Database for curricular materials in security studies

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What would a database for curricular materials for the security professions look like? How would it be organized, and how could it be used by teachers and teaching institutions to improve practice?

A curriculum is a list of subjects for study. It is associated with both training and education, and somewhat less with socialization, although training (transferring skills and abilities), education (developing problem-solving, critical and creative thought) and socialization (inculcating values, attitudes and beliefs) are always intertwined.[1] A list of subjects for study, given sufficient detail, implies content, resources, and methods of evaluating students, and can be used to evaluate both a program's inputs and its outputs. Student achievement on assessment measures is an additional level of detail.

Purpose for Establishing a Database

Why would a database be helpful? Several professions use comparative databases of curricular and practicum delivery to accredit schools and professionals. The practice is widespread amongst medical, pharmaceutical, dental, legal, and engineering colleges, which strive to maintain or improve professional standards. In some cases the comparisons are continuous and ongoing (e.g. the Association of American Medical Colleges Curriculum Inventory and Reports) and in other cases they are intermittent and evaluative (e.g. the American Bar Association's Survey of Law School Curricula). *A Survey of Law School Curricula 1992-2002* by the Section of Legal Education and Admissions to the Bar (2004) provides a common rationale:

> "So often in matters of law school curriculum, legal educators ask, "*What are other law schools doing?*" anecdotal information can be powerful, yet incomplete. This comprehensive survey, the first in 18 years, was conducted to offer objective data on wide-ranging aspects of law school curricula at ABA-approved law schools, with special attention to changes, innovations, and trends in legal education that have occurred over the last ten years."[2]

A database of curricular materials would allow comparison of what professionals are learning in other places at comparable stages in their careers, and under comparable

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[1] See https://www.othree.ca/pcp/gserphome/gserp/blogs/training_education_and_socialization
[2] American Bar Association, accessed 12 March 2014, http://www.americanbar.org/content/dam/aba/migrated/legaled/publications/curriculumsurvey/Curriculum_Survey.authcheckdam.pdf

circumstances: how does the education that our students receive compare to the wider community of security professionals? It would allow for benchmarking: are we teaching more or less, at a higher or lower level, than other institutions? It might reduce and focus program and course development efforts: what programs, courses, or exercises are already available that might be adapted to our needs? These activities already go on, of course. National staff colleges typically bench-mark against other establishments as part of their normal development process, but these exercises are constrained by travel budgets, language, and existing lines of influence, which may change over time.

A nuanced and detailed database of curricular materials has enormous research potential: does it matter what we teach security professionals? Is organizational learning occurring over time? Are there characteristics or trends in the pedagogy, epistemology, ontology or teleology of security education that help to explain the attainment of levels of security or insecurity? Questions like these are asked of other professional education programs.

Databases are often established to answer specific questions, in a format idiosyncratic for the purpose. How are ethics taught (Robinson et al, 2008)? How does culture affect teaching (Higbee et al, 2010)? How does global society affect the training and education of police (Kratcoski and Das, 2007)? But in each of these cases the larger pool of data is hidden in the qualitative product of the research, so it cannot be queried easily on related subjects.

Existing curricular databases

There are examples of curricular databases that are helpful in preparing a database for security education, providing both negative and positive examples, and illustrations of the challenges.

Databases are shaped by their purpose because they are costly and time-consuming to assemble. If they are not shaped by a purpose, they may absorb a lot of resources and be unusable for any useful purposes, yet collecting data for the sake of collecting data is a common phenomenon in any large organization.[3]

Here we consider several types of database that might be useful for research on security education.

Universalizing institutional records

Britain's Higher Education Achievement Reports (www.hear.ac.uk) bring together student records on curricular and extracurricular performance in a single, standardized format, common to all UK institutions of higher learning, and accessible through the institution for at least four decades. It is intended to accompany the academic transcript to reflect activities such as fund-raising, team sports, leadership activities, and internships. The web site notes that the HEAR has been accepted by the European Commission as a

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[3] Even in business, where collecting and storing data is costly, much of it is not analysed. http://www.lifehacker.com.au/2013/11/the-big-data-we-collect-but-fail-to-analyse/ accessed 17 March 2014.

way forward to implement Diploma Supplement records, as agreed by Bologna Process signatories at the Berlin Ministerial meeting of 2003. It took nine years for one country in the Bologna Process to progress towards a solution for individual records in established universities; common records for security training and education establishments are not a likely prospect. Because HEARs are linked to individual students and subject to privacy, they are not very useful as a window on comparative curricula, but the process illustrates the utility of standardized reporting in a wider labour market.

In the context of security education, alliances and common-law areas constitute a wider labour market, for which it might be appropriate to retain comparable data on individuals with common credentials. Two recent initiatives for common staff college education amongst a number of countries (the Visegrad Four and the Nordic Defence Community) illustrate the need to be able to compare individual attainment of professional qualifications.

Systematic reviews of research

There are several models of systematic reviews of research relevant to teaching, which might be considered as free-form repositories of text data.

The Higher Education Empirical Research Database (from the Quality Assurance Agency of the UK) is a collection of published, peer-reviewed empirical papers on a variety of themes, including: Access and widening participation; curriculum (including learning, teaching, and assessment); economic and social context of higher education; graduate labour market; institutional management, staffing, and finance; quality assurance and enhancement; research; and student experience.[4]

The Campbell Collaboration has assembled similar collections of studies (www.campbellcollaboration.org) and some of these refer to curricula for police officers, though none for the military. The Campbell Collaboration is a consortium of scholars and practitioners concerned with evidence-based practice in the fields of crime and justice, education, and social welfare. The main mechanism for improving practice is the systematic review of studies that present empirical evidence related to specific problems. One example of a registered proposal for a systematic review is, "Training programs to improve attitudes, behaviours and skills of police officers regarding democratic values, civil rights, and human rights, and to reduce unlawful use of force by police officers." (www.campbellcollaboration.org/lib/download/1877/) This review intends to focus on studies of "educational training interventions" targeting any member or unit of public police in democratic countries (identified by the Democracy Index, 2010), using published and unpublished empirical studies of the effect of interventions on participants' behaviour and attitudes. Studies would be excluded from the review, "…if no training manual or general plan is available to allow clarity regarding the content of the intervention…"

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[4] http://heer.qaa.ac.uk/BrowseForSummaries/Pages/browseResults.aspx?t=8&spec=1

Disciplinary reviews

The American Political Science Association (APSA) provides an example of data collection on curricula within an academic discipline. The APSA report on departmental course offerings and prerequisites (2014) provides a summary of the courses offered and prerequisites by department. This is a cumbersome tool, produced intermittently and accessible only to department heads who use it for benchmarking and comparative analysis.[5] Unlike the medical and legal professions, there are no certification processes that require departments of political science to offer any particular combination of subject matter, so there is a lot of variety in course offerings. (In this respect, it resembles military education.) Separate surveys report on graduate employment, external funding, scholarships, and other metrics of departmental success, for which there are no security analogues. In the Canadian analogue, 56 departments of political science reported the fields within which their courses were offered (2011). There were as few as five and as many as 13 fields, with requirements also varying, from a minimum of one course in each of three fields to graduate, to four courses per field or specific courses as part of a prescribed sequence.

The UNICEF Curriculum Report Card (2000) is an example of a specific enquiry at a close-to-global level. It required UNICEF Education Program Officers from 59 member states to answer questions about life skills, peace education, gender, reading and writing skills, and learning outcomes in national primary school curricula. The responses were based on official government information on UNICEF related projects, and the interpretations and impressions of UNICEF officers in country. The 2000 report presents a baseline of information on curriculum in UNICEF countries, describes the curriculum development and implementation process, and shows the linkages between curriculum, teaching, and learning outcomes (UNICEF, 2000).

Professional reviews: the medical example

Medical education in the US is highly professional and well resourced, because it is also a multi-billion dollar business. It may not be a model to follow for international security education, because business incentives may run counter to those of human and national security interests. Nevertheless, the development of both comparative curricula and resources for medical education within the American states' system is a helpful model and may offer both frameworks and terminology that could be useful for developing curriculum studies for security education.

The Curriculum Management Information Tool (CurrMIT) is:

> "a password-protected online database offering an array of support services to help medical schools manage and report on curriculum information. Uses include detailed comparisons of curricula among U.S. and Canadian medical schools, trends in medical education, teaching methods and materials being used, and more."[6]

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[5] APSA Correspondence with the author, 12 March 2014.
[6] website of the Association of American Medical Colleges, https://www.aamc.org/services/currmit/183178/about_currmit.html accessed 14 March 2014

CurrMIT did not standardize key words, and allowed institutions to determine the form in which they described their programs, making it difficult to compare courses, modules, labs, practicums, and so on across institutions.

The MedBiquitous Consortium was established under the leadership of Johns Hopkins University School of Medicine, working initially on software architecture and electronic patient records, and moving on to competency specifications, e-learning, and curricula standards.

In 2011 the MedBiquitous Curriculum Inventory Working Group reviewed terminologies for instructional and assessment methods from CurrMIT, the Liaison Committee on Medical Education (LCME),[7] and the Accreditation Council for Graduate Medical Education (ACGME), among others. It developed a list of general terms describing learner activity. A list of resources to be used in conjunction with the instructional and assessment methods followed, making the nature of the activities more specific. These resources are housed on a private workspace including a wiki and other resources for the Curriculum Inventory Working Group.[8] The 2012 list includes 29 instructional methods, 18 assessment methods, and 22 resource types, each with definitions and examples (Curriculum Inventory Working Group, 2012) .

In 2013, the AAMC launched Medical Academic Performance Services (MedAPS), including three suites of tools: the Accreditation Standards Self-Evaluation Tool (ASSET); the Curriculum Inventory; and the ASSET Dashboard. ASSET is intended to help medical schools prepare for evaluation in accordance with national standards, and the dashboard will provide a one-stop portal for aggregate data reports and comparisons by 2016.

In January 2014, Curriculum Inventory and Reports (CIR) replaced CurrMIT to became the official repository of curricula for member colleges of the Association of American Medical Colleges (AAMC):

> "The AAMC's Curriculum Inventory (CIR) will be the premier benchmarking and reporting tool for medical school curriculum content, structure, delivery, and assessment. Medical schools that submit their data to the CIR will be able to compare their school's curriculum with those of other schools across the country. They'll also be able to compare their curriculum against other schools in different comparison groups, such as schools in the same region or schools of similar size. The reporting will be anonymous so that individual schools aren't identifiable. The CIR will provide graphical reports on aggregate and historical curriculum data with the aim to:
> - assist in curriculum evaluation;
> - educate curriculum committees and faculty;
> - enhance medical education research; and

[7] Liaison Committee on Medical Education (LCME) http://www.lcme.org/overview.htm accessed 16 March 2014

[8] Curriculum Inventory Working Group, http://www.medbiq.org/curriculum_inventory accessed 16 March 2014

- inform legislators and the general public."[9]

A December 2013 presentation by Terri Cameron, Senior Program Manager for MedAPS, described the results of the Curriculum Inventory Working Group efforts. Institutions report their benchmark assessments, educational methods, and common competencies across specialties in a variety of different forms. The aim was to put this into a shareable format using either institutional or vendor systems, so that data could be exported in standard formats (XML, CSV, Access or Excel). The generic hierarchy of the standardized database is its main advantage over CurrMIT.

In the CIR database, a curriculum is made up of many educational and assessment events. Events have metadata, which is descriptive information about the events. Curricula may reference expectations, such as objectives, competencies, or learning outcomes. An event may be intended to address one or more expectation, and an expectation may be associated with many events. Events can be organized into blocks of instruction, usually delivered in a sequence. These sequence blocks—courses, modules, years, phases, etc.— are put together to make up a curriculum. There may be recurring events associated with more than one sequence block. Sequence blocks also have metadata. Curricular themes (or integration blocks) include a group of blocks, and there may be many ways to combine them. An integration block may link to many events, blocks or objects. Instructional and assessment methods and teaching resources help to define the way in which the curriculum is delivered. In the case of medical education, the curriculum management systems developed by individual institutions (or vendors servicing them) are matched to the standardized vocabulary in a format compatible with the MedBiquitous data exchange standard, to populate a curriculum inventory. Institutions will use the ASSET dashboard to input curriculum changes and ask questions, and the ASSET to match their curriculum against those of other institutions, to confirm that they are meeting competency expectations (Cameron, 2013).

Figure 1 Sample comparative report (Cameron, 2013)

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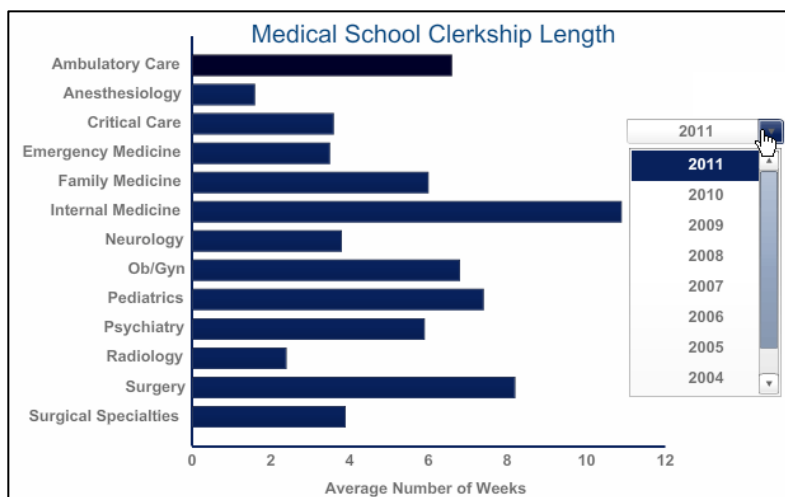
[9] One45 website, http://www.one45.com/aamc-cir accessed 12 March 2014

Figure 1 illustrates the kind of search over time that is possible for benchmarking a specific piece of information like duration of medical clerkships. Comparable data in the security field might be duration of supervised patrolling for new police officers, time-in-rank requirements as part of professional education, total length of mid-career staff course, total time on course for progression in rank, and so on. These examples imply other forms of standardization, such as international standard rank and appointment equivalents, tables for which already exist.

CIR highlights a series of commercially available services from 13 participating curriculum management system vendors like Vancouver's one45, which service universities in general, and particularly medical, pharmacy, and veterinary schools, and their deans, directors and administrators.

> "Since 2001, one45 has become the *de facto* standard for medical education administration at both the graduate and undergraduate level, and is now used by more than 40 medical schools across North America, including 90% [all but two] of schools in Canada."
> (http://www.one45.com/why-one45/history/).

The key services of one45 include: schedules; clerkship lotteries; curriculum management; evaluation; case logs; grades; and accreditation reports. Although they are designed for use within a single institution, services for deans and directors allow senior administrators to compare what is being taught, how effectively it is being learned, at one institution, with similar statistics from others.

Database Models

Since 2008, the Global Security Education Project has accumulated about 500MB of data in two forms. The first is tabular data in Excel, selecting for country and region, and for institution, but incorporating descriptive data about individual countries (proxies for size, wealth, power, democracy, functionality, and intellectual capital, for example). The second is narrative data in Word or as PDFs, sorted by country and institution (police, paramilitary, military). Neither of these comes close to a database of curricular materials.

We have collected sample curricula at institutional level from open source (online) descriptions for police, paramilitary and military institutions at entry, mid-career and senior officer level, but these are superficial. See Table 6 of Last, Emelifeonwu, and Langlois (June 2011), "Separate Worlds: A Comparison of Police and Military Education…" (http://www.davidmlast.net/ARP_Research/ERGOMAS_2011_files/Separate%20worlds-rn3.pdf)

To get beyond this superficial description, we need more details about the content of courses, organized in an accessible way.

Consider three models of database.

One big bucket – throw anything into it, and let search engines find what you're looking

for. This is the Internet with Google, or the current www.othree.ca/globalsecurity web site, which has minimal structure to the wiki (country entries, but people could start an entry on anything) and none to the documents, blogs, or forums.

Finding aid – a tabular list or index of the things most likely to be searched for, organized according to community needs. Most libraries' archives have finding aids or descriptive inventories that help to locate commonly searched parts of their inventory. Good finding aids are designed with the user in mind, and may be part of a two-stage search strategy: find the group of documents most likely to yield the information sought, then search within that group using other tools.

Sorted buckets – group materials according to characteristics (which might be defined by a user-oriented finding aid).

Desirable characteristics of a curricular database

A useful database of curricular materials would have the following characteristics:

- It should be crowd-sourced to permit growth within a professional community over time, because curricula are never static, and the uses and comparisons sought will change over time
- While open to a non-commercial professional community it should not be universally open, in order to encourage sharing
- It should make no demands about formatting, because every institution has its own rules, formats and procedures, and no-one wants to invest time in changing formats
- It should be electronic to permit tagging, searching, and comparison, although photographic PDFs are acceptable (OCR is not ideal, but getting better all the time)
- It should be in open-source or accessible software without licensing fees, or it should sit as a pool of documents that are searchable with such software
- Documents should not have to be manually inputted, uploaded, or changed in any way beyond making them available online through a link
- It should permit temporal distinctions, identifying what was once taught but has been removed, and what has been added.

Tagging and organizing curricular data

Tags could be envisioned for at least four sets of characteristics inherent to any individual piece of curricular information:

- Size/type or level of enterprise delivering the material (e.g. national force, university, police college)
- Type of material (e.g. course, seminar, exam, exercise)
- Subject of material (e.g.
- Intended audience for material (e.g. police, paramilitary, military, entry, mid-career, senior officer)

Ideally tags should be confined to a matrix small enough that it can be easily kept in mind

while coding; larger matrices lead to coding inconsistencies. On the other hand, new categories will emerge and any matrix has to be expandable, but growth beyond a certain size will make tagging more difficult. Conscious conflation of categories may therefore be useful. Any given data point can include tags for as many parent categories as necessary, but doesn't have to include any.

- We can conflate size/type and level as "granularity": A course from a training centre (like investigating terrorist financing) might be prescribed by a regime (UNODC) or national authority (FBI), offered credit by a university, or
- We can conflate subject and audience: it may be difficult to distinguish the intended audience. "Combined arms operations" may be clearly intended for military audiences, but "combined arms operations in internal security" will be important for police and gendarme operations, too. With an adequately detailed description of content and meaning, subject and audience tags can be usefully combined.

We might reasonably begin with one big bucket of data and use a constrained matrix of tags to sort all contributed data into the most useful buckets for individual or institutional users.

For specific users like the UN Directorate of Peacekeeping Operations, general tags like "peacekeeping" or "police in peacekeeping" won't be adequate; lists of course titles and course material will be needed.

Granularity

If we think in terms of levels of increasing granularity, we might define the multiple levels. It is not necessary to identify a full sequence for any given data point. For example, if we know that something looks like a simulation, we don't have to identify the course, program, faculty and university with which it is associated (there might be many). Of course, it will be helpful to have enough information to be able to find more if we need to, but incomplete and transient information will always be a feature of a database like this.

The following levels of granularity are suggested:
1. Regimes – a system or way of doing things, sometimes established by fiat (e.g. ministry of education) but often emerging over time from interaction of peer institutions, seeking to set themselves apart from other institutions, by doing things in a reliable and systematic way. The Bologna process is an international regime. University accreditation is usually a national regime.
2. Institutions (ranging from university-like, to training centres or institutes, which may not have levels 2, 3, or 4 below, depending on scale and function). It is usually at the institution level that rules are articulated about the conduct of programs and courses, quality assurance standards are established, and individual qualifications for delivery are assessed. These rules and standards are usually established to meet external regimes or requirements by groups of peers.
3. Faculties (usually within universities, such as arts, science, engineering, medicine, law, etc, consisting of a group of related departments, disciplines, centres or

institutes)
4. Departments (usually based around disciplines, like sociology or criminology)
5. Programs (usually within, but often cutting across disciplines to meet a particular professional need)
6. Courses
   a. Course-descriptions (usually a few hundred words)
   b. Course outlines and reading lists (usually 10-15 pages)
   c. Course assignments (may be individual or collective,
7. Supporting materials, usually generic for the institution rather than specific to individual courses
   a. Library holdings
   b. Journal subscription lists
   c. Reading lists
   d. Prescriptive handbooks or guidelines (usually practical, implying training rather than education, i.e. prescribed or approved actions, checklists, etc.)
   e. Professional journals
8. Examination materials (usually completed under controlled circumstances, see also course assignments above, linked to specific courses, but may be linked to groups of courses and/or practical work for certification)
9. Exercises or practicums (usually consist of scenarios, actors, event-lists, role-plays, etc.)
   a. Table-top exercises (TTX)
   b. Command post exercises (CPX)
   c. Field exercises (FTX)
   d. Simulations and role-play exercises (e.g. model UN, crisis response, etc)

Subject/audience

The most generic layers of subject and audience have been defined by the project as: police, paramilitary, and military, at entry, mid-career, and senior officer level. These groupings are not very informative. The "lowest common denominator" categories identified from an initial survey of institutional curricula (Last, Emelifeonwu, and Langlois, 2011) and listed in Table 1 get us closer to the mark. But the subject headings in Table 1 will still be too generic for anyone looking for content: exercises for disaster management; simulations for civil-military relations; junior-level university courses on approaches to studying military history; staff college courses on maritime strategy.

This is where one big bucket is useful. The more specific the query, the less useful general tags will be. The technique will therefore involve word-search on the largest possible body of *relevant* data. Although much of the of the material may be accessible through an Internet search, the same searches on the world-wide web will yield far too much extraneous material. A domain search within the entire global security site, using the search function, should find both all database material and any mention of the key words in blogs, wikis or forums.

Table 1 Common Subject Elements of military, police and paramilitary education

Common Elements in Mid-Career Military Staff Colleges	Common Elements in mid-career Police and Gendarme Officer Education
• Profession of arms • Command • Leadership and ethics • Defence and security studies • Defence management • Law of armed conflict • Military history • International relations • Civil military releations • Joint and combined operations	Police: • Law • Criminology • Administration • Incident management Gendarmes • Law • Administration • Public order operations • Crowd management • Specialties (e.g. border control)

Some examples help illustrate how the database might work. NATO's Reference Curriculum for Generic Officer Professional Military Education has been uploaded to the web site. It provides an example of a regime-level document, which specifies general subject areas to be studied at pre-commissioning, junior officer, and intermediate/senior officer levels. It is one of the documents that is found by a search of the topic, "profession of arms" on the global security web site. The first hit locates the document, and a search within the document provides an outline of the material and other hits discussing "profession of arms". Because it is a generic reference curriculum rather than an actual course outline, it tells the searcher what should be covered in professional military education at each stage in career development, not what is actually covered by any given course offering in a particular country.

Figure 2: search entire domain in www.othree.ca/globalsecurity

The Jakarta Center for Law Enforcement Cooperation (JCLEC) provides another group of examples. Described in research notes from the Indonesia visit, February 2014, JCLEC issues annual reports that list, for example, courses sponsored by the Australian Federal Police, the Government of Canada, the Danish Government, the UK, the UN Office on Drugs and Crime, the European Commission, and a long list of official visits and planning events. The annex lists 81 courses with a total of 2118 participants. Including a single annual report from JCLEC on the global security web site, results in a search of the word "terrorism" finding the title "Counter Terrorism Investigations Management Course".   Finding the course material, however, would require contacting the trainer's archive of JCLEC, unless the trainers decided to upload the material. Similarly, a search of "peacekeeping" would locate the label, "Regional Meetings for the Development of Strategic Guidance Framework for International Police Peacekeeping," and a few sentences about the meeting, but it would not find the Strategic Guidance Framework. An Internet search of the phrase, "Strategic Guidance Framework for International Police Peacekeeping" finds the site for the International Challenges Forum (http://www.challengesforum.org/en/Forums).

Order of magnitude

How big can this get? Consider various alternatives – minimal is just links, but then you can't do in-situ content analysis, consider how NVIVO works…is that worth it?

Conclusion

For now, our best approach is "one big bucket" with a good search tool. As the forms of use by institutions and researchers become clearer, we can refine the structure and tagging of the data.

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Research notes

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Figure 3 Zualkernan et al, 2012

ABSTRACT

Success of Wikipedia has opened a number of possibilities for crowd sourcing learning resources. However, not all crowd sourcing initiatives are successful. For developing countries, adoption factors like lack of infrastructure and poor teacher training can have an impact on success of such systems. This paper presents an exploratory study to determine if teachers in a developing country are able to create quality multiple-choice questions for primary school students. An adoption model is developed and evaluated to ascertain if the teachers would actually contribute to such a Wiki. Results are that, given student learning outcomes, content constraints, and a Bloom's assessment level, a reasonable number of teachers were able to formulate quality questions, and that there is a strong intention to use such a system. Teachers with high intention to adopt also had a better attitude, enjoyed making questions and found the process easy to use. However, there is no obvious relationship between the intention to use and an ability to pose good assessments. In addition, there is no obvious predictor of where the good question contributors came from.

Engineering curriculum assessments

European network for accreditation of engineering education (http://en.wikipedia.org/wiki/European_Network_for_Accreditation_of_Engineering_Education)

ABET http://www.abet.org/about-abet (originally, 1932, the Accreditation Board for Engineering and Technology, but since 2005, just ABET), "ABET is a nonprofit, non-governmental organization that accredits college and university programs in the disciplines of applied science, computing, engineering, and engineering technology. ABET accredits over 3,100 programs at more than 670 colleges and universities in 24 countries. ABET provides specialized, programmatic accreditation that evaluates an individual program of study, rather than evaluating an institution as a whole.
ABET accreditation, which is voluntary and achieved through a peer review process, provides assurance that a college or university program meets the quality standards established by the profession for which the program prepares its students.
ABET is recognized by the Council for Higher Education Accreditation (CHEA).
- See more at: http://www.abet.org/about-abet/#sthash.CUtSNmxF.dpuf

Certified General Accountant (CGA) international standards

International Accounting Education Standards Board

"The International Accounting Education Standards Board (IAESB) is an independent standard-setting body that serves the public interest by establishing standards in the area of professional accounting education that prescribe technical competence and professional skills, values, ethics, and attitudes."

International federation of accountants, http://www.ifac.org/Education/

ISO 9001 Standards

- See the debate on ResearchGate from 2012, http://www.researchgate.net/post/Do_the_benefits_of_ISO_9001_certification_among_colleges_and_universities_outweigh_its_limitations

http://bid.ub.edu/19balag3.htm The use of ISO 9001 quality standards in higher education institutional libraries: [note that Malaysia and Singapore both use ISO 9001 standards…

International Standards of Education

UNESCO International standard classification of education, started in 1997, revised in 2011,
http://en.wikipedia.org/wiki/International_Standard_Classification_of_Education
Now goes to 8 levels (see table in wiki article), but Europe's glossary and published data still use the 1997 scheme, as does the
http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:International_standard_classification_of_education_(ISCED)

http://www.csiet.org Council for standards on international educational travel, mainly with secondary and undergrad education in mind