing activities to fulfill the goals of the unit.

In order to address these problems, teachers carefully should conceive curriculum design features. Such features include a scope and sequence, a cognitive taxonomy to encourage thinking skills, behavioral indicators of attitudinal change, and a solid evaluation scheme. The teachers should then facilitate disciplinary as well as interdisciplinary experiences for students in the curriculum.

Teaching methods

Traditional Public Administration instruction typically is deductive, starting off with appropriate theories and concepts and progressing to the application of these to public sector settings. Alternative teaching approaches are usually more inductive, starting from the public sector context and then analysing the findings in light of the theories and concepts (Woods 2007:855). Topics are introduced by presenting specific observations, case studies or problems. Theories are taught or students are helped to discover these elements only after the need to know them has been established. Shields (1998:195) suggests that pragmatism as a philosophy of science is evident in the teaching of Public Administration. She regards pragmatism as a “philosophy of common sense” and states that critical reasoning is applied and tested in action (practice) (Shields 1998:197).

Interdisciplinary teaching generally entails the use and integration of theories, methods and analytical frameworks from various disciplines. These are employed to explore a particular problem, challenge or phenomenon. This usually involves the integration of various perspectives to obtain more complete and coherent frameworks for analysis (Haynes 2002; Caviglia-Harris and Hatley 2004:396; Lattuca, Voigt and Fath 2004:24).

Brewer (1999:335) asked the following particular questions that highlight some challenges associated with curriculum design:

- Which perspective from which discipline will be absorbed and who will decide on this? How will the different research traditions be accommodated?
- Who will be responsible for curriculum design and quality control, and according to whose standard will it be applied?
- What are the particular programme outcomes and how will students’ competence be assessed?
- How will provision be made for collaboration in curriculum design since universities generally favour individual (disciplinary) achievement?
- How should different methods and operational objectives be accommodated within and between disciplines in the curriculum?
- How should institutional impediments related to funding for course development be addressed?
- How should professional impediments related to promotion opportunities, status, recognition and available time be accommodated?

Corley and Sabharwal (2010:627) observed a positive consequence that interdisciplinarity holds for the teaching of Public Administration. They found that collaboration in interdisciplinary endeavours improve lecturers’ teaching abilities. Due to

broader exposure, lecturers are able to contextualise theory and to reflect on practical, work-related issues. Gaff and Ratcliff (1997), as well as Fogarty and Pete (2009), recommend that lecturers should familiarise students with interdisciplinary approaches since discipline-based learning usually do not expose them to such vantage points and methods. Lecturers should develop teaching models that enable students to synthesise and integrate insights from a range of disciplines into an inclusive framework of analysis. Lattuca, Voigt and Fath (2004:44) conclude that such interdisciplinary teaching methods contribute to better insight and thus promote learning. Teaching methods should promote integrative meaning and facilitate the relationship between research (knowledge production), practice, teaching and learning. It should also stimulate critical reflection on practice through theory (Woods 2007:862).

A literature survey further reveals that some teaching methods are more suitable for interdisciplinarity than some of the more conventional teaching modes. Below is a brief synopsis of some of the methods that are more conducive to interdisciplinary teaching:

- *Case studies*: Case study research and instruction is a popular method to integrate other disciplinary perspectives (see Flyvberg, 2006:219). According to Walsh (2006) case studies can contribute significantly by broadening students' perspectives on approaches to Public Administration in governance settings. The case-study method can also be implemented effectively in the classroom setting – whether in traditional, face-to-face format or virtual, through the Internet. It then helps incorporate an international focus to the theory or principle that is taught, unlike experiential approaches that most often must be tailored to the individual student's situation or needs.
- *Experimental and experiential learning*: Adriansen and Knudsen (2013:118) recommend that the role description of public managers should be enhanced. They highlight the need for practical reflexivity in curriculum design. The pedagogy they propose for this endeavor they label “experimental management”. This method requires of students to conduct experiments in public sector organisations and then to reflect on and analyse their findings by means of concepts from the curriculum. In the same vein, Cunningham (1997:219) proposes experiential learning as an ideal method to encourage pragmatic, interdisciplinary learning – to “think outside the existing framework and to look for relationships and composing wholes rather than emphasizing pieces and parts”.
- *Problem-based learning*: According to Mergendoller, Maxwell and Bellisimo (2006:5) problem-based learning (PBL) is more effective than traditional instructional approaches (i.e. conventional lecture-discussion) where interdisciplinary instructions are concerned.
- *Team-teaching*: Often the definition of interdisciplinarity integrates team-teaching as a technique in which teachers from multiple disciplines cooperate to design a curriculum, instruct the class, and grade teams of students (see Haynes 2002:16).

Klein (In Haynes 2002:19) also mentions that interdisciplinary teams have benefits such as a wider knowledge and personality base, as well as a “wider design, teaching, and assessment methods to draw on and is thus more balanced in the overall teaching approach”.

- *Comparative Public Administration (CPA)*: CPA is the study of administrative concepts and processes across organisations, nations, and cultures (Holzer and Kasymova 2012:163). The main concern of CPA is not only to recognise similarities and differences among administrative systems and functions, but also to establish general patterns and to discover and define successful or unsuccessful practices (Heady 2001). An interdisciplinary approach could guide students significantly to obtain a broader perspective of such patterns and practices.

Conclusion

The value of interdisciplinarity should be evident from the arguments above. The “what” and “how” questions, however, need to be interrogated thoroughly to ensure that it contribute to Public Administration teaching, both in content and method. The level and nature of collaboration and integration between disciplines should be determined by course outcomes. Cross-field outcomes should be formulated in such a way that it determine the degree of such collaboration and integration. It becomes clear that an analysis of the potential consequences of interdisciplinarity on the teaching of Public Administration is complicated by the nature of the discipline, as well as the context within which it is taught. Lecturers need to consider particular options for curriculum design and make sure that appropriate teaching methods complement the interdisciplinary teaching effort.

To prepare students for the world of governance, Public Administration curricula should reflect the need to recognise the contributions of integrative studies. To this end, it was also argued that “strong” disciplinarity should not be sacrificed. Students should be grounded solidly in the theoretical underpinnings of Public Administration, to help them participate meaningfully in any interdisciplinary studies. Both disciplinary depth and interdisciplinary breadth have value and should be regarded as complementary in such a curriculum design.

References

Adriansen, HK, Knudsen, H (2013) Two ways to support reflexivity: Teaching managers to fulfil an undefined role. *Teaching Public Administration* 31(1): 108-123.

Alexander, JC (2011) *Performance and power*. Cambridge: Polity.

Augsburg, T (2006) *Becoming interdisciplinary: An introduction to interdisciplinary studies*. 2nd ed. Dubuque, IA: Kendall/Hunt.

Ball, C (1996) *Life-long learning for the 21st century*. Keynote address at the 21st Improving University Teaching Conference, the Nottingham Trent University, Nottingham.

Barberis, P (2012) Thinking about the state, talking bureaucracy, teaching public administration. *Teaching Public Administration* 30(2): 76-91, Dec.

Barnett, R (1994) *The limits of competence: Knowledge, higher education and society*. London: Society for Research into Higher Education.

Becher, T (1987) The disciplinary shaping of the profession. In Clark, BR, *The academic profession: National, disciplinary and institutional settings*. Berkeley, CA: University of California Press.

Benson, TC (1982) Five arguments against interdisciplinarity. *Issues in Integrative Studies* 1(1982): 38-48.

Beyer, JM, Lodahl, TM (1976) A comparative study of patterns of influence in United States and English universities. *Administrative Science Quarterly* 21: 104-129.

Brewer, GD (1999) The challenges of interdisciplinarity. *Policy Sciences* 32(4): 327-337.

Brown, VA, Harris, JA, Russell, JY (2010) *Tackling wicked problems through the transdisciplinary imagination*. London: Eartscan.

Caiden, GE (1971) *The dynamics of Public Administration: Guidelines to current transformations in theory and practice*. Hinsdale: Holt, Rinehart and Winston.

Caiden, GE (1991) What really is public maladministration? *Public Administration Review* 51(November/December): 486-493.

Caviglia-Harris, JL, Hatley, J (2004) Interdisciplinary teaching: Analyzing consensus and conflict in environmental studies. *International Journal of Sustainability in Higher Education* 5(4): 395-403.

Chen, H, Brandt, L, Gregg, V, Traunmüller, R, Dawes, S, Hovy, E, Macintosh, A, Larson, CA (2008) *Digital government: E-government research, case studies, and implementation*. New York, NY: Springer.

Coletto, R (2013) Transdisciplinarity: Two preliminary issues. *TD: The Journal for Transdisciplinary Research in Southern Africa* 9(1): 1-16, Jul. 2013.

Condit, CM (1993) The New Science of human reproduction: A reflection on the inadequacy of 'disciplines' for the understanding of human life. *Quarterly Journal of Speech* 79: 232-265.

Corley, EA, Sabharwal, M (2010) Scholarly collaboration and productivity patterns in Public Administration: Analysing recent trends. *Public Administration* 88(3): 627-648.

Cunningham, B (1997) Experiential learning in Public Administration education. *Journal of Public Administration Education* 3(2): 219-227.

Denhardt, RB (1999) The future of Public Administration. *Public Administration & Management* 4(2): 279-292.

Denning, PJ (1989) Computing as a discipline. *Communications of the ACM* 32(1): 9-23.

Doheny, MO, Cook, C, Stopper, M (1987) *The discipline of nursing: An introduction*. 2nd ed. Norwalk, CT: Appleton & Lange.

Duerr, LL (2008) Interdisciplinary instruction. *Educational Horizons* 86(3): 173-180, Spring.

Eddy, SR (2005) Antedisciplinary science. *PLOS Computational Biology* 1(1): 3-4.

Farazmand, A (1999) Globalization and Public Administration. *Public Administration Review* 59(6): 509-522.

Flyvberg, B (2006) Five misunderstandings about case-study research. *Qualitative Inquiry* 12(2): 219-245.

Fogarty, RJ, Pete, BM (2009) *How to integrate the curricula*. Thousand Oaks, CA: Corwin.

Forrester, JP (1996) Public Administration productivity: An assessment of faculty in PA programs. *Administration and Society* 27(4): 537-566.

Foucault, M (1979) *Discipline and punish: The birth of the prison*. New York, NY: Vintage.

Frederickson, HG (1976) Public Administration in the 1970s: Developments and directions. *Public Administration Review* 36: 564-576.

Frederickson, HG (1997) *The Spirit of Public Administration*. San Francisco, CA: Jossey-Bass.

Gaff, IG, Ratcliff, JL (1997) *Handbook of the undergraduate curriculum*. San Francisco, CA: Jossey Bass.

Gasper, D (2004) Interdisciplinarity. In Giri, AK (ed), *Creative social research*. Lanham, MD: Lexington. pp. 308-344.

Gibbons, M (2000) Mode 2 society and the emergence of context-sensitive science. *Science and Public Policy* 27(3): 159-163.

Gibbons, M, Limoges, C, Nowotny, H, Schwartzman, S, Scott, P, Trow, M (1994) *The new production of knowledge: The dynamics of science and research in contemporary societies*. London: Sage.

Giri, AK (1998) Transcending disciplinary boundaries. *Critique of Anthropology* 18(4): 379-404.

Glanzel, W (2002) Co-authorship patterns and trends in the sciences (1980 – 1998): A bibliometric study with implications for database indexing and search strategies. *Library Trends* 50(3): 461-473.

Grant, G, Riesman, D (1978) *Perpetual dream*. Chicago, IL: University of Chicago Press.

Greenwood, J, Eggins, H (1995) Shifting sands: Teaching Public Administration in a climate of change. *Public Administration* 73(1): 143-163.

Gulick, L (1937) Is Public Administration becoming a science? In Gulick, L, Urwick, L, *Papers on the science of administration*. New York, NY: Institute of Public Administration.

Hardy, CA, Williams, SP (2011) Assembling E-government research designs: A transdisciplinary view and interactive approach. *Public Administration Review* May/June: 405-413.

Haynes, C (2002) *Innovations in interdisciplinary teaching*. Wesport, CT: Oryx.

Hejka-Ekins, A (1988) Teaching ethics in Public Administration. *Public Administration Review* 48(5): 885-891.

Holzer, M, Kasymova, J (2012) Restating the relevance of Comparative Public Administration. *Public Administration Review* 72(1): 162-164.

Huber, L (1992) Towards a new studium generale: Some conclusions. *European Journal of Education* 27: 285-301.

Jacobs, HH (1989) *Interdisciplinary curriculum: Design and implementation*. Alexandria, VA: Association for Supervision and Curriculum Development.

Jacobs, JA (2009) *Interdisciplinary hype*. *The chronicle of Higher Education*, 22 Nov. Available at: <http://chronicle.com/article/Interdisciplinary-Hype/49191/>.

Jones, C (2009) Interdisciplinary approach – advantages, disadvantages, and the future benefits of interdisciplinary studies. *ESSAI* 7(26):76-81. Available at: <http://dc.cod.edu/essai/vol7/iss1/26>.

Karlqvist, A (1999) Going beyond disciplines – the meanings of interdisciplinarity. *Policy Sciences* 32: 379-383.

Katz, JS, Martin, B (1997) What is research collaboration? *Research Policy* 26(1): 1-18.

Kavaloski, VC (1979) Interdisciplinary education and humanistic aspiration: A critical reflection. In Kockelmans, JJ (ed) *Interdisciplinarity and Higher Education*. University Park, PA: Pennsylvania State University Press, pp. 123-160.

Keen, PGW (1980) *MIS research: Reference disciplines and cumulative tradition*. Proceedings of the First International Conference on Information Systems. Philadelphia, PA, Dec., pp. 9-18.

Klein, JT (1990) *Interdisciplinarity*. Detroit, MI: Wayne State University Press.

Klein, JT (1996) *Crossing boundaries: Knowledge, disciplinarity and interdisciplinarity*. Charlottesville, VA: University of Virginia Press.

Kleinberg, E (2008) Interdisciplinary studies at a crossroads. *Liberal Education* 94(1): 6-11.

Kuhn, TS (1970) *The structure of scientific revolutions*. 2nd ed. Chicago, IL: The University of Chicago Press.

Laband, DN, Tollison, RD (2000) Intellectual collaboration. *Journal of Political Economy* 108(3): 632-662.

Lang, DJ, Wiek, A, Bergmann, M, Stauffacher, M, Martens, P, Moll, P (2012) Transdisciplinary research in sustainability science: Practice, principles, and challenges. *Sustainability Science* 7(S1): 25-43.

Lattuca, LR, Voigt, LJ, Fath, KQ (2004) Does interdisciplinarity promote learning? Theoretical support and researchable questions. *The Review of Higher Education* 28(1): 23-48.

Levin, R (1993) The new interdisciplinarity in literary criticism. In Easterlin, N, Riebling, B (eds) *After poststructuralism*, Evanston, IL: Northwestern University Press. pp. 13-43.

Liles, DH, Johnson, ME, Meade, LM, Underdown, DR (1995) *Enterprise engineering: A discipline?* Proceedings of the Society for Enterprise Engineering, Orlando, FL. June.

Max-Neef, M (2005) Foundations of transdisciplinarity. *Ecological Economics* 53(2005): 5-16.

Mergendoller, JR, Maxwell, NL, Bellisimo, Y (2006) The Effectiveness of problem-based instruction: A comparative study of instructional methods and student characteristics. *Interdisciplinary Journal of Problem-based Learning*, 1(2): 5. Available at: <http://dx.doi.org/10.7771/1541-5015.1026>.

Nissani, M (1997) Ten cheers for interdisciplinarity: The case for interdisciplinary knowledge and research. *The Social Science Journal* 34(2): 201-216.

Norgaard, R (1994) *Development betrayed – the end of progress and a co-evolutionary revisioning of the future*. London: Routledge.

Pierce, SJ (1991) Subject areas, disciplines and the concept of authority. *Library and Information Science Research*, 13: 21-35.

Pohl, C (2008) From science to policy through transdisciplinary research. *Environmental Science and Policy* 11(2008): 46-53.

Porac, JF, Wade, JB, Fischer, HM (2004) Human capital heterogeneity, collaborative relationships, and publication patterns in a multidisciplinary scientific alliance: A comparative case study of two scientific teams. *Research Policy* 33(4): 661-678.

Raadschelders, JCN (2003) *Government. A Public Administration perspective*. Armonk: Sharpe.

Ranney, A (1971) *The governing of men*. 3rd ed. New York, NY: Holt, Rinehart & Winston.

Ravaioli, C (1995) *Economists and the environment – what the top economists say about the environment*. London: Zed.

Repko, A (2008) *Interdisciplinary research: Process and theory*. London: Sage.

Rodgers, R, Rodgers, N (2000) Defining the boundaries of Public Administration: undisciplined mongrels versus disciplined purists. *Public Administration Review* 60(5): 435-445.

Roe, E (1998) *Taking complexity seriously*. Boston, MA: Kluwer.

Rotblatt, S (1998) Tug of war for knowledge. *Times Higher Education Supplement*, Dec.

Rowat, DC (1961) *Basic issues in Public Administration*. Toronto: Macmillan.

Rowland, S (2002) Overcoming fragmentation in professional life: The challenge for academic development. *Higher Education Quarterly* 56(1): 52-64.

Roy, R (1979) Interdisciplinary science on campus. In Kockelmans, JJ (ed) *Interdisciplinarity and higher education*. University Park, PA: Pennsylvania State University Press, pp. 161-196.

Rutgers, MR (2010) Foundations of Public Administration: Theory and scope. *Public Administration Review* (The Foundations of Public Administration Series), pp. 1-45.

Salamon, L (2002) *The tools of government: A guide to the new governance*. New York, NY: Oxford University Press.

Salvendy, G (1982) *Handbook of industrial engineering*. New York, NY: John Wiley & Sons.

SAQA. *see* South African Qualifications Authority.

Scholz, RW (2011) *Environmental literacy in science and society. From knowledge to decisions*. Cambridge: Cambridge University Press.

Scholz, RW, Lang, D, Wiek, A, Walter, A (2006) Transdisciplinarity case studies as means of sustainability learning. Historical framework and theory. *International Journal of Sustainability in Higher Education* 7(3): 226-251.

Schroeder, L, O'Leary, R, Jones, D (2004) Routes to scholarly success in Public Administration: Is there a right path? *Public Administration Review* 64(1): 92-105.

Sherif, M (1979) Cross-disciplinary coordination in the social sciences. In Kockelmans, JJ (ed) *Interdisciplinarity and Higher Education*. University Park, PA: Pennsylvania State University Press, pp. 197-223.

Shields, PM (1998) Pragmatism as a philosophy of science: A tool for Public Administration. In White, JD (ed) *Research in Public Administration*. Vol. 4, Stamford, CT: JAI, pp. 195-225.

Simon, HA (1945) *Administrative behavior*. New York, NY: Free Press.

Simon, HA (1946) The proverbs of administration. *Public Administration Review* 6, Winter: 58-61.

Snodgrass, A (1987) *An archaeology of Greece: The present state and future scope of a discipline*. Berkeley, CA: University of California Press.

South African Qualifications Authority (SAQA) (2006) *Investigating the use of critical cross-field outcomes in the design of ABET qualifications and unit standards*. Pretoria: SAQA, Dec.

Staples, H (2005) *The Integration of biomimicry as a solution-oriented approach to the environmental science curriculum for high school students*. Available at: http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/1b/c2/3d.pdf.

Stichweh, R (2003) *Differentiation of scientific disciplines: causes and consequences*. Encyclopedia of Life Support Systems (EOLSS), UNESCO, Paris 2003. Available at: <http://www.unilu.ch/files/stwdisciplines.eolss.pdf>.

Stillman, RJ (1982) The changing patterns of Public Administration theory in America. In Uevegés, JA (ed) *Public Administration history and theory in contemporary perspective*. New York, NY: Marcel Dekker, pp. 5-37.

Thani, XC, Disoloane, VPP (2012) Determining the role of academics in teaching and improving of Public Administration in the 21st century. *Journal of Public Administration* 47(1): 148-160.

Thomson, P, Walker, M (2010) *The Routledge doctoral student's companion: Getting to grips with research in education and the social sciences*. New York, NY: Routledge.

Thompson-Klein, J, Grossenbacher-Mansuy, W, Häberli, R, Bill, A, Scholz, RW, Welti, M (2001) *Transdisciplinarity: Joint problem solving among science, technology and society: An effective way for managing complexity*. Basel: Birkhäuser.

Van der Waldt, G (2012) Disaster Risk Management: Disciplinary status and prospects for a unifying theory. *Jàmhá: Journal of the African Centre for Disaster Studies* 5(2): 1-11.

Ventriss, C (1991) Contemporary issues in American Public Administration education: The search for an educational focus. *Public Administration Review* 51(1): 4-14.

Waldo, D (1956) *Perspectives on administration*. Alabama, IL: University of Alabama Press.

Walsh, RW (2006) *Exploring the case study method as a tool for teaching Public Administration in a cross-national context: Pedagogy in theory and practice*. Paper presented at the European Group of Public Administration. EGPA Conference Milan, Sept.

Wickson, F, Carew, A, Russell, A (2006) Transdisciplinary research: Characteristics, quandaries and quality. *Futures* 38(9): 1046-1059.

Wilson, W (1887) The study of administration. *Political Science Quarterly* 2(2): 197-222.

Woods, C (2007) Researching and developing interdisciplinary teaching: Towards a conceptual framework for classroom communication. *Higher Education* 54(6): 853-866, Dec.

Youngblood, D (2007) Interdisciplinary studies and the bridging disciplines: A matter of process. *Journal of Research Practice* 3(2): 1-8.