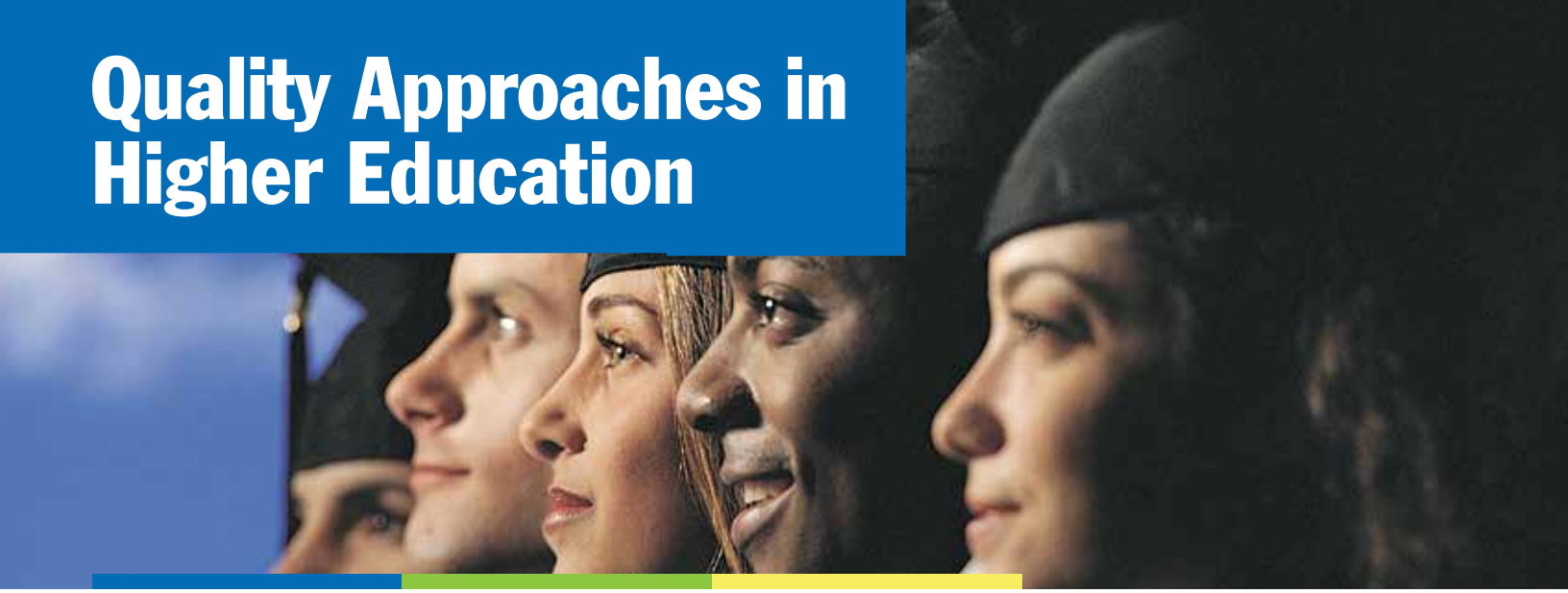
Quality Approaches in Higher Education



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Quality Approaches in Higher Education (ISSN 2161-265X) is a peer-reviewed publication that is published by ASQ's Education Division, the Global Voice of Quality, and networks on quality in education. The purpose of the journal is to engage the higher education community in a discussion of topics related to improving quality and identifying best practices in higher education, and to expand the literature specific to quality in higher education topics.

Note From the Editor

Massy, Graham, & Short (2007) state that "[s]ustaining and improving quality requires that both design and implementation be considered explicitly" (p. 32). In higher education, this means looking at what academics and academic units do in regard to student learning and teaching; the business components of colleges and universities; student services and their approach to providing meaningful experiences; and external and institutional quality assurance to provide evidence that design and actual performance align and succeed in relation to student, parent, government, societal, and workforce expectations. The progressive dimensions of quality, therefore, come from these varied perspectives, making the effects of quality in higher education because of the nuanced and interactive picture of how change occurs in the sector (Stensaker, 2007). Context based on system structure (Luhmann, 1995/1984) thus becomes important in identifying and understanding the intended and unintendend effects of design.

This issue is comprised of four articles that look at future trends in quality assurance in higher education and the effect changes in quality assurance have had on past practice. The first article by Dr. David Woodhouse is a guest editorial article discussing the salient issues facing quality assurance now and in the future from an international practice perspective. The second article is also a guest piece by Dr. Elizabeth McDonald who helped establish the Carrick Institute for Learning and Teaching in Higher Education in Australia, the predecessor of today's Australian government's Office of Learning and Teaching. This is the first time she has written about creating an agency devoted to the quality of learning and teaching in Australia's higher education sector.

Because of the upcoming update of ISO 9001, the third article by Laila El Abbadi, Aboubakr Bouayad, and Mohamed Lamrini analyzes the impact of the IWA 2 document on how universities should implement ISO 9001. Their analysis and recommendations are based on projects sponsored by the United Nations Development Programme (UNDP) and the European Union (the TEMPUS Project ALTAIR). The final article by Marlene Hurley, Fernando Padró, and Michael Hawke focuses on the unintended consequences as a result of policy-steering-based quality legislation. They look at how No Child Left Behind and its reporting structure negatively impacted teacher preparation programs using an integrated math-science model, and the ramifications on the current Race to the Top initiative in the United States.

These articles provide a glimpse of different aspects of quality within higher education—positive and not so positive. Together, the articles demonstrate how quality assurance affects different levels within higher education at the systems and institutional levels.

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GUEST EDITORIAL

Governments are seeking to ensure that quality agencies serve society, use money well, and provide results to stakeholders.

Global Trends in Quality Assurance

David Woodhouse

Introduction[i]

As organizations, generically referred to as "quality agencies" were set up, whether by governments, institutions, or private entities, they needed an "organizing principle." The two most common, though known by a variety of names, are accreditation and audits.

Accreditation stresses the "gatekeeper" role of an external quality agency (EQA), holding higher education institutions (HEIs) to threshold requirements. An audit permits greater diversity among institutions, but therefore usually presupposes that the institution has already exceeded some known threshold. Conventionally, accreditation has become associated with accountability of the institution (to someone, for something); and an audit is associated with (further) improvement of the institution above the threshold. However, an accreditation approach by the EQA can lead to suggestions for improvement; while an audit can focus on holding the institution accountable for achieving its stated published goals.

Accreditation denotes the process or outcome of evaluating whether something, for example, an institution or program, qualifies for a certain status. The status may have implications for the institution itself (e.g. permission to operate) and/or its students (e.g. eligibility for grants) and/or its graduates (e.g. qualified for certain employment). In theory, the output of an accreditation is a yes/no or pass/fail decision, but gradations are possible, usually in the context of a transitional phase (toward or away from "pass"). Accreditation is also called licensing or registration.

In some cases, there is no intention to implement the gatekeeper role of accreditation, but merely to assess how well the organization is performing. In this case, the term assessment is sometimes used for an evaluation that results in a grade, whether numeric (percentage or 1-4), literal (A-F), or descriptive (excellent, good, satisfactory, unsatisfactory). Thus, assessment and accreditation can both result in one of several scores on a linear scale. There may or may not be a pass/fail boundary somewhere along the grade spectrum.

Accreditation presupposes external measures or standards against which the institution, department, or program is being judged, but there is an argument that this does not allow for the range of higher education institutions and the scope of their purposes. This argument takes us naturally toward the quality audit, which is a check on an organization's claims about itself. When an institution states objectives, it is implicitly claiming that this is what it will do, and a quality audit checks the extent to which the institution is achieving its objectives.

ISO defines the quality audit as a three-part process: checking the suitability of the planned quality procedures in relation to the stated objectives, the conformity of the actual quality activities with the plans, and the effectiveness of the activities in achieving the stated objectives. This "quality loop" is often referred to using the initials OADRI for objectives, approach (e.g. plans), deployment (e.g. the actual activities), results (the consequences of all this planning and activity), and improvement. Improvement refers to what is done if the loop is not closed (e.g. adjust the objectives, plans, or deployment) or if it is closed (perhaps set more ambitious objectives). OADRI is another name for the Plan-Do-Check-Act cycle of the industrial quality movement.

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As these various terms multiplied, a generic term was needed and was found in the phrase "quality assurance" (QA), which denotes the policies, attitudes, actions, and procedures necessary to ensure that quality is maintained and enhanced—though not all agree on this. Some see QA as synonymous with the threshold check of accreditation, and some conversely see it as synonymous with improvement above the threshold. This disagreement over meanings extends even to the word "quality" itself.

Future Trends

What is currently exercising the minds of those involved in QA, both staff of quality agencies and staff in the institutions' internal QA units? This is a brief overview of some of these issues.

1. Value/Legitimacy of QA

Accreditation has a history of more than a century in the United States and in the British Isles of nearly 40 years. National agencies continue to be established (the current membership of the global network of QA agencies (International Network for Quality Assurance Agencies in Higher Education or INQAAHE) stands at about 280 organizations from 80 countries and HEIs continue to establish internal quality units and systems (IQA). Higher education (HE) generally has accepted the need for accountability.

Nonetheless, there are concerns about the emergence of an "evaluation bureaucracy," and tension continues between standardization and conformity: are external quality agencies (EQAs) too conservative? Both internally and externally, is the focus more on what *can* be measured than on what is important? If an EQA is part of the government, do quality checks imply government interference?

Other concerns include "diminishing returns." In some systems, the EQA is repeating the same process, cycle after cycle, and institutions claim that the improvements they experience from each cycle fall. Some EQAs (AQA in New Zealand and the former Australian Universities Quality Agency (AUQA) in Australia) try to avoid this by changing the focus each cycle while the U.S. agencies try to mitigate it by having a long cycle time and varying the methods used.

Part of the difficulty in establishing the value of EQA relates to the number of stakeholders in HE. These include students, institutions, employers, governments, and society. Students want to know which institution to choose; institutions want confirmation of their standing; employers want to know that graduates can hit the ground running; governments want to know that their money is well spent and sometimes press EQAs to drive institutions in particular directions; society wants a prestigious local institution; and all want QA decisions and outputs that are intelligible and useful.

It is now clearly established that EQAs do have an effect, and that the effect is mostly positive. The next question that arises is about value for money: do EQAs have enough beneficial effect to justify their costs?

In the debate on the value of EQA, attention must be paid to what can reasonably be expected. Most EQAs are expected to both hold institutions accountable and to enable them to improve. The former is feasible, and EQAs can reasonably be judged on their success in this. The latter is only partially feasible: EQAs can set the context for institutional improvement and can ensure that their processes are not counterproductive, but ultimately it is the institution itself that must improve. (Just as a teacher should teach well so as to encourage learning, but it is only the student who can actually do the learning.)

2. Evolving Environment

EQAs for HE continue to be established, but HE is also changing, and the agencies must change correspondingly. Agencies previously judged on inputs (entry student scores, faculty qualifications, funds available etc.) and facilities on a physical campus. Increasingly, EQA agencies are looking at processes and even more at outcomes. They are also paying attention to electronic and online courses and facilities. This reinforces the attention to outcomes. Evidently the experiences of a student on campus and at a distance are different; similarly, a student in an overseas branch campus is not experiencing the culture of the home institution's country firsthand. Hence, the desired outcomes are built into the specification of the qualification (see note on learning outcomes below), and the aim is for these to be achieved, even if the processes differ.

In recent years, more institutions have been making educational resources openly available online (open educational resources, OER). A few universities have come together as an OER university to offer some structure to this, and the internal and external quality issues need to be addressed. Also emerging recently are the massively open online courses (MOOCs). These can be seen as a progression of OER, but some would view it as a regression: OER systems exist to support the learner, but MOOCs come with no associated pedagogy or support. Any interested person can study the material for self-interest, but problems of assessment and validation are only just beginning to be addressed. QA may be covered under the category of recognition of prior learning. This evolution will continue as institutions determine how best to ensure a meaningful educational experience online, and how to deal with changes in attitudes and expectations of learners.

Life-long learning (LLL) is receiving increasing attention and this brings a need for the ability to assure the quality of this different style. Correspondingly, there will be increased reliance on the recognition of prior experiential learning (RP(E)L). HEIs will need strategies, and EQAs will need tools to evaluate the strategies.

Dealing with new types of institutions and new modes of learning requires a dialogue between HEIs and EQAs. It must never be forgotten that the quality task is the responsibility of the HEI, not the EQA. The latter is responsible only for validating and assisting in the HEI's work.

3. Accreditation Mills

We are accustomed to the notion of degree mills—entities that do not meet the generally accepted requirements for an institution of the type they claim. There is a spectrum of these, ranging from the totally value free (send us some money and we'll send your degree certificate) to those that are merely of very poor quality (students do work, but a degree is earned for work that is little higher than school level). Such entities are often litigious, so an EQA might hesitate to say publicly that they are invalid. Instead, we call the attention of the public to the nature and meaning of accreditation.

To get around this, bogus accreditation agencies ("accreditation mills") are now proliferating. Lists of these entities can be found (e.g. www.inqaahe.org, www.chea.org, www.accredibase.com), but inevitably they are always somewhat out of date as the mills change form, Prometheus-like, to beat the system.

4. International Issues

In a globalized world QA cannot escape international issues. The first thing to note is that most QA agencies are national or sub-national, with no authority to operate outside those national borders. The second thing to note is that HEIs are increasingly operating across borders, and their students and graduates are moving across borders as well. If an institution in country A operates in country B, who is responsible for the EQA of the latter operation—the agency in A, or the agency in B, or both or neither? In practice, different approaches are taken, although many countries have not addressed the questions of incoming or outgoing education at all.

Increasingly, agencies are collaborating through the development of mutual recognition processes to try to ensure that institutions do not have to jump through two sets of (possibly conflicting) hoops, but conversely that no institution falls through the cracks. This collaboration is far more difficult than might appear, as various agencies have a range of different details of their operations. Furthermore, even if agencies agree, effectiveness usually depends on government agreement also, which is not always forthcoming.

This problem must be solved for the recognition of students' qualifications, credit for partial qualifications, and acceptability for employment. National recognition entities typically operate separately from the national QA bodies, which is not a productive situation, although the Lisbon Convention does require documents prepared to assist students in achieving recognition of their qualification in another country to describe the EQA regime under which the relevant institution operates. There is also increasing attention to "diploma supplements" or "graduate statements" which set out a student's achievements in the degree program undertaken in a widely intelligible form.

An entire burgeoning area is joint degrees, combined degrees, double degrees, dual degrees, etc. The terminology is still in flux, but the core idea of a joint degree is a one specially designed by two or more institutions, and the student spends time at each institution to earn a single degree awarded by all institutions. Some of these operations slide over into the fraudulent when it is represented that a student has multiple degrees for the same piece of work or into devaluation when a student is allowed to obtain multiple qualifications for only a little extra work. Many institutions are guilty of either of these faults, and EQAs need to be able to detect what is happening. Some of it, however, is entirely within the preserve of the institution, and many EQAs are powerless to require the institution to change.

It was noted above that most agencies are national. Some nevertheless operate abroad by request of the institution (e.g. some U.S. accreditors) or by permission of the system (e.g. EQAs on the European QA register). Also, some international agencies are emerging (e.g. EQUIS and the European quality labels).

5. EQA and IQA

The vastly increased attention to QA over the last two decades has largely been at the behest of governments for various reasons. Governments want to ensure that the institutions serve society, that they use their money well, and that they produce the results desired by the various stakeholders. Hence governments and groups of institutions have established EQA agencies.

These agencies have increasingly expected institutions not to be merely passive recipients of whatever checks and requirements are imposed by the EQA but to take responsibility for their own quality. This has prompted institutions to set up internal QA systems and units. In several countries, the EQA has explicitly required this and in some countries has provided money to support it.

Some institutions have resisted establishing a QA unit on the grounds that this will absolve everyone else in the institution

from thinking about quality: they will take the view that the IQA unit is "where quality is done." This is a somewhat spurious argument. Most institutions have a teaching support unit, but no academic assumes that this unit does all the teaching in the institutions.

IQA units (or systems), when operating well, can assist individuals and departments in the institution to monitor and improve whatever they are doing. Often such units are combined with the data collection, institutional research, statistics, and/or the planning office.

A thorny issue is the relation of the IQA to the EQA. It should mediate to the institution the requirements of the EQA, and mediate to the EQA the performance of the institution. If it is seen as too close to the EQA, however, it may be perceived by the institution's staff to be just part of a "quality bureaucracy"—at best irrelevant, and at worst unhelpful, to the "real" work of the institution.

6. Professionalization of QA

Whether or not there is a quality bureaucracy, it is incontrovertible that explicit attention to QA does now take more of the time of many folk within HE. It, therefore, behooves those working in QA (whether IQA or EQA) to perform their jobs with a high level of professionalism.

Over the last 20 years, the INQAAHE has led the push toward professionalization of QA workers. A profession has a code of practice, and in 2003 INQAAHE created the Guidelines for Good Practice in QA (GGP) and encourages its members to act in compliance with these. ENQA, the European quality network, drew on the GGP in formulating the European Standards and Guidelines (ESG).

INQAAHE also devised a postgraduate certificate in QA. This is on the INQAAHE website as open-source material, and is offered by the University of Melbourne as a credit-bearing award.

7. QA Networks

INQAAHE was founded in 1991 by a dozen agencies and now has almost 300 member organizations in more than 80 countries. An interesting phenomenon is that despite the existence of a global network, many groups have found it valuable to create smaller networks and to belong to both. The first development was the creation of regional networks, then discipline-related networks, and finally other special interest networks.

The existence of a governmental/political/economic grouping of countries can be a catalyst for a regional network. The European Union gave impetus to ENQA; despite the existence of an Asia Pacific Network (APQN), the ASEAN countries have created a QA network (AQAN); and despite the existence of an Arab QA network (ANQAHE,) the six Gulf Co-operation Council (GCC) countries are creating a quality network. Special interest networks include one for Islamic countries.

These observations show the value widely seen by EQAs in working together. Networks support emerging agencies within their constituency, share ideas and good practices, collaborate in the QA work, and present a stronger face to national governments on behalf of their members.

A growing phenomenon in Europe is the "quality labels," e.g. discipline-specific networks, particularly to cover non-professional areas (such as business and engineering) that have long had their special-purpose agencies. Some tension is evident between the national agencies that are general purpose and cover "everything" within one country and the label networks that argue they are the best judges in their specific areas.

8. Qualifications Frameworks

Qualification frameworks (QFs) are very much the flavor of the day. Most countries that lack a QF are creating one. The core reason for this is to ensure consistency between institutions (Does a degree denote the same thing at all institutions in the country?) and, with that consistency, facilitate mobility of students? These are valid and useful goals, and many students have been assisted to combine qualifications and "staircase" to a higher level. However, QFs tend to assume a life of their own, and can be very directive, becoming restrictive and stifling.

In some systems, the national QF resides within the authority of the national EQA, whereas in other systems the QF is outside the EQA but used by it in reviewing institutions' operations.

Associated with the growing number of QFs is a growing attention to learning outcomes (LOs). This is not a new idea. Bloom's taxonomies for outcomes dates from 1956. It was mentioned above that EQAs historically focused on inputs, and more recently have moved to consider processes and outputs. The emergence of different modes of teaching and learning and of different types of institutions has emphasized the importance of considering processes and increased the emphasis on outputs and outcomes rather than on inputs. Hence, increasingly institutions are expected to state specifically the intended and achieved learning outcomes for courses and programs, to show that they align with the requirements of the national qualification network (where one exists), and to demonstrate that students' achievement of these LOs are appropriately assessed. EQAs check these in their accreditation processes.

9. Data

Historically, too much HEI planning has been data free. Writing in 1963, Sir Eric Ashby, former master of Clare College, Cambridge, said: "All over the country, these groups of scholars, who would not make a decision about the shape of a leaf or the derivation of a word…without painstakingly assembling the evidence, make decisions about admission policy, size of universities, staff-student ratios, content of courses and similar issues based on dubious assumptions, scrappy data and mere hunch" (Ashby 1963, p. 3). Since then, the wheel has turned, and HEIs gather enormous amounts of information and data—but use only a fraction of it. Thirty years ago, I urged my faculty to gather more data on student opinions; for the last 10 years, I have been urging institutions to gather less data but to use it more effectively.

In most developed countries, there is now a great deal of HE data in the public domain, and institutions should use it, together with their own data, for comparative analyses, benchmarking, and improvement. EQAs have a role in this as they constantly ask data for evidence—e.g. information turned to a particular purpose—to show institutional performance and student achievements.

One increasingly common misuse of data is for institutional rankings. I call it "misuse" as the rankings are largely based on arbitrary indicators with arbitrary weightings and an emphasis on research. They still fail to tell prospective students and their parents much about which institution to attend or why.

Attempts to avoid the worst effects of rankings include ratings (e.g., grouping institutions or factors into bands as done by the Australian Good University Guide), providing the basic data and allowing users to specify their weightings (e.g., the German CHE rankings), and classifying institutions more precisely (e.g. the European U-Multi-rank).

Conclusion

As stated above, it is now clearly established that EQAs do have an effect, and that the effect is mostly positive. For example, there are many positive comments from institutional leaders about the beneficial effects of the audits of AUQA. One notable area is that Australia's overseas operations were much improved over a five to six-year period. In New Zealand, students believe that a university's Academic Audit Unit (now Academic Quality Agency) led the universities to pay more attention to student concerns. In the UAE, institutions affirmed to an international review of the Commission for Academic Accreditation (CAA) that the CAA's standards and support had led to improved institutional quality in a range of areas. Many institutions in different countries report that student teaching and assessment has improved because of the IQAs which universities created as a result of the EQA demand for more effective use of data in providing evidence of quality performance.

Sometimes, though, EQAs are expected to take on conflicting roles. Also, the effect of an EQA can easily be outweighed by force majeure, such as government policies and funding or lack of them.

There continue to be challenges to QA, some of which have been mentioned above. External quality agencies must continue to self-reflect (as they expect of the institutions) and develop to continue to serve as agents for improvement in higher education.

[i]The introduction section of this article was originally found in Woodhouse, D. (March 2009). *Putting the 'A' into Quality*. Melbourne: Australian Universities Quality Agency.

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Invited Article

Australia's University Learning and Teaching: An Experiment in Promoting Quality

Elizabeth McDonald

Abstract

The paper is a reflection on the experience of the development and early years of what was a unique Australian experiment to enhance the quality of learning and teaching in universities. That experiment was the development and funding of a national institute for learning and teaching in higher education, known in its later years as the Australian Learning and Teaching Council.

Keywords

Learning and Teaching, Educational Quality, Australian Learning and Teaching Council

In an experiment in encouraging quality in learning and teaching there were many important issues to resolve.

Introduction

In 2003, the Australian government determined to establish an institute to promote learning and teaching in higher education. This paper is a reflective commentary on that experiment. While I had no involvement in developing the recommendation that would result in the institute's establishment, I led a small team within the government department which implemented the recommendation, spent a year on a temporary transfer assignment working on the planning, and finally accepted one of three program director positions in the new body where I worked for the next four years. In total, I was involved in this initiative for more than six years, which gives me a unique insight, though one which is essentially highly biased in perspective and probably in judgement. The paper is not based on notes or records from the time; hence it runs the risk of false or selective memory. In my work today I often meet with those who had strong relationships with the Australian Learning and Teaching Council (ALTC), which was closed in 2011.

Background

In 2003, one of the recommendations arising from an Australian review of higher education, commonly known as the Nelson Review, was the development of and funding for the Institute for Learning and Teaching in Higher Education. This recommendation was made in the context of supporting excellence in learning and teaching in Australian universities. It was matched with another recommendation for a Learning and Teaching Performance Fund to provide incentive-based funding to individual universities that could demonstrate certain indicators associated with the quality of teaching and learning. The institute's proposed establishment followed a number of earlier initiatives to support quality teaching and learning.

Australia had already established a body with a charter related to quality assurance in higher education. Following an agreement between the state and federal ministers for education, the Australian Universities Quality Agency (AUQA) was established in 2000 and charged with ensuring universities had quality assurance processes in place. AUQA had limited means to encourage good practice or penalize universities with substandard quality systems. Its establishment was in large part to assure the international student market regarding the quality of all 38 public Australian universities along with the few private providers offering university degrees at the time. (AUQA has been replaced by TESQA—the result of a recommendation of the latest review of Australian higher education).

AUQA was not the only initiative to promote quality. There was a long history of recognition of individual academics through national teaching awards and awards for programs that addressed priorities associated with improving learning and broad access to higher education. For many years there had been a small amount of funding facilitated by committees appointed by the Australian government to improve teaching and learning in universities. The establishment of the proposed institute was in response to lobbying on the part of the last of these committees, the Australian Universities Teaching Committee (AUTC). The announcement identified considerably more funding for awards and grants than the earlier committees had received.

A National Focus for the Enhancement of Learning and Teaching

In *Our Universities: Backing Australia's Future* (Nelson, 2003), the new institute was given a detailed outline of the tasks it would perform:

> A National Institute for Learning and Teaching in Higher Education will be established to provide a national focus for the enhancement of learning and teaching in Australian higher education institutions and will be a flagship for acknowledging excellence in learning and teaching. The Institute's responsibilities will include:
>
> - management of a competitive grants scheme for innovation in learning and teaching;
> - liaison with the sector about options for articulating and monitoring academic standards;
> - improvement of assessment practices throughout the sector, including investigation of the feasibility of a national portfolio assessment scheme;
> - facilitation of benchmarking of effective teaching and learning processes at national and international levels;
> - development of mechanisms for the dissemination of good practice and professional development in learning and teaching;
> - management of a program for international experts in learning and teaching to visit Australian institutions and the development of reciprocal relationships with international jurisdictions;
> - coordination of a revised version of the Australian Awards for University Teaching, including the awards presentation event; and
> - secretariat functions to the Australian Universities Teaching Committee.
>
> The Institute will be overseen by the Australian Universities Teaching Committee (AUTC) and be run by professional staff with expertise in learning and teaching in higher education. The AUTC will continue to advise the Minister on the allocation, management, and outcomes of any grants scheme and activities administered through the Institute, including the revised Australian Awards for University Teaching.
>
> The Institute will receive $21.9 million per year from 2006, which will comprise $2.5 million for administration and $19.4 million for grants and other activities. Funding will be allocated from existing program funds to establish the Institute in 2004 (Nelson, 2003).

Following this detailed description, other instructions focused on the number and size of awards for which an additional amount of funding was allocated.

As an experiment in encouraging quality in learning and teaching in universities and building a national profile for learning and teaching, there were many important issues to resolve, not the least of these was to gain the higher education sector's endorsement of the vision and way of operating the new institute. If that could be done, it would provide the uncontested space for the new organization to become successful. The matters to consider included the type of legal entity, governance, vision, and priorities for funding. A great deal of thought and careful planning began after the government's announcement. Tasked with the oversight of the development, the AUTC, largely made up of vice-chancellors/presidents, began a process of consultation with the involvement of an external consultant, Alan Schofield who had served as the lead reviewer of an earlier committee, the Committee for University Teaching and Staff Development.

Getting the Blueprint Right

My involvement began with the national consultation, leading a small team supporting the development of the institute from inside the government department responsible for the implementation of this initiative. One of the early challenges was to ensure the engagement of universities with the new institute, as it would have no power, authority, or means of enforcing any expectations within the Australian higher education sector. In addition, the institute would always be reliant on the fickle support of government as all its funding came from the Australian national government. The institute could not afford to be perceived as partisan in its politics or to engage in a way that resulted in difficulties for a government minister. Yet it had to achieve quickly to maintain the goodwill of universities and the support of government.

The initial model envisioned within the department was along the lines of National ICT Australia (NICTA). This type of model ran counter to the views of universities. During the first consultations, university leaders made it clear that they would not support a small group of universities "owning" the institute. The universities argued that, unlike research institutes, no group of universities could or should claim pre-eminent expertise in teaching and learning; they should all be experts. A model like that of the Higher Education Academy in the United Kingdom was discussed and found little support. Consequently, and given the lack of support in the government for creating the institute under legislation, the new body was established as a wholly-owned government company, a decision which would ultimately result in the demise in 2011 of what was by then known as the ALTC. That demise, however, was seven years after its establishment in 2004. It was originally established as the Carrick Institute for Learning and Teaching in Higher Education; the name was later changed to the ALTC. (The change of name was due to strong lobbying by the owner of a private education provider who claimed confusion resulting from the use of "Carrick" was losing her international business.)

Emeritus Professor Lesley Parker, the planning director appointed to oversee the planning phase, points out in *A Case Study of the Planning of the Carrick Institute in Australia* (Parker, 2006) that some aspects of the remit were greeted with enthusiasm and others with some scepticism, particularly the large number of annual awards, 251 in all. Other aspects such as requirements for more explicit standards and benchmarking were greeted with a degree of unease. Within this context a great deal of consultation took place including discussion papers and forums across Australia. Arising from all this work and the responsibilities set by the government, the institute's mission statement, objectives, and values were determined. The Carrick Institute for Learning and Teaching in Higher Education was launched on August 11, 2004, at Parliament House in Canberra in the presence of many university leaders. Despite the hopes expressed by many that the institute would be independent of government, under the constitution, the board was appointed by the government minister responsible for higher education. The first board included a strong contingent of university leaders, vice-chancellors, and deputy vice-chancellors, as well as some representation from other interests including education research, schools, and private education providers. The company was integrally linked to the government, though as a company, it was responsible for its financial management. The government approved the constitution, though the minister appointed the board and controlled the use of funding through a funding agreement. Throughout the time I was there, the minister and government of the day simply reflected the tasks set out in the initial announcement in its funding agreement.

Parker sums up her impression on the early life of the institute highlighting what the planning team believed was important to the successful implementation. She states that the "mixed incremental-organic and step-organic model for change appears to have been critical, underpinned as it is by the early work of antecedent organizations, the commitment of the Carrick Institute to collaboration and inclusiveness, and the respect shown to stakeholders. Further the attention given to evidence documenting what was actually happening in the sector and the development of plans on the basis of this evidence ensured a certain robustness in the planning" (Parker, 2006). This approach to change continued in a more subtle way during the years I was involved. Later sections of the paper demonstrate how this occurred.

In the above summary, Parker captures the early days when the Institute had limited funding. Full funding was not scheduled until 2006. Between late 2004 to the end of 2005, projects were commissioned including research on how to improve the impact of projects. Pilot projects were funded to assist in development work on program guidelines, always in consultation. Further, the systems of governance were developed. From my perspective, three principles underpinned the early development and implementation. These principles were to gain as much value from the effort as possible, that is to make a sustainable impact; to build engagement with all of Australia's institutions eligible for the new institute's funding, then 43, while at the same time ensuring high quality and credible project work and awards; and finally to gain the support and commitment of the various groups of university leaders who could promote change along with the teaching and learning enthusiasts and experts. The message was one of inclusion, quality, and impact.

The Importance of Collaboration

There was a strong commitment to competitive processes as the underpinning approach for allocating awards and project funding, two of the key tasks given to the institute. Fellowships were introduced by the board and were also competitive. Since the larger, more established universities were often more experienced and better supported in project application preparation and award nomination development, competitive funding and awards presented a challenge to gaining broad engagement across the sector. One of the ways to encourage broad sectoral engagement and wider uptake of project outcomes, while at the same time building capacity across the sector was to encourage collaboration. Collaboration, though not a requirement for funding was strongly signalled as an expectation in funding guidelines. Although not without its difficulties, including the tick-box

type of "collaboration," many projects gained enormously from a cross-institutional team, a team that took members beyond the limitations of their own university, even to links with international colleagues, professions, and industry. Fellows also structured their work to build in expert advice and collaboration. The best of this work built capacity and expertise, produced high quality materials, and gave the project leaders and fellows a profile that resulted in promotion and/or international alliances. The underpinning message was that ALTC expected value for Australian higher education from project work and fellowships, regardless of the type or size of project.

National bodies with different types of interest in university learning and teaching supported collaboration. Discipline bodies, which already had creative initiatives such as networks of associate deans (teaching and learning), were able to share those initiatives with others beyond their discipline group, thus strengthening the value of their work. National networks of associate deans (teaching and learning) included professional and regulatory bodies in their projects giving credibility to their work and increasing the likely uptake of the outcomes from projects. This type of collaboration set the scene for beginning the work on national standards, work that was undertaken in the last two years of the ALTC and is continuing through discipline networks. I must acknowledge that without the relationship building undertaken by a colleague, Dr. Janice Orrell, in the first couple of years, engaging in national discipline standards development would have been very difficult. It was her effort that built the foundations for the national discipline initiatives.

While collaboration supported wide sector engagement, appropriate intellectual property (IP) clauses in funding agreements were an essential enabler. The IP arrangements needed to be synergistic with collaboration between universities and support sharing beyond those involved in the project. All work funded by ALTC was to be released under a licence that allowed use and adaptation with appropriate attribution, although it did not permit commercialization. The IP on the work was held by ALTC, which in turn gave a very broad licence to the partners involved in the project. This approach to IP also enabled ALTC to encourage the use of earlier project work in new projects, without the need for permission from the original universities. The ALTC expected that, where appropriate, new projects would build on earlier ones. Gaining the best value from the project work would not have been possible if the individual universities held the IP. This approach to IP, the antithesis of the way research IP operates in Australian universities, led to many challenges from university lawyers and other influential leaders. However, once the reasons were explained, fellows and those involved in the projects appeared comfortable with the arrangement and sometimes sought support to deal with the lawyers in their universities.

One of the unforeseen outcomes that arose from the various collaborations, and the work done across discipline boundaries, was capacity building. Many people have spoken of the impact that the collaborative work, the ALTC-sponsored thematic gatherings, and the encouragement of sharing has had on their professional lives. The principal of a small private higher education provider, Dr. Don Owers, wrote, "It would not be overstating things to say that our involvement with the ALTC has transformed the culture of the college, and that, this in turn, will have an ongoing impact on the quality of teaching and learning offered to students" (Owers, 2011).

Gaining the Support of University Leaders and Experts

The legal structure could have resulted in considerable political interference with the operation of the ALTC, however, Minister Brendan Nelson approved the board to make decisions regarding successful award nominees and grant applications, determine guidelines, and appoint standing committees etc. without reference to him. No earlier committee had this type of authority. Consequently, the board appointed standing committees for each program, led by a board member. Membership of these committees extended the involvement of university leaders from across the sector. It was the members of these committees who made the decisions regarding awards, fellowships, and projects. The committees also provided advice regarding changes to the program guidelines. Despite the fact the committee work brought a heavy workload, ALTC had no difficulty gaining this involvement. I attended many of these meetings over the years and came to the view that university leaders enjoyed finding out what was happening, touching base with learning and teaching, especially if it was their own discipline, and debating issues with their colleagues from other universities. The committees were provided with assessments of the proposals and nominations, which were undertaken by academics who also came together to participate in the assessment process. The arrangements for these meetings meant that assessors found themselves side by side with academics from other universities and disciplines making judgements about the standard of nominations and applications. This type of peer review gave credibility to the grants and awards while at the same time extending the involvement of academics with the ALTC.

Success?

Not every ALTC initiative was successful; some were not and one, ALTC Exchange, was contested all the way through

development and implementation. Some risky initiatives were successful, often due to earlier work that put into place elemental systems and structures that could be strengthened. Some of these then become models for other disciplines. Listening to the challenges the new level of funding posed for universities gave shape to the Promoting Excellence Initiative developed to assist capacity development and encourage engagement. All higher education institutions eligible for funding were offered the same amount of money if they submitted a two to three-year strategy to build capacity and engagement with the ALTC. Each strategy was evaluated and, in some cases, revisions were required. Surprisingly, universities within some Australian states formed groups of those responsible for supporting the strategy, invited speakers, and shared what they were doing.

At times there were stridently different views about how the ALTC should operate, what role staff with learning and teaching expertise should play within the organization, and how that expertise should exert influence within the sector. In the end, the ALTC provided leadership, though not through developing teaching and learning policy or guidelines or setting itself up as an expert organization. Rather, the ALTC led through facilitating sharing and expertise, building relationships with the universities, encouraging collaborations between individuals and groups through setting funding priorities and funding criteria. It was the importance given to sharing and collaboration that I believe made the difference. Funding was certainly an incentive. It enabled different groups and people with special interests to work and collaborate on projects that fit within a broad set of priorities.

So, was this experiment successful? One could suggest that the ALTC was not successful as signified by the summary announcement of its closure in late January 2011. From many accounts, that judgement would misread the situation. Rather it appears there was an urgent grab for money within the government. There had been no signal that the government or the department responsible was unhappy with the ALTC, rather the messages were supportive of the ALTC. The Minister specifically stated at the Universities Australia Conference in March 2011 that he was not unhappy with the work of the ALTC. He found it difficult to provide a convincing explanation for the closure other than the need for money to assist after the Queensland floods.

It is always difficult for someone intimately involved in developing and running an organization to look with any objectivity when it comes to answering questions about success. Other voices and actions are more important in assessing what was achieved.

In a background paper making a case against the abolition of the ALTC, four senior representatives of the Councils of Deans wrote that:

> … the ALTC has been characterized by:
>
> - Strategic long-term vision for incremental system wide innovation and development in teaching and learning
> - Capacity building in organizational change and leadership
> - Collaboration rather than competition across institutions and disciplines, and for the first time with external stakeholders (e.g. employers and professional bodies)
> - Significant networking across institutions and, at this critical time, with technical and further education (TAFE) and with private providers, as a key means of achieving national outcomes (Freeman, Koppi, McKeough & Rice).

While it is clear that an enormous amount of activity occurred through projects and fellowships, one strong supporter wrote, "The ALTC is not just about the money; it's not just about the programs and the other functions; it's actually about the people" (Goodyear, 2011).

I had completed my employment contract at the ALTC over a year before the announcement of its closure. During the time I was employed, a raid on ALTC funding occurred as part of cost-savings at election time. A number of vice-chancellors lobbied government seeking the reinstatement of the funding. The lobbying managed to get the full funding re-instated, although money was removed from the Learning and Teaching Performance Fund. This was the first signal that the new government was not fully committed to the experiment, despite university support. That vice-chancellors preferred to lose funding that could go directly to their institutions rather than the loss of some ALTC funding spoke of growing confidence in the ALTC's work.

After the government announced the ALTC's closure I was amazed to see a public online campaign to lobby against the closure. The effort was not successful in protecting the ALTC, though it did gain the reinstatement of some project, fellowship, and award funding. When I reviewed those who were commenting in the online campaign I expected to see the names of people I knew, it was with quiet satisfaction that I found many names, Australian and international, I did not know.

New arrangements for funding projects, fellowships, and awards are in place within a government department.

Nevertheless, it seems that the government has missed the point of the ALTC experiment. To successfully build national capacity and commitment to ongoing improvement of learning and teaching in Australian universities requires an entity outside government to be the focus, the enabler, the encourager, and facilitator. There are signs that this role is already being missed within the Australian higher education sector.

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Elizabeth McDonald

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ISO 9001 and its supporting document IWA 2 may need to be amended to "[focus] on social value" to emphasize concerns universities face.

ISO 9001 and the Field of Higher Education: Proposal for an Update of the IWA 2 Guidelines

Laila El Abbadi, Aboubakr Bouayad, and Mohamed Lamrini

Abstract

This paper analyzes IWA 2 guidelines, compares them with the guidance of the ISO 9001 handbook for educational organizations, points out some gaps in these guidelines, and proposes an update to the IWA 2 guidelines to bridge these gaps. The proposed update aims to make ISO 9001 closer to a specific quality standard in the field of higher education. The proposed update is made first by suggesting an amendment to the IWA 2 structure (by adding a reminder about the ISO 9001 requirements, and the consolidation of all definitions into one section) as well as the definitions of product and customer given by these guidelines. Second, it proposes the addition of new requirements specific to the field of higher education, namely, "program withdrawal," "ethics and corporate social responsibility," and "financial resources."

Keywords

Higher Education Requirements, ISO 9001:2008, IWA 2, Quality Management

Introduction

Throughout the world, higher education institutions (HEIs) are concerned about insuring and improving the quality of their services and satisfying their customer's requirements. These concerns have led HEIs to implement a quality management/assurance system with compliance to the ISO 9001 standard. This standard is the popular choice for educational organizations (Thonhauser & Passmore, 2006) despite the fact that previous studies pointed out gaps specific to the field of higher education (HE) within ISO 9001:2000/2008 (Becket & Brookes, 2008; El Abbadi, Bouayad & Lamrini, 2011a, 2011b, 2011c). Furthermore, the ISO strategic plan 2011-2015 does not identify education as one of the sectors where ISO standards provide and achieve benefits (International Organization for Standardization [ISO], 2010-2011).

The ISO 9001 standard gives a set of generic requirements for implementing a quality management system (QMS) independently on the organization's activities. However, the education sector has its specificity that makes it different from manufacturing and other services sector activities. Therefore, the ISO 9001 requirements need to be interpreted in the educational field (Karapetrovic, 2001; Karapetrovic, Rajamani & Willborn, 1998; Van den Berghe, 1997). The International Organization for Standardization (ISO) is aware of this problem; it has published the *IWA 2 (2007): Quality Management System-Guidelines for the Application of ISO 9001:2000 in Education* and the *ISO 9001:2008 Handbook for Educational Organizations-What to Do: Advice from IWA 2 Working Group*. The focus of this paper is on the IWA 2 guidelines which complement the ISO 9001 standard (Roszak, 2009). These guidelines provide the conduit through which education organizations of all types, including HEIs, are able to implement ISO 9001 (ISO, 2007). More precisely, we analyzed the IWA 2 guidelines benefits and limitations from the lens of the needs and expectations for quality assurance of HEIs and the HE sector in general in northern Africa. The analysis was based on projects sponsored by Nations Development Programme project (United Nations Development Programme [UNDP], 2009) and the European Union Tempus project ALTAIR (European Union TEMPUS Project ALTAIR, 2008). We

also verified if the HE specificities are taken into account by these guidelines.

This paper begins by outlining the history of the application of the ISO 9001 standard in the field of education. It also presents and analyzes the IWA 2 guidelines as well as the ISO 9001 handbook for educational organizations. The paper ends with a proposed update of the IWA 2 guidelines to make them more suitable for HE institutions and systems.

The ISO 9001 Standard and the Field of Higher Education

In 1987, ISO published the ISO 9001, ISO 9002, and ISO 9003 standards which defined the requirements for a QMS. These standards were subsequently revised in 1994, 2000, and 2008, with a decision in March 2012 to create a new revision of ISO 9001 (West, Hunt, Croft, & Jarvis, 2012).

In the early 1990s, educational institutions in Europe began to implement the ISO 9000 family of standards (Apoyo a la Calidad Educativa, 2006; Van den Berghe, 1997), followed by those in the United States and Asia (Van den Berghe, 1997). These institutions encountered enormous problems because this standard was designed mainly for manufacturing. Indeed, the requirements and vocabulary were not adapted to service providers or educational institutions. The problem of interpretation has been the subject of several studies during this period. The ISO 9001:1994 key terms, such as product and customer, and its requirements have been interpreted in the field of education by, for example, Karapetrovic et al. (1998) and Van den Berghe (1997).

In 2000, ISO revised and combined ISO standards 9001, 9002, and 9003 into one standard, ISO 9001. The resulting standard provided a set of generic requirements for a QMS applicable to any type of organization, regardless of activity, size, or if it is public or private. New requirements were added, the structure of the standard was changed, and the vocabulary adapted to make it applicable to all sectors, including education. The revised ISO 9001:2000 standard contained eight clauses. The first three were introductory in nature, while the last five contained generic requirements for any organization to implement a QMS, manage its processes, and meet customer requirements.

Despite the revisions in the 2000 version, difficulties remained in applying and interpreting this standard in the educational field (Karapetrovic, 2001). This was probably because the ISO 9001 requirements were more generic in the 2000 version when compared to the 1994 set of standards (Karapetrovic, 2001). To deal with these issues, Karapetrovic (2001) looked at the key terms of ISO 9001:2000, interpreted them for engineering education and research, and gave a seven-step approach to implementation.

In 2003, ISO published the first version of IWA 2: *Quality Management System—Guidelines for the Application of ISO 9001:2000 in Education*. It was revised again in 2007. The purpose of the initial international workshop agreement and its update was to provide guidelines for educational institutions (including HEIs) to use when implementing the ISO 9001:2000 requirements. These guidelines were written by a group that included education experts along with experts representing national organizations for standardization.

In 2008, a new version of ISO 9001 was created to clarify the requirements of ISO 9001:2000. One year later, the IWA 2 working group developed *ISO 9001:2008 Handbook for Educational Organizations—What to Do: Advice from IWA 2 Working Group*. This handbook provides guidance to educational organizations for implementing a QMS in compliance to ISO 9001:2008.

In March 2012, ISO agreed to revise ISO 9001:2008 (West et al., 2012). It will probably add new concepts to this standard (AFNOR, 2012). The fifth edition of ISO 9001 is expected to be released in 2015 (West et al., 2012).

Analysis of IWA 2 Guidelines

The IWA 2 Guidelines made the ISO 9001:2000 standard easier for HEIs to understand and to implement (Caraman, Lazar, Bucuroiu, Lungu, & Stamate, 2008; Roszak, 2009). The guidelines were structured similarly to the way ISO 9001:2000 was written. Among the major differences, in our point of view, is that the terminology is more understandable to common educators, for example the terms curriculum, learner assessment tools, course, accreditation requirements, and learning outcomes. The guidelines provided definitions for four key terms found in the standard that were not as familiar or required additional detail to give educators points of reference. The defined terms included: customer, product, education provider, and educational organization. The two latter terms were defined in section 3: *Terms and Definition*. The customer and the product were defined in the first and second notes in the section 5.1: *Management Commitment*. While in IWA 1 guidelines for health service organizations and IWA 4 guidelines for local government, all terms were defined in the appropriate section, section 3: *Terms and Definition*.

Later revisions of both the standard (ISO 9001:2008) and the guidelines (IWA 2:2007) are not seamlessly linked because of the year difference between the two. Therefore, the ISO 9001:2008 clarifications were not integrated into IWA 2. Another gap occurs where IWA 2 neglects research activities (Rodman & Godnov, 2010) and its customers (which are industry, research sponsors, other universities, and research community (Karapetrovic, 2001)). The difficulty here rests on how IWA 2 defines the

product as an educational service and the customer as a learner. This definition of product does not take into account the role research plays in HE, especially the research-intensive institutions, and the subsidiary concerns of intellectual property that research (and to a lesser extent, teaching) need to address.

IWA 2:2007 section 7 (Realization of the Educational Service) indicates that education is a service. Section 5.2 (Customer Focus) states that the focus of the educational organization's top management is to identify and document the needs and expectations of learners and that specific performance indicators often imply learner requirements. This approach demonstrates a difference between manufacturing and education because, in the former, the organization's staff is the actor responsible for the realization and the quality of the product, while in the latter the learner is both customer and actor (Becket & Brookes, 2008). A learner is a "customer" in the sense that the individual acquires new knowledge, skills, and attitudes. On the other hand, the learner is also an "actor" who contributes in the delivery of HE services and whose behavior influences the quality of services offered by an institution. Parenthetically, the dual role the learner plays requires that he or she should know what his or her rights and responsibilities are, a point covered by the code of conduct for learners integrated by the IWA 2 guidelines as part of requirements established by organization.

El Abbadi et al. (2011a, 2011b, 2011c) and Rodman and Godnov (2010) have noted how aspects of both ISO 9001 and IWA 2 do not seem to be easily applicable or sufficiently appropriate for HE. These ISO documents only focus on current requirements and approaches toward implementation rather than expanding requirements to meet unique university activities. Actually, emerging trends in HE quality assurance place much emphasis on ethics (as seen in accreditation practices in numerous disciplines) and principles of corporate social responsibility (similar in thinking to ISO 26000). This implies that IWA 2 may need to be amended in spite of statements in the second QMS principle, "focusing on social value," which does not emphasize these concerns universities face. In fact, we underline the importance of the interactions between HEIs and societies wherein the educational leaders are responsible for the integration of their institutions into their societies (Padró, 2012) as well as for the effect of their decisions and activities on society (Padró, 2012).

Other areas of concern that are not currently dealt with effectively in the ISO 9001:2008 standard or the IWA 2 guidelines are a balanced approach to program planning and review focusing on course/program development and course/program withdrawal/termination (and teach-out). According to Eckel (2003), the decision to withdraw/terminate programs is hard for the affected students, so the HEIs are strongly advised to pay special attention to program withdrawal/termination decisions and put appropriate procedures in place (Eckel, 2003; Quality Assurance Agency for Higher Education, 2006, 2011; University of Wisconsin System, 2010).

On the other hand, HEIs, whether public or private, face diminishing financial resources. Thereby, HEIs must ensure good management of financial resources in parallel with investing in quality. These investments allow HEIs to eliminate nonconformities and resulting costs (ISO, 2009b). The financial resources lacking in ISO 9001 and IWA 2 (El Abbadi et al., 2011a, 2011c; Rodman & Godnov, 2010) are considered in ISO 9004 standard (Rodman & Godnov, 2010) and according to AFNOR (2012), these resources are among new concepts recommended for integration into the next ISO 9001 edition. Likewise, the quality standards implemented in several Moroccan HEIs in the frame of Tempus project "ALTAIR," and which were adapted from quality standards developed by Germany's (Accreditation Agency for Degree Programs in Engineering, Informatics, the Natural Sciences and Mathematics) and the EFQM model (European Union TEMPUS Project ALTAIR, 2008), included special requirements related to financial resources. Actually, in the context of south Mediterranean countries, the experts assembled in the project all agreed that these requirements are worth considering for emerging countries whose universities are developing to reach the size and the influence of prestigious western institutions.

What About the ISO Handbook for Educational Organizations?

The ISO 9001:2008 handbook for educational organizations is a more detailed document than the IWA 2 guidelines. It has included almost all of the IWA 2 guidelines and completed them with supplementary explanations and recommendations. It explained the utility of a QMS within an educational organization and the steps for its implementation according to ISO 9001:2008; presented this standard; defined the key terms such as product, educational organization, supplier, and stakeholders; provided a reminder of the requirements of this standard before interpreting them in the educational context; and gave practical advice to satisfy them (ISO, 2009a).

This handbook defined almost all terms in the education field in the section *Explanation of Terms Used*, except the term "customer," which was defined as the student in the section 3: *Terms and Definition* and as a learner by Note 1 in the section 5.1: *Management Commitment*. In addition, this handbook widened the definition of "product" to the outputs of all activities undertaken by educational organizations such as educational services

and research. Despite this definition of product, this guide has focused especially on educational services (Note 2/ section 5.1: *Management Commitment*), and other neglected activities that can be performed within a HEI and excluded other customers such as the industry and the research community.

On the other hand, financial resources lacking in IWA 2 are mentioned without further details in the handbook, along with the resources that the organization needs to ensure are available. The statements regarding ethics and social responsibility in IWA 2 are the same in the ISO handbook. Finally, the program withdrawal, which is not dealt with in IWA 2, was not also mentioned in this handbook.

Proposal to Update IWA 2 Guidelines

Some gaps in the IWA 2 guidelines can be addressed by modifying the existing guidelines, others by appending new requirements specific to the field of HE.

Proposal to Modify Some IWA 2 Guidelines

To make IWA 2 guidelines understandable and implementing the ISO 9001 requirements easier for users, we first recommend changing the structure of the IWA 2 guidelines and making it similar to the structure of the ISO handbook, e.g. IWA 1 and IWA 4 guidelines, which provide the ISO 9001 requirements first before interpreting them at the appropriate field. By offering a reminder of the ISO 9001:2008 requirements will also help align the IWA 2 guidelines with the ISO 9001:2008 requirements. In fact, the ISO 9001:2008 standard aims at updating the ISO 9001:2000 requirements without changing them or adding new requirements, so the IWA 2:2007 could remain valid for the ISO 9001:2008 if a reminder of the requirements of this standard were in place. Second, we propose to amend the definition of customer and product given by Note 1 and 2 in the section 5.1: *Management Commitment*, which does not take into account all HE core activities and customers. We suggest the adoption of the definition of product given by the ISO handbook (2009) and the definition of customer given by Karapetrovic (2001), which are broader instead of those given by IWA 2. Finally, we propose the consolidation of all definitions in *Section 3: Terms and Definitions*.

Proposal to Add New Requirements to IWA 2

As cited above, some requirements specific to the field of HE are not found in the ISO 9001:2008 standard or the IWA 2:2007 guidelines. We can mainly name financial resources (El Abbadi et al., 2011a, 2011c; Rodman & Godnov, 2010), ethics and corporate social responsibility as well as program withdrawal. These concepts can be integrated into the IWA 2 guidelines by referring to other ISO publications and/or adding new requirements related to them, such as it was done by IWA 1 guidelines for health service organizations which provided amendments specific to the field of health services such as new requirements related to "financial measures" and "urgently needed purchased product" (ISO, 2005).

Based on our analysis of IWA 2:2007 and our experience in implementing quality standards in HEIs, it seems judicious to propose the addition of the following new requirements to IWA 2 guidelines. Each proposed requirement will be preceded by a number indicating its placement within the IWA 2 sections.

- The first proposed requirement: 6.5: *Financial Resources*

  "The educational organization should identify the financial resources needed for a good functioning of its QMS, the use of quality tools and for the delivery of services, seek funding sources and ensure the availability and good management of its financial resources.

  The quality investments are gainful for the educational organization. They can diminish financial resources used. In fact, investing in quality tools and in QMS implementation with compliance, for example, to ISO 9001, allow educational organizations to eliminate non-conformities and resulting cost.

  For more information on financial resources, the educational organization can refer to ISO 9004 (2009): *Managing for the sustained success of an organization–A quality management approach*."

- The second proposed requirement: 7.3.8 *programs withdrawal*

  "When the educational organization decides to withdraw a program, it must inform learners registered or admitted to this program.

  The educational organization must also help these learners to choose another program regarding suitability with their course of study."

- The third proposed requirement: 6.2.3 *corporate social responsibility and ethics*

  "The educational organization should establish a code of ethics and introduce the corporate social responsibility principals in the institution's environment. The institution's staff, learners and partners must respect these principles and adhere to their code of ethics.

For more information on this requirement, the educational organization can refer to ISO 26000 (2010): *Guidance on Social Responsibility*."

Conclusion

Throughout the world some HEIs choose to implement generic quality standards which have an undeniable success, especially in the industrial field. These standards are more known than the specific quality standards which can differ from a country (or a group of countries) to another. Moreover, they may induce renewed confidence of customers in the effectiveness of the HEIs' processes and management. Among these generic quality standards, ISO 9001 is increasingly used by HEIs as a viable option in implementing quality assurance practices. HEIs interested in adopting ISO 9001 receive guidance on how to become ISO 9001 compliant through the IWA 2 guidelines and the ISO 9001 handbook for educational organizations.

Focusing on the needs of HEIs, this paper analyzed the IWA 2 guidelines, compared them with the handbook guidance, outlined some gaps in IWA 2, and proposed an update pending the release of the new version of ISO 9001. This update suggests a reminder of the ISO 9001 requirements, a broadening of the definition of product and customer, bringing together all definitions into one section, and finally the addition of some requirements specific to the field of HE; namely "program withdrawal," "financial resources," and "corporate social responsibility and ethics." This proposed update will upgrade IWA 2 guidelines to the latest version of ISO 9001 and will make the ISO 9001 standard more suitable for HEIs and aligned with their needs and expectations. As well, it will make understanding the ISO 9001 requirements easier for HEIs, which can promote their implementation within these institutions.

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What the research here shows is that educational research presents a picture that discourages differentiation and experimentation.

Will Race to the Top Have the Same Mixed Results No Child Left Behind had on Student Learning and Preservice Teacher Preparation?

Marlene M. Hurley, Fernando F. Padró, and Michael F. Hawke

Abstract

Race to the Top (RTTT) creates concerns for researchers and teachers (Owens, 2009) because of its emphasis on high-stakes testing and the continued lack of collaboration among educators, researchers, and policy makers. These laws reflect Foucault's notion of governmentality due to the approach taken to meet the aims of both the Bush and Obama administrations. This four-step study looked into the impact No Child Left Behind (NCLB) had on preservice teacher preparation based on the integrated math-science (IMS) model. A review of the literature identified 16 studies on IMS that provided the basis for a national survey to determine the reasons for offering IMS, the successes and challenges of the model, and the future of IMS at their higher education institutions (HEI). The number of IMS courses was lower than found in catalogs and the overall rate of IMS courses during 2004-05 was comparable to that in the 1950s.

Key Words

Governmentality, Integrated Math-Sciences, Preservice Teacher Preparation, Race to the Top, STEM

Race to the Top (RTTT), part of the *American Recovery and Reinvestment Act* of 2009 (ARRA), is in part an attempt to circumvent the perceived failings of No Child Left Behind (NCLB) (McGuinn, 2010). Its priorities have implications for STEM education at the P-20 and workforce level and, indirectly as a result of what states have to do to meet the priorities, also on preservice teacher preparation in teaching integrated math and science (IMS). Specifically, RTTT's Priority 2 requires states to emphasize STEM education, requiring a rigorous course of study in these areas. It also calls for establishing partnerships with STEM-capable community partners to prepare and assist teachers in integrating STEM content across grades and disciplines to promote relevant instruction and learning opportunities and providing advanced studies and careers in STEM, accentuating how to get more under-represented groups, women, and girls interested in STEM courses and careers (U.S. Department of Education, 2009). RTTT Priority 5 indicates that states have to address the alignment and coordination of the school-to-work pipeline (to borrow from a program from the Clinton Administration) "to ensure that students exiting one level are prepared for success, without remediation, in the next" (p. 5). Emphasis under this priority is in the transition points between educational levels (preschool to K-12, K-12 to college/university, college/university to work and career, or K-12 to work/career). It is also important that states provide high-need students with an array of opportunities and services they need to succeed even if these are beyond the capacity of a school itself to provide.

RTTT's approach of a competitive grant program to create systematic rather than targeted change in education embodies a change in strategy in fostering a national agenda (McGuinn, 2010). Even so, it reflects the Obama administration's ambivalence in crossing the line between federal mandates and state discretion in educational matters (McGuinn, 2012). Such a change in approach leads to the obvious questions of cost effectiveness (cf. Kolbe & Rice, 2012), effectiveness in creating change, and of improved student learning.

While this last question may be unfair in regard to the ability to correctly anticipate or divine potential consequences, the history of change resulting from policy implementation (cf. Gillies, 2008) can identify potential areas of concern. This paper is an example of how an intended consequence from a systematic response to NCLB in the area of IMS education, particularly preservice teacher preparation of math and science teachers, did not come to pass.

Under NCLB, schools had to assess students in mathematics, reading/language arts, and science (Pilotin, 2010); however, state report cards reported on mathematics and reading arts. One consequence of the Academic Yearly Progress (AYP) report card's focus on reading/language arts and mathematics was that it led to a 32% average reduction in time for other subjects when compared to 2001-02 (McMurrer, 2007). According to the report from the Center on Education Policy (CEP), science, along with social studies, art and music, physical education, and time for lunch/recess were cut back about an average of 30 minutes per day. Districts with at least one school identified as in need for improvement were found to report at a higher rate a decrease in time devoted to teaching science, social studies, art and music. One recommendation CEP gave as a means to help remedy this decrease in coverage in these areas to accommodate increased instruction time in language arts and mathematics was for the federal government to fund "research to determine the best ways to incorporate the teaching of reading and math skills into social studies and science" (p. 2). Combine this recommendation with Czerniak, Weber, Sandmann, & Ahern's (1999) expressed need for more models of teacher preparation and greater preservice teacher familiarity with state and national reform recommendations, the focus of attention comes to two questions: Why did the integrated teaching of math and science not take hold? and Where have the political will and wise educational policies, to paraphrase Vars (2001), been to ensure that the teaching of science did not become a victim of policy steering defining education quality? It seems that Ravitch's (2010) complaint of quality improvement becoming transmuted into an accounting strategy created an unfulfilled consequence that RTTT may not be able to come to life given the rising controversies surrounding it (cf. Owens, 2009).

Integrated Mathematics and Science

The publication of *A Nation at Risk* (1983) report provoked the writing of more than 300 documents (Bybee, 1993), some of which addressed a perceived need for national benchmarks, standards, and assessment for mathematics and science "literacy" that not only improved student achievement scores, but also increased the level of student understandings (DeBoer, 1991). Standards-based curriculum reform of the 1990s called for integration, connections, and links between disciplines and specifically between mathematics and science. Science education and mathematics education researchers saw the need to create tests that demonstrated authentic understandings of the natures of science and mathematics, rather than just measuring the size of the student's reservoir of memorized facts (e.g., Champagne, Kouba, & Hurley, 1999). This work was just getting well underway when the Bush administration mandated NCLB. In NCLB reform, the learner-centered processes and concepts advocated by the standards and supported by the learning literature were diminished in the wake of requirements for high-stakes student assessment and teacher-school accountability (Hurley & Padró, 2006; Padró & Hurley, 2005), which from the perspective of critics of NCLB lacked both public discussion and a sound theoretical foundation (Ravitch, 2010).

While research has been conducted on IMS for at least 60 years (Berlin & Lee, 2003), a presence of integration through "theoretical models and empirical research related to IMS courses, projects, and programs for preservice and in-service teachers has emerged in the last 12 years" (Berlin & Lee, 2005, p. 22). From time to time throughout the 20th century, review articles reported on the literature of IMS and the progress of integration in classrooms. The most recent of these provided both positive and negative evidence for the status of IMS just prior to NCLB (Czerniak et al., 1999; Hurley, 2001; Pang & Good, 2000). Berlin and Lee examined the IMS literature from 1990 through 2001 and found an increase of publications related to courses offered in schools of education.

Assumption and Hypothesis for the Study

This paper was based on the assumption that locating course offerings in the days of NCLB reflects the value that college/university preservice teacher preparation programs place on the integration of mathematics and science. Using the method that Gould (1996) called "interviewing a document" for the analysis of a literature review guided the development of a national survey of preservice teaching programs identified as having IMS courses or approaches to teacher preparation during 2001-07. Both the literature review and the study focused on three questions:

1. What was the reasoning behind the offering of an IMS methods course?
2. What were its successes and challenges?
3. What is the future of the integrated course?

The hypothesis driving the study was that the emphasis by state report cards on reading/language arts and mathematics did not help improve the learning of math and sciences at P-12

because it caused schools to de-emphasize science and thus stifled different approaches toward preservice teacher preparation in these fields. By comparing findings to historical data, no difference in the extent to which an IMS model is used to prepare new math and science teachers would be found.

Research Design and Methodology

The study began with a literature review of primary studies reporting on integrations of mathematics and science in HEI methods courses from 1991 through 2009 (representing the presence of national standards) was conducted. While the studies did not have to meet specific methodology criteria, they did have to be teaching mathematics and science methods courses in some integrated fashion; report on the successes and challenges of their integrations; and have preservice teacher training for the elementary, middle school, or high school levels of instruction. Sixteen studies were found that met the above criteria, representing nine states (based on the home state of the first author or the state identified as the study location): California, Colorado, Connecticut, Florida, Maryland, Montana, Ohio, South Dakota, and Texas. Ten studies were at the elementary level, two studied middle schools, two involved high schools, and two studies covered both middle and high schools.

The second step of the research study, the design of a national survey, was done in four stages:

Stage 1. Schools of education (SOE) were located for all states plus the District of Columbia using the website, www.univsource.com, which listed a total of 557. A state was selected and the pilot study was conducted on all the SOE within that state to verify the accuracy of the website and to examine responses to the research questions, which originally numbered five.

Stage 2. As a result of the pilot study, two questions were dropped from the survey to simplify it. All SOE websites and catalogs in the nine states represented by the 16 studies were searched for IMS methods courses. States were assigned to a graduate student who searched each school's website and catalog. This work was double-checked by either a second graduate student or one of the researchers. Of the 140 SOE in the nine states, 52 showed IMS methods courses in their catalogs. These 52 schools were contacted via email and asked the remaining three research questions; one follow-up email was done.

Stage 3. Eleven states (Alabama, Arizona, Arkansas, Illinois, Kansas, Maine, Nevada, New Hampshire, New Jersey, New York, and Pennsylvania) were randomly selected from the remaining 41 states plus the District of Columbia to have their SOE websites and catalogs searched in the same manner as in Step 2. Out of 138 SOE in these states, 70 schools with possible IMS methods courses were located and contacted using email; one follow-up email was done. A total of 278 SOE (49.9%) were now fully searched, with 122 directly contacted based on preliminary information obtained.

Stage 4. The 279 remaining SOE in the United States (located in the remaining 30 states plus the District of Columbia) were assigned numbers and a random number generator was used to select 25% of these to contact by mail. The department chairs at these SOE received a letter, containing both research questions and a stamped return envelope, along with a request to pass along the information to any IMS professor(s); one follow up was done by email.

Results

From the Literature Review

Table 1 describes the reasons given in the different studies analyzed as to why IMS methods courses were provided. These reasons fit within three broad categories: compliance with standards, a desire for program reform, and philosophical reasons.

Table 2 describes the successes and challenges (Question 2) found in the literature during this time from pursuing an IMS model. Extracted from the 16 studies were indicators framing

Table 1: Reasons from the 16 Studies as to why Universities Offered IMS Courses

Compliance with Standards (national, state, or NCATE accreditation)	Reform (school, program, or policies)	Philosophical Reasons (Constructivism or beliefs about integration)
Briscoe & Stout (1996)	Berlin & White (2009)	Berlin & White (2002)
Frykholm & Glasson (2005)	Lewis, Alacaci, O'Brien, & Jiang (2002)	Kelly (2001)
Haigh & Rehfeld (1995)	Lonning & DeFranco (1994)	Kotar, Guenter, Metzger, & Overholt (1998)
Koirala & Bowman (2003)	Miller, Metheny, & Davison (1997)	Stuessy & Nazier (1996)
Kretschmer, Sia, & Bagheri (1991)	Moseley & Utley (2006)	
McGinnins, Parker, & Roth-McDuffie (1999)		
Stuessy (1993)		

the analysis of data relating to Question 3 (which are not fully discussed in this paper due to space limitations).

Responses from the pilot study (Stage 1) provided positive evidence that the use of information from the website, www.univsource.com, was accurate enough to continue to use in the remaining steps. It also provided evidence that some SOE were continuing to teach IMS methods courses at both the undergraduate and graduate levels, causing the researchers to continue to Stage 2. Based on feedback from the pilot study participants, the number of research questions was shortened from five to the three identified in the previous section.

Table 3 presents results from the 16 identified studies (Stage 2), the SOE in each state (n=140), the number of integrated methods courses located in catalogs (52), the number of surveys returned by state (17), and the number of integrated courses verified by state (seven total). The return rate for the 17 responses to 52 surveys sent out was 32.7%, with seven integrated methods courses verified in four of the nine states.

Table 2: Successes and Challenges of Using an IMS Model in Preservice Teacher Preparation Identified in 16 Selected Studies

Successes	Challenges
Statistically significant outcomes for preservice teacher confidence (Kelly, 2001)	Preservice teachers perceived that problem solving in integration was only pertinent to mathematics (Briscoe & Stout, 1996)
Statistically significant increased beliefs in science teaching efficacy after taking a newly developed integrated course (Moseley & Utley, 2006)	Preservice teachers had difficulties designing problems that demonstrated higher-level thinking, needing additional time to develop integration expertise in another study (Miller, et al., 1997)
Improved attitudes toward teaching integrated mathematics and science (Lonning & DeFranco, 1994)	Preservice teachers considered mathematics as only a tool for science (McGinnis, et al., 1999)
Positive attitudes toward problem-centered learning (Briscoe & Stout, 1996)	Preservice teachers had difficulty with the difference in language between mathematics and science and lacked preparation for teaching mathematics (Koirala & Bowman, 2003)
Improved reflectivity and problem-solving processes were perceived to develop (Stuessy & Nazier, 1996)	Preservice teachers became frustrated with the challenges of integration and the lack of seeing integration in middle schools (Koirala & Bowman, 2003)
Improved preservice teacher curriculum designs and the teaching of integrated units (Kotar, et al., 1998; Kretschmer, et al., 1991)	Preservice teacher attitudes toward integration was lower at the end of teaching and barriers and challenges were seen as greater (Berlin & White, 2002; 2009)
Development of analytical skills (Stuessy, 1993)	Preservice teachers questioned their content knowledge and their abilities to integrate curricula (Frykholm & Glasson, 2005)
Increased knowledge of mathematics and science (Frykholm & Glasson, 2005; Stuessy, 1993)	Preservice teachers, while remaining enthusiastic for integration, also reported a very heavy workload (Haigh & Rehfeld, 1995)
Perception of student benefits from integration remained constant from beginning to end in preservice teachers (Berlin & White, 2002; 2009)	
High level of student enthusiasm for the integrated course (Haigh & Rehfeld, 1995)	
Preservice teachers receiving extra integration training held deeper conceptual understandings of integration and practiced integration in their teaching (McGinnis, et al., 1999)	
Researchers felt their course was successful in linking theory to practice (Kretschmer, et al., 1991); others felt that philosophical, theoretical, and logistical problems were overcome (Lonning & DeFranco, 1994)	

Table 3: Nine Searched States Represented by 16 Research Studies of IMS Methods Courses for Preservice Teachers

States	No. Studies by State	SOE in	Integrated Courses Found	No. Surveys Returned	No. IMS Courses Verified
California	2	42	8	2	1
Colorado	2	9	4	2	1
Connecticut	2	7	2	2	2
Florida	2	12	5	2	0
Maryland	1	10	2	0	0
Montana	1	3	0	0	0
Ohio	2	20	9	0	0
So. Dakota	1	2	2	0	0
Texas	3	35	20	9	3
Total	**16**	**140**	**52**	**17 (33%)**	**7**

Table 4: Random Sample of 11 Searched States with Surveys Returned and IMS Methods Courses Verified

Random Sample of States	SOE in State	Integrated Courses Found	No. Surveys Returned	No. IMS Courses Verified
Alabama	17	3	0	0
Arizona	4	3	1	0
Arkansas	7	5	2	1
Illinois	24	11	5	1
Kansas	6	1	0	0
Maine	3	0	0	0
Nevada	2	1	0	0
New Hampshire	3	1	0	0
New Jersey	10	6	5	4
New York	32	16	4	2
Pennsylvania	30	9	6	1
Total	**138**	**56**	**23 (33%)**	**9**

In Stage 3 (Table 4), 11 states were randomly selected to increase the number of states to 20 whose SOE websites and catalogs were searched. Representing 138 SOE, 56 integrated courses were located in their catalogs. Responses were received from 23 schools (32.9% response rate) that verified nine IMS methods courses in five of the 11 states.

At this point, 278 (50%) of the total SOE in the United States (557) were searched and surveyed. Surveys were then mailed to 69 (25% of the remaining SOE) randomly selected SOE that were located in an additional 25 states and the District of Columbia. This resulted in a return of 38 survey responses (55%). The number of verified IMS courses was five, as shown in Table 5.

Altogether, 347 (62.3%) of the 557 SOE in the United States had websites searched and/or were contacted directly for IMS methods course information. Overall, 78 SOE (22.5%) responded to surveys and 21 SOE reported the presence of IMS teacher education methods courses. This number represents 3.8% of SOE in the United States. Out of the 21 SOE reporting the presence of IMS teacher education methods courses, 20 of these actually provided reasons for the presence of the courses. These responses included the same three categories found in the literature review as well as additional reasons for integrating mathematics and science.

Integration successes and challenges were addressed by 18 of the 21 survey respondents. Successes included: students realizing the connections between mathematics and science (nine); increased student comfort and confidence with science and math (four); enjoyment of science and math (two); reduction in anxiety (two); lowering of redundancies caused by separate science and math methods courses (one); and, students learned to teach mathematics (one). Two responses were too general to classify. More integration challenges than successes were reported by the 18 methods teachers. Twelve discussed the lack of time for teaching everything needed in an IMS methods course, four mentioned the presence of both math and science anxieties, four were concerned about the lack of mathematics and science conceptual understanding in students, three wrote of the difficulty in finding professors with expertise in both mathematics and science, three talked about the difficulty of doing a good job of teaching math and the use of manipulatives, while 10 identified other unique challenges that were largely contextual.

Table 5: Random Sample of 69 SOE in 25 States and D.C. with Surveys Returned and IMS Methods Courses Verified

State	SOE Randomly Surveyed	No. Surveys Returned	No. IMS Courses Verified
Delaware	1	0	0
Georgia	4	2	0
Idaho	4	2	0
Indiana	4	3	1
Iowa	1	1	1
Kentucky	4	3	0
Louisiana	4	0	0
Massachusetts	4	1	0
Michigan	5	3	1
Minnesota	2	1	0
Mississippi	2	1	0
Missouri	4	2	0
Nebraska	1	0	0
N. Carolina	5	3	0
N. Dakota	1	1	0
Oklahoma	3	2	0
Oregon	2	1	1
Rhode Island	2	1	0
S. Carolina	1	1	0
Tennessee	3	1	1
Utah	2	2	0
Virginia	1	1	0
Washington	5	5	0
Washington D.C.	1	0	0
W. Virginia	1	0	0
Wisconsin	2	1	0
Totals	**69**	**38 (55%)**	**5**

In regard to Question 3, 11 of the 16 studies (69%) indicated that they would continue to integrate, while 15 of 19 (79%) of respondents said they would continue to integrate. This national survey contacted a total of 347 SOE (62.3%) across the United States in a search for the existence of IMS methods courses. The survey produced a small percentage of SOE (ranging from 5% to 7.3%) that are persevering in the current climate. These percentages are larger than those integrations of math and science found by Wright in 1950 (3.5%), but similar to those found by Bossing in 1955 (6.6%).

Discussion

Both NCLB and RTTT are products of Foucault's governmentality, the way in which government formulates a strategy to ensure an aim is achieved invoking models of practice interpreted through the lens of government's description of its own actions (Padró, 2013; Gibbon & Ponte, 2008). Implementation of policy under both pieces of legislation raise evaluation questions of the interorganizational networks required to make them successful (DeGroff & Cargo, 2009). Using governmentality as a conceptual framework emphasizes how the effect of policy limits the response to change (Ball, 1994 as cited in Fimyar, 2008) in a variety of contexts (Gillies, 2008). NCLB and RTTT had/has in mind documenting improvements in student learning, but under NCLB the gains in reading/language arts and mathematics came at the expense of other subjects. Results have been mixed as demonstrated by the National Assessment of Educational Progress (NAEP) math test scores: scores for fourth and eighth grades between 1990 and 2005 have increased, but the percentage of students performing at the basic level did not improve during this time (Kuenzi, 2008). The question now is whether RTTT's system-wide demand for STEM education will generate the desired documentable level of student learning that eluded NCLB in spite of the big assumptions held by proponents of the Act. What the research here shows is that looking at the education reform efforts of the late 1990s and beginning of the 21st century presents a picture that discourages differentiation and experimentation in finding better ways to teach math and science as reflected in how preservice teachers are prepared to teach these subjects.

Kegan and Lahey (2001) talk about the notion of *competing commitments* based on *big assumptions*. With states having to report on school performance based on test score results for reading/language arts and mathematics, there seems to be at least a *prima facie* connection. The competing commitments are demonstrating improved performance in the two key reporting areas by reducing instructional time for other subjects. The big assumption is that the most important thing is to be compliant

where one has to be. This makes compliance a zero-sum game based on a strategy that minimizes an institution's maximum loss (Padró, 2013). Arguably, the effect on preservice teacher education can be seen in the discrepancy between catalog descriptions and verified IMS courses in Tables 4 and 5, where there are fewer verified courses.

RTTT has some similarities with the National Defense Education Act of 1958 (NDEA) regarding targeting funds through grants for specific priorities. Although originally envisioned as short-term emergency legislation, its long-term impact on strengthening science, mathematics, and foreign languages (Title III) was deemed successful, particularly in the 1960s (Flattau et al., 2007). State surveys from the period suggested that "that better equipment and teacher training contributed to students' increased interest in Title III subjects" (p. III-4). One major difference between RTTT and NDEA, however, is that the latter was a reform movement based on collaboration between teachers and researchers (Jolly, 2009). As this has not been the case under NCLB and the grant process behind RTTT, the challenge that RTTT has to overcome is how both scientists and teachers have concerns on how high-stakes testing can inhibit effort to improve science education (Taylor, Jones, Broadwell, & Oppewal, 2008; Owens, 2009).

This national survey contacted a total of 347 SOE (62.3%) across the United States in a search for the existence of IMS methods courses. The survey produced a small percentage of SOE (ranging from 5% to 7.3%) that are persevering in the current climate, an increase from 1949, but not that much more from 1954. World War II is often blamed for the slowing of the integrated curriculum movement (e.g., Harvill, 1954); however, some blame the countertrend on how the federal government responded to Sputnik (Cohen, 1978). Nevertheless, Hurley's (2001) meta-analysis of the literature on integrated curriculum indicates that IMS has continued to generate interest as a viable preservice teacher preparation and school teaching model.

Conclusion

A report of this study's findings was first given in 2007 at the School Science and Mathematics Association annual conference (Padró & Hurley, 2007). At the time, only 14 studies had been identified as part of Stage 1 of the study. Subsequent reviews of the literature up to 2011 identified another two studies, and the additional data from these two studies were incorporated into the analysis. The inclusion of the studies did not alter results. Rather, revisiting and expanding the literature review from data collected during the time NCLB was officially in effect provides what Lincoln and Guba (1985) called *prolonged engagement* as a means to increase the probability of credible findings. The literature on IMS from 1991 to 2009 purports a preponderance of evidence supporting the teaching model in preservice teacher preparation (Table 2). Yet, AYP state report cards emphasizing reading/language arts and mathematics mean that NCLB took time away time from teaching other subjects, making science a low priority, especially at K-8 (Owens, 2009).

The benefits of an integrated curriculum model have been around since the *Eight Year Study* commencing in 1933 (Aiken, 1942). Yet, the mandated improvements under NCLB seem not to be too different than that found in the 1930s. What does this augur for RTTT? STEM, as a model for integration could encourage integration (e.g., Veenstra, Padró, & Furst-Bowe, 2012). RTTT Priorities 2 and 5 address STEM; however, RTTT may also not fully succeed in meeting expectations because the accounting mentality Ravitch (2010) refers to can still reduce focus to those measures defining accountability.

Under NCLB, IMS languished because science was not part of the AYP report card. Test scores in reading/language arts and mathematics improved, but this came at the expense of reduced time teaching other subjects, including science. Even then, in mathematics, NAEP scores showed that student performance at the basic level did not improve from 1990-2005 (Kuenzi, 2008) and the proportion of students not reaching the Program for International Student Assessment's (PISA) baseline Level 2 has not changed between 2003 and 2012—while performance in reading and science also has not changed much over time, remaining near the OECD average (Organization for Economic Cooperation and Development [OECD], 2013). One of the limitations students showed in math was the lack of applicability of mathematical concepts to real-world problems. The chances of RTTT succeeding when previous efforts fell short do not seem high given the track record.

Based on the evidence found in this study, it is difficult to disagree with Cody's (2013) argument that *groupthink* is at play in establishing educational policy and its consequences or agreeing with Marcuse's (1964) view of social one-dimensionality. The unintended consequences of NCLB in preservice teacher preparation programs may not dissipate because policy steering continues to define quality from a similar lens in RTTT. The creation of the Common Core is seen as a potential solution to improve PISA results (OECD, 2013), but even this report points out that there are other, non-curricular issues at play as well based on achievement gaps by low-socio-economic and minority students.

An often-used statement is that quality education depends on quality teachers. Results from focusing on mathematics and literacy have not generated expected results. It makes sense to take a serious look at classroom pedagogies and preservice teacher preparation to propose and support these new pedagogical

models. Policy driving educational reform is not about pedagogical experimentation, however, it is more about test taking rather than focusing on the elusive target of actual, meaningful student learning.

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