Chapter 5. Quality assurance of the Colombian tertiary education system

This chapter examines the current status of quality assurance in Colombia's tertiary educational system. It does so by looking at the institutions involved, the processes in the certification of programmes and institutions, the history of the quality assurance legislation, and the mechanisms and instruments used for the evaluation of outcomes.

The chapter closes with a summary of main findings and recommendations, including suggestions addressing the need to (i) increase the resources devoted to quality assurance, (ii) achieve independence of organisations involved in quality assurance, and a strengthened role for ICFES (iii) introduce stricter controls for Registration of Qualified Programmes, and (iv) continue the improvement of instruments designed to evaluate outcomes and value added, as in the SABER 11 and new SABER PRO exams.

Introduction

How best to assure the quality of tertiary education institutions and systems is one of the most discussed issues in education. Most OECD countries have processes in place, both to measure the quality of programmes and to assess their outcomes. Given the importance of tertiary education for the social and economic development of a country, there is a clear policy need to establish accountability processes and mechanisms for the review, assessment and accreditation or certification of tertiary education quality.

The process of quality assurance and institutional and programme accreditation in Colombia is structured around two institutions: CONACES, the National Intersectoral Commission for Higher Education Quality Assurance, and the National Accreditation Council (CNA, *Consejo Nacional de Acreditación*). CONACES has a consultative function for the Ministry of National Education (MEN), and its main task is to advise the Ministry on whether programmes deserve to be put onto the Register of Qualified Programmes, on which all Colombia tertiary education programmes must

appear to be allowed to operate. CONACES has also been charged with advising on the establishment of programmes, including graduate programmes.

The second institution, the CNA, also a consultative organ of the Ministry of National Education, advises on whether tertiary institutions and programmes which have chosen to apply for high quality accreditation should be awarded this status. The CNA is a purely academic council which operates under guidelines from the CESU, the National Council of Higher Education.

Colombia's tertiary education system faces major quality challenges. Recent rapid expansion, a continuing need to increase coverage further, increasing diversity of programmes and institutions, the competitiveness pressures of increased globalisation and the need to cater for students from an ever-widening ability range have together created a situation in which Colombian tertiary education institutions are expected to do a great deal, with limited and unequally-allocated resources, and to do it to high quality standards that will meet the needs of both students and their future employers.

One of the main barriers to the integration of the lower socio-economic sectors into the Colombian labour market is their lack of adequate and relevant skills. It is therefore extremely important that the country establishes quality assurance arrangements designed to ensure that tertiary education improves the employability and labour market prospects of all the young people who enrol in it, but particularly those who enrol in the institutions which cater for the most students in the lower socio-economic groups (World Bank, 2009).

Historical perspective

Law 30 of 1992 opened up the possibility of introducing new degree programmes in any university. Tertiary education institutions had to inform ICFES (then known as the Colombian Institute for the Promotion of Higher Education) of their new programmes, and ICFES would register them on SNIES, the National System of Higher Education Information. There were limited opportunities to ensure quality because, although both CESU and CNA had set quality guidelines, neither of these institutions had been given the necessary regulatory power to influence the quality of the programmes.

This lack of adequate quality regulation continued through the 1990s, while the number of programmes grew apace, from 1 800 in 1991 to almost 3 000 in 1997. Decree 272/1998 finally established that all academic programmes would need to achieve minimum requirements, and the responsibility for this quality control was delegated to the CNA.

Finally, with the creation of CONACES (Decree 2230/2003), the Register of Qualified Programmes was established. To get their programmes onto the Register, tertiary education institutions had to prove that they met minimum quality requirements. At the same time, the CNA was charged with administering the voluntary high quality accreditation system. Decree 2904/1994 defined the accreditation function, and two agreements from CESU established accreditation policies and the by-laws of the CNA.

ICFES was given the sole authority to evaluate the outcomes all levels of education, including tertiary education. ICFES devised what are now known as the SABER PRO tests, but were originally called ECAES (*Exámenes de Calidad de la Educación Superior*), which evaluates achievement outcomes of students at the end of their undergraduate programmes, to establish the level of basic and specific competences achieved by students in each of the fields of study.

These tests were voluntary to start with, but from 2009 were made mandatory for all tertiary education students at the end of their programmes. The SABER PRO system attempts to measure the institutional input variables and the outcomes of educational programmes in order to inform policy and educational strategies (MEN, 2011*a*).

Articulation of the various quality assurance components

The overall quality assurance system in Colombia is composed of various entities which have specific functions and audiences, as Table 5.1 shows. Students, programmes and institutions are each evaluated. For students, access to the system of tertiary education is determined by individual institutional requirements and usually by the results of standardised national exams (SABER 11). Their continued progress towards their degrees and qualifications is monitored by the tertiary education institutions, and their exit requirements include national standardised tests (SABER PRO), as well as institutional requirements. For programmes, their creation and operation is regulated by CONACES, which also grants access to the Register of Qualified Programmes. Additional voluntary high quality accreditation for both programmes and institutions is granted by the CNA, advising the CESU. The CESU was created in 1992 by Law 30. It is formed of 16 members elected by the organisations and institutions they represent. CESU's functions are primarily related to policy, co-ordination and nominating members of CONACES and the CNA. Currently, CONACES is organised by *salas* (desks), one which evaluates the academic standing of master's and PhD programmes and another which reviews applications for the establishment of programmes.

Table 5.1 **Institutions in the quality assessment process in tertiary education**

Students	•	Admissions (ICFES, TEI)
	•	Progress (TEi)
	•	Graduation (ECAES, TEI)
Programmes	•	Register of Qualified Programmes (minimum standards) (CONACES)
	•	Functioning (CONACES)
	•	High Quality Accreditation (CNA)
Institutions	•	Register of Qualified Programmes (minimum standards) (CONACES)
	•	Functioning (CONACES)
	•	High Quality Accreditation (CNA)

Source: Presentation made by the Minister of National Education to the review team (MEN, 2011*b*).

In 2010, the CNA decided to undergo an external evaluation process with the collaboration of INQAAHE (the International Network for Quality Assurance Agencies in Higher Education) and RIACES (the Ibero-American Network for Higher Education Accreditation). The process was entrusted to an international panel of four experts, of whom two were appointed by INQAAHE and two by RIACES, two were from Latin America and the other two from Europe. Recently INQAAHE has awarded a five-year certificate confirming that the CNA adheres fully to INQAAHE's Guidelines of Good Practice.

Assurance of minimum standards

The role of ensuring that both programmes (technical, professional, technological, university, specialisations, master's and doctorates) and institutions meet minimum standards is one of the main functions of CONACES. CONACES consists of 33 academic members, selected by the CESU to represent a variety of areas of study and geographic regions. Three also represent MEN, ICFES and COLCIENCIAS, two also represent CESU and CNA.

Initially regulated by Decree 2566 of 2003, under Act 1188 of 2008 a system was put in place to ensure minimum quality standards. Decree 1295 of 2010, which currently regulates the system, stipulates that to be admitted to the Register of Qualified Programmes, programmes must meet fifteen minimum quality-related conditions, in the following areas.

1. Academic denomination of the programme.
2. Justification of the programme.
3. Curricular considerations.
4. Organisation of formative activities by academic credits.

5. Research orientation.

6. Social projection.

7. Selection and evaluation of students.

8. Academic personnel.

9. Educational media.

10. Infrastructure.

11. Academic-administrative structure.

12. Self-evaluation.

13. Policies and strategies for follow-up of graduates.

14. University well-being.

15. Financial resources.

This same decree defines the Register of Qualified Programmes for both undergraduate and graduate cycles, and establishes that only after the above-mentioned minimum quality conditions have been verified by academic peers, can the MEN decide to authorise the programmes. It also establishes that once on the Register of Qualified Programmes, programmes – including programmes based on propaedeutic cycles – must renew that status every seven years.

It was also established that a tertiary education institution can offer academic programmes anywhere in the country, as long as it demonstrates that the fifteen minimum conditions have been verified. It makes clear that there is no limit on the number of programmes an institution can offer on sites other than its main location. It also establishes a mechanism for inspection and control of academic programmes, as well as a mechanism for the improvement of any deficiencies noted.

In order to verify that minimum quality standards are met, so as to authorise the establishment of new institutions and programmes, the Ministry of National Education, with CONACES as the advisory body, has established a series of steps for the institutional evaluation of the documentation presented by the institutions, and the verification of reports from external academic peers. These steps include:

- Formal application through the TEI.

- Review of documentation.

- Selection of academic peers.

- Logistic co-ordination of the peer review process and other consultants and commissioners.

- External audit by academic peers.

- Evaluation of documentation and external evaluation reports.

- Granting or not of the certification of compliance issued by the Ministry of National Education.

Of the 11 593 programmes offered at the national level by tertiary institutions, 60% (6 950) are at undergraduate level and 40% (4 643) are specialisation, master's or doctoral level programmes.[1] The distribution of programmes on the Register by level is shown in Table 5.2, the distribution by area of studies in Table 5.3.

Table 5.2 **Programmes on the Register of Qualified Programmes by level**

Level	Number of programmes[1]
Professional technical	760
Technological	1 566
University	4 216
Specialisation	3 384
Master's	791
Doctorate	123
Total	**10 840**

Note (1): Does not include programmes at the Universidad Nacional, but does include SENA programmes.
Source: MEN, SACES. Information as at 2 October 2011.

Table 5.3 **Programmes on the Register of Qualified Programmes by area of studies**

Area	Number of programmes[1]
Agronomy, veterinary and related fields	465
Arts	381
Education	1 556
Health sciences	1 067
Humanities and social sciences	1 635
Economy, administration, accounting and related fields	3 004
Engineering, architecture, urban studies	2 621
Mathematics and natural sciences	111
Total	**10 840**

Note (1): Does not include programmes at the Universidad Nacional, but does include SENA programmes.
Source: MEN, SACES. Information as at 2 October 2011.

Table 5.4 shows the total number and percentage of programmes by level, the percentages of each offered by public and private institutions, and the percentages on the Register.

<p style="text-align:center">Table 5.4 Programmes offered nationally and percentages on the Register of Qualified Programmes</p>

Level	Number of programmes offered[1]	% of all programmes offered	% in public TEIs	% in private TEIs	% on Register
Technical	906	8%	41%	59%	83.88
Technological	1 727	15%	49%	51%	90.68
University	4 317	37%	39%	61%	97.66
Specialisation	3 538	31%	31%	69%	95.65
Master's	931	8%	52%	48%	84.96
Doctorate	174	2%	68%	32%	70.69
Total	**11 593**	**100%**	**40%**	**60%**	-------

Note (1): Includes SENA and UNAL programmes.

Source: MEN, SACES. Data as at 2 October 2011.

Voluntary accreditation of high quality standards

This voluntary high quality accreditation is carried out by the CNA, which represents the academic and scientific community. Its most relevant functions are: *(i)* to guide the institutions in the self-evaluation process; *(ii)* to set the quality criteria, instruments and technical indicators for the external evaluators to use; *(iii)* to carry out the final evaluation and to make recommendations to the MEN. The CNA is composed of seven members. These are nominated by CESU to serve for a period of five years, after which they cannot be re-appointed.[2]

The voluntary high quality accreditation (VHQA) process is designed to achieve continuous self-evaluation, self-regulation and institutional/programme improvement. It is carried out following guidelines established by the CNA for institutional and/or programme accreditation, as well as for the VHQA of master's and doctoral programmes.

VHQA of programmes

Factors taken into account for the high quality accreditation of undergraduate programmes are:

- Institutional goal and mission
- Students

- Professors

- Academic processes

- Institutional well-being

- Organisation, administration and management

- Alumni and impact on society

- Financial resources and infrastructure

For graduate programmes, three additional factors are included:

- Research, new knowledge/artistic production

- Articulation with society and innovation

- Internationalisation and insertion in scientific networks

Each one of the factors is associated with certain characteristics that have been identified as indicators of high quality programmes in tertiary education, and which define the factor as well as help to establish the expected level of performance. These characteristics have empirical referents, or indicators, including quantitative and qualitative information, which describe each characteristic and provide observable evidence of performance in a given academic context.

The process of high quality programme accreditation has the following steps, which on the average are currently completed in 11.4 months (2010 data).[3]

- Initial conditions set

- Self-evaluation carried out by programme staff

- Visit by external peer evaluators

- Report from the external peer evaluators

- Comments from programme staff and rector

- Final report from CNA

- Accreditation decision from the Ministry of National Education

Table 5.5 shows the outcomes of VHQA of programmes by the end of 2010 – making clear that this has been a very active process in Colombia.

Table 5.5 **VHQA Programme outcomes, 1998-December 2010**

	Basic Indicators of VHQA Programme (1998-December 2010)	Number of programmes
1	Number of programmes evaluated	1 213
2	Number of total accreditations granted	1 046
3	Number of programmes not accredited (on this occasion)	167
4	International evaluations for accreditation	3
5	Number of programmes with first (primary) accreditation	762
6	Number of re-accredited programmes	284
7	Number of programmes with current accreditation (10/2011)	646
8	Number of programmes with lapsed accreditation (12/2010)	139
9	Number of programmes under re-accreditation (12/2010)	76
10	Number of programmes which have not began re-accreditation (12/2010)	63
11	% of programmes with lapsed accreditation which went for re-accreditation	83.7
12	% of programmes with lapsed accreditation not seeking re-accreditation	16.2
13	% of programmes with lapsed accreditation over all accredited programmes	3.8
14	% of programmes which have not obtained accreditation	14

Source: CNA Presentation, October 2011.

Table 5.6 shows undergraduate programmes with current VHQA by area of studies. By far the highest number of accredited programmes is in the field of engineering, architecture and urban studies, followed by humanities and social sciences and then economy, administration and accounting. Table 5.7 breaks down the same programmes by type of tertiary education institution. The percentage of programmes with VHQA rises with institutional level.

VHQA of institutions

Table 5.8 shows the number of institutions with high quality accreditation and how this rose over the years 2007-2011. By 2011 there were 23 institutions with VHQA (9 public and 14 private), representing 8% of the 288 TEIs in Colombia. Table 5.9 lists them. Table 5.10 shows the percentages of public and private universities with this status. Though nine public institutions have VHQA, only seven of them are universities coming under the auspices of the MEN – the other two are military schools under the auspices of the Colombian Ministry of Defence – therefore the percentage of private universities is higher.

Table 5.6 **Programmes with current VHQA by area of studies**

Area of studies	Number of programmes
Agronomy, veterinary and related fields	16
Fine arts	17
Educational sciences	61
Health sciences	72
Economy, administration, accounting and related fields	97
Engineering, architecture, urban studies	236
Mathematics and natural sciences	36
Humanities and social sciences	111
Total	**646**

Source: CNA, 2 October 2011.

Table 5.7 **Programmes with current VHQA by type of TEI and VHQA programmes as percentage of those offered nationally by each type**

Type of TEI	Public institutions	Private institutions	Total	% of programmes with VHQA
Technical	4	2	6	0.8
Technological	15	9	24	3.1
University Institution	33	58	91	11.9
University	348	293	641	84.1
Total	**400**	**362**	**762**	**100**
Percentage	**52.5%**	**47.5%**	**100%**	

Source: CNA, August 2011.

Table 5.8 **Total number of tertiary education institutions (TEIs) and number of TEIs with VHQA, 2007-11**

Year	TEIs	TEIs with VHQA
2007	279	13
2008	280	15
2009	283	16
2010	286	20
2011	288	23

Sources: CNA and MEN, SNIES (October 2011).

Table 5.9 **Public and private tertiary institutions
with full institutional VHQA**

Public	Private
- Universidad de Antioquia	- Universidad de los Andes
- Universidad Industrial de Santander	- Universidad EAFIT
-Universidad Tecnológica de Pereira	- Universidad Externado de Colombia
- Universidad del Valle	- Fundación Universidad del Norte
- Universidad de Caldas	- Pontificia Universidad Javeriana
- Escuela Naval de Suboficiales ARC Barranquilla	- Universidad Nuestra Señora del Rosario
- Universidad Nacional de Colombia	- Universidad de la Sabana
- Universidad Pedagógica y Tecnológica de Colombia	- Universidad Pontificia Bolivariana
- Escuela de Suboficiales de la Fuerza Aérea Colombiana Andrés M. Díaz	- Universidad de la Salle
	- Universidad de Medellín
	- Escuela de Ingeniería de Antioquia
	- Universidad ICESI
	- Universidad Tecnológica de Bolívar
	- Universidad Santo Tomás

Source: MEN, SNIES.

Table 5.10 **Public and private universities, and percentages
of each with VHQA as institutions**

Type of TEI	Public	% public with VHQA	Private	% private with VHQA	Total	% total with VHQA
University	32	21.9	48	29.2	**80**	**26.25**

Source: MEN, SNIES.

Since 2008, the CNA has worked to achieve continuous improvement in the national VHQA system. And in 2010, institutional re-accreditation began. (How soon institutions have to apply for re-accreditation depends on the length of the original accreditation, which can last from three to ten years.) Four institutions were re-accredited in 2010. One of the main objectives of this new process is to validate and document all quality improvements in tertiary education, noting any impact that could be attributed to the voluntary accreditation programme. Re-accreditation is also intended to verify improvement plans and goals cited by institutions in their original accreditation. This new re-accreditation programme has an increasingly important international perspective.

Assessment of outcomes from education

An important element in any assessment of the quality of tertiary education should involve the assessment of outcomes, first by evaluating how much students have learnt in the course of their tertiary programmes, and secondly by tracking labour market outcomes after they leave the tertiary education system. Discussion in this chapter will focus on the first aspect, evaluating how much students have learnt; the second aspect is discussed in Chapters 4 and 8. The institution in charge of student evaluation at all education stages is ICFES, the Colombian Institute for Education Evaluation.

ICFES: history and activities

ICFES was created in 1968 as the Colombian Institute for the Promotion of Higher Education (*Instituto Colombiano para el Fomento de la Educación Superior*), with a mission to provide a national admission exam for tertiary education, and conduct all national and international standardised assessments. The official name was changed to the Colombian Institute for Educational Evaluation (*Instituto Colombiano para la Evaluación de la Educación Superior*, though still under the acronym ICFES) by Law 1324 of 2009, and the organisation was restructured as a public institution with autonomous funding and became a non-profit "public business unit", providing services to individuals and organisations, both public and private. ICFES is governed by a board of directors, consisting of a MEN representative plus four members appointed by the president of Colombia for a fixed period of four years.

ICFES carries out research into factors determining quality outcomes in education, psychometric methods, item development, and validity and reliability studies of the exams it provides. It is responsible for all national and international assessments, which include:

- National Basic Education Assessments
   - SABER 5 (5th grade).
    - SABER 9 (9th grade).

These exams assess quality of education at school and regional levels. They are compulsory for schools, but not for individual students. The exams produce measures including learning outcomes and performance trends. But the assessments most relevant to this review are:

- National State Examinations
    - SABER 11.
    - SABER PRO.

- International Studies

    – PISA (OECD Programme for International Student Assessment).

    – TIMSS (Trends in International Mathematics and Science Study).

    – AHELO (OECD's Assessment of Higher Education Learning Outcomes, in development).

SABER 11 is a secondary education exit examination. It provides information for admissions to tertiary education, and it is taken by a large majority of those who graduate from secondary education, although it is compulsory only for those seeking access to tertiary education. This set of tests, in the areas of biology, social sciences, philosophy, physics, English, language, mathematics and chemistry, also provides valuable indicators of secondary education quality, such as learning outcomes and performance trends. The number of test takers has risen steadily, as Figure 5.1 shows.

Figure 5.1 **Number of test-takers – SABER 11 tests**
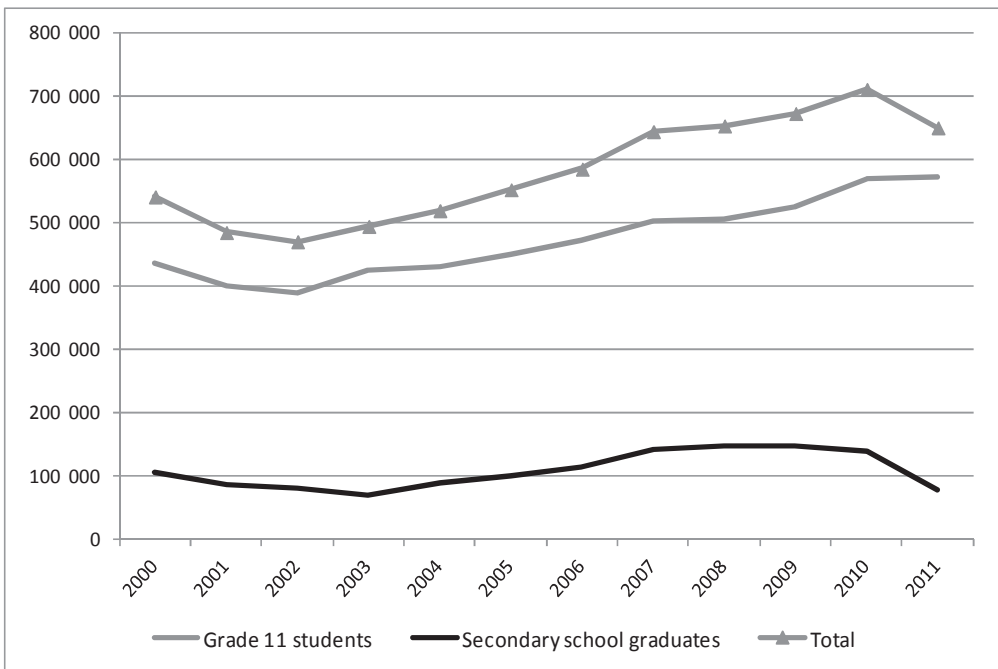
Source: ICFES.

This examination programme started in 1969, in order to respond to the request for a national admissions test from several universities. It became compulsory for entry into tertiary education in 1980. Starting in 2000, the exams underwent a fundamental change, shifting the focus of the assessments from knowledge and abilities to competencies, while at the same time bringing the blueprint of the assessments closer to the curriculum taught in secondary schools. The psychometric quality of these exams also improved significantly following these major revisions to content and psychometric indicators.

Table 5.11 **Average "reliability" of the SABER 11 exams**

SABER 11 Exams	Average reliability
Biology	0.715
Social Sciences	0.783
Philosophy	0.663
Physics	0.555
English	0.795
Language	0.715
Mathematics	0.725
Chemistry	0.640

Source: ICFES (2011*a*), "Transition to New SABER PRO", October 2011.

"Reliability", in the technical sense of a measure of the potential error built into the reported scores, is useful to estimate the extent of misclassifications that could occur at a given decision point in the reporting scale of an exam – that is, the number of students considered to have satisfied the criteria (in this case, reached the minimum score necessary for admission to a particular institution) who have not actually done so because their "true score" is below the minimum, and also the numbers of students considered not to have satisfied the criteria even though their "true score" is above the minimum. Reliability is therefore a measure of the accuracy of the score and the accuracy of the decisions made based on using the score. As they stand now, the average reliabilities for each SABER 11 exam as reported in Table 5.11 are relatively low for a summative examination, and too low to be the sole basis for decisions between borderline candidates for entry to a tertiary education institution. If SABER 11 results are used on their own, therefore, they could introduce into admission decisions a higher level of error than is desirable. However, these examinations are currently

being redesigned (see later in this chapter), and the new versions of the exams have been planned and designed by ICFES to follow a much better approach, based on general competencies and providing a useful baseline for the SABER PRO tests.

Currently, some 78% of tertiary education institutions in Colombia use SABER 11 results to select the students they will admit; but most (72%) complement the results information with other evidence, from individual interviews, other exams, secondary school marks, etc.[4]

SABER PRO (formerly ECAES). SABER PRO is a set of tertiary exit examinations. These exams assess individual competencies of final-year undergraduate students, and have been compulsory for graduation since 2010. Their purpose is to produce indicators of higher education quality, including learning outcomes, value-added estimates and performance trends. This important and quite exceptional programme gives a true assessment of outcomes from tertiary education. It is at the forefront of current thinking on how to measure tertiary outcomes and provides valuable accountability information, as well as measures of value added by tertiary education institutions when combined with SABER 11 results.

Development for the ECAES programme began in 2003. A total of 55 different assessments were developed between 2003 and 2007. However the number of students taking each exam varied greatly, with 5 ECAES exams (law, administration, accounting, industrial engineering and systems engineering) accounting for 44% of the students assessed, while 14 ECAES exams (mathematics, French, phonoaudiology,[5] nutrition and diet, optometry, occupational therapy, agricultural engineering, petroleum engineering, forest engineering, agricultural-industrial engineering, electronic technician, chemistry, physics and geology) had only between 72 and 271 students taking them and assessed only 3% of students between them. These very low numbers represented a major challenge to the psychometric integrity of the tests, making the test development process and test calibration very difficult.

Law 1324 of 2009 established the ECAES exams as mandatory for graduation and required that the test structure should be maintained for periods of not less than 12 years. Also in 2009, Decree 3963 regulated the gradual adoption of the new structure of examinations comprising the ECAES assessment system, divided into tests of specific and generic competencies, and established the objectives for the programme, which are:

- To provide information for the development of indicators for the evaluation of quality in programmes and institutions of tertiary education.

- To provide information for the evaluation of institutional processes and to inform educational policy and decision making at all levels of the educational system.

- To establish the level of competencies achieved by students at the time of graduation from their tertiary education programmes, and to inform the process of continuous improvement of the educational system.

- To produce indicators of value added from tertiary education programmes, taking into account the level of similar competencies at the time of entry into the tertiary education system.

In 2009, 55 ECAES tests of specific competencies were developed and administered, together with two tests of generic competencies which were used by all academic programmes: English and reading comprehension. For those academic programmes which did not have their own specific competencies test, ECAES used a battery of generic skills tests, including testing of critical thinking, problem solving, interpersonal communication and writing.

In the first semester of 2010, ECAES exams measuring specific competencies in 33 content areas were developed and administered. At this time, it was also decided to discontinue examinations in areas that evaluated less than 1 000 students per year. The two generic skills tests administered by all programmes were continued, as well as the generic skills tests for programmes with no specific competencies test. In the second semester of 2010, Resolution 782/2010 adopted the name of SABER PRO for the ECAES examinations and Decree 1295/2010 established specific quality indicators. A total of 31 SABER PRO exams for specific academic competencies were developed and administered. The areas of administration and medicine each had their own specific competencies and generic skills exams, each of them a half-day exam. All other programmes continued to administer the generic skills tests as before.

In the first semester of 2011, administration, medicine, engineering, educational sciences, natural and exact sciences, technical and technological programmes in engineering all started to use six tests of generic competencies – English, reading comprehension, critical thinking, problem solving, interpersonal understanding and writing – and these six generic

tests continued to be used by programmes with no specific competency tests of their own. In addition, for the first time, three "common competencies" exams were administered in three academic areas: educational sciences, engineering programmes, and basic sciences.

In the second semester of 2011, all specific competencies tests were eliminated, for some of the reasons explained before in the terms of the psychometric difficulties of obtaining the required quality level, and because of the shift to generic skills tests and common competencies exams. Programmes in all fields now use the six generic competencies tests. In collaboration with the MEN and the academic community, ICFES established 30 reference groups bringing together academic programmes with similar characteristics. These 30 reference groups facilitate the process of obtaining comparable results across disciplines for "common competencies" exams, and they differentiate the analysis of results for three levels of institutions: technical, technological, and universities. The 30 reference groups were established using the MEN's SNIES system and UNESCO's CINE system. They are (ICFES, 2011a):

- 14 groups at university level;

- 6 groups at technological level;

- 6 groups at technical level;

- 2 groups for technical and technological levels;

- 1 group for all levels;

- 1 group for upper level teachers' institutions.

Furthermore, all programmes now require a generic competencies test with the following modules: quantitative reasoning, critical reading, writing and English. For the "common competencies" exams, the first modules have been developed which allow each programme to select the combination of contents in each module best suited to the academic profile of the programme. The total number of programmes in these reference groups, by October 2011, was 17 823 programmes in 22 academic areas. The 22 academic areas, by tertiary education level involved, are shown in Table 5.12.[6]

Table 5.12 **Reference groups by area and type of TEI**

Reference groups by academic area	Type of TEI
Administration and tourism	Technical
	Technological
Architecture and urban studies	University
Art – design – communication	Technical
	Technological
Fine arts – design	University
	Technical
Agricultural/farm sciences	Technological
	University
Economic and administrative sciences	University
Military and naval sciences	University
Natural and exact sciences	University
Social sciences	University
Communication – journalism - advertising	University
Law	University
Education	University
Humanities	University
Engineering	University
Engineering – industry – mines	Technical
	Technological
Judiciary	Non-university
Medicine	University
Military and police	Non-university
Teacher's College (high level)	Teachers' Colleges
Sports and recreation	All
	Technical
Health	Technological
	University
Information & communications technology	Technical
	Technological

Source: ICFES, Presentation (October 2011).

The main characteristics of the new SABER PRO examinations, which transform this programme into a leading programme in the world in terms of outcomes evaluation for tertiary education, are:

- They assess the whole of Colombia's tertiary education population.

- The indicators obtained allow comparisons and establish performance levels for similar groups.

- The exams are developed and maintained following standard psychometric procedures that maintain the measurement scale and the comparability of results across time and groups. This is achieved by the application of appropriate psychometric principles for large-scale standardised assessments.

- They evaluate common competencies between diverse programmes.

- They will be able to measure value added in tertiary education, using the new SABER 11 exams as the entry measure, because the new SABER 11 exams will measure many of the same competencies.

- The SABER PRO exams concentrate on the assessment of more basic skills, not expected to fluctuate, and which are the outcome of an aggregation of educational content and processes over the course of the whole tertiary education programme.

- They leave the assessment of specific competencies in content areas to the tertiary education institutions.

- They provide the information needed to inform the pedagogical process and institutional approaches to tertiary education, with reliable data on performance outcomes.

- By placing performance in the context of comparable reference groups, these exams provide more than just scores – they establish performance levels for all modules and for different disciplines.

SABER PRO results are communicated to students and to institutions. They are reported by module; there is no aggregate score for the whole battery of tests.

When students receive their results by module, they receive their scores; their level of performance descriptor; the average scores in the corresponding reference group; and the standard deviation of the scores of the corresponding reference group.

When institutions receive their results by module, they receive individual student scores (for students of the institution); distribution by levels of performance (quintiles); and their average scores in relation to the averages and standard deviations of scores of the reference group and the national data.

The final design of the new SABER PRO examinations will involve a full-day examination. In the morning section the following generic competencies will be evaluated:

- Critical reading (will also be evaluated by the SABER 11 exams).

- Quantitative reasoning (will also be evaluated by the SABER 11 exams).

- English (will also be evaluated by the SABER 11 exams).

- Writing.

In the afternoon, specific common competencies will be assessed. Each programme has to establish, according to their reference group, which combination of common specific competencies modules to use to evaluate the students in a given programme, from the 20 which have been developed. The choice of module combinations is from the 50 defined combinations developed for the various reference groups.

Revision of the SABER 11 tests

A full discussion of the new SABER PRO exams would not be complete without a description of the new SABER 11 exams ICFES have been developing since 2009, to be administered at the end of secondary education and used in admissions by most tertiary institutions. ICFES's project has identified three main goals:

1. Improve the SABER 11 exams' power to predict performance in higher education. To achieve this goal in particular, the battery of exams is being designed to include the evaluation of generic skills and to achieve more reliable measurement along the entire spectrum of skills of students entering tertiary education.

2. Enable the accurate observation of educational trends and effects of educational policies. To achieve this goal requires, in addition to improving the reliability of the SABER 11 examinations as mentioned above, more detailed specification of what is tested in each of the exams.

3. Achieve better articulation between the SABER 11 and SABER PRO examinations. In particular, ensure the possibility of producing value-added measures of higher education outcomes from comparing SABER PRO results with SABER 11 results.

The development work now being carried out is intended to lead to new-style SABER 11 exams which are more than an aggregation of scores in various academic content areas. Instead of simply corresponding to the

curricular areas in grades 10 and 11 of secondary school (language, mathematics, natural sciences, social sciences, and citizenship), these new exams will address basic generic competencies achieved throughout the secondary education cycle. They are being designed so as to better inform the process of admissions to tertiary education, and provide a baseline for value-added calculations made using the results of SABER PRO.

A tentative design being considered, shown in Table 5.13, includes the following modules – critical thinking, interpersonal understanding, quantitative literacy, analytical reasoning, use of concepts – within the various curricular areas.

This design would allow very valuable comparisons with outcomes from the new SABER PRO exams, and would enable the calculation of value-added measures for the various programmes (ICFES, 2011*b*).

Table 5.13 **Possible design of the new SABER 11 examination modules by curricular area**

	Natural sciences	Social sciences	Language/ humanities	Mathematics
Critical reasoning	X	X	X	
Interpersonal understanding		X	X	
Quantitative literacy	X	X		X
Analytical reasoning	X	X		X
Use of concepts	X	X	X	X

Source: ICFES (2011*b*), "Restructuring the *Examen de Estado* for Secondary Education".

Findings and conclusions

The quality assurance system as a whole

Colombia's plans and objectives for the quality assurance of tertiary education are sound in principle and, if fully and correctly implemented, could result in a reasonably effective national quality assurance system. The review team commends Colombia on having a robust design for quality assurance which includes both measures to assure minimum quality and measures to promote continuous improvement. It notes the many positive benefits of the implementation of the system to date. It also notes the particular need to improve the impact of quality assurance measures at the technical and technological levels.

The review team also recognises the merits of the standardised exam systems administered by ICFES, and applauds that organisation's efforts to continue to improve the exams. Colombia is to be congratulated on positioning itself to be a world leader in the assessment of value added in tertiary education. Colombia should however redouble efforts to integrate evaluation data from the exam system into the overall quality assurance system. It will be especially important to maximise the exams' use as a diagnostic tool for quality, while ensuring that TEIs do not over-estimate the reliability and validity of the exam results as a means of distinguishing between the performance of individual students, for example when deciding which students to admit.

Articulation of the various quality assurance components

There are two interlocking agencies (CNA and CONACES) in charge of various aspects of quality assurance at the tertiary level. While there are some clear areas of responsibility, there is also the potential for conflicts of interest, including the participation of the same individuals in different roles in different agencies. Although the fact that commissioners and directors belong to tertiary education institutions provides opportunities for institutional participation and recognition within their own academic communities, it also means that some of these agencies are headed by individuals who are themselves interested parties in tertiary education institutions, with roles that puts them in charge of quality control of not only their own institution but also those of their peers. The review team considers that as Colombia's tertiary education system grows, as the range and diversity of programmes increases and particularly as the proportion of T&T programmes increases, such a system becomes less appropriate. The team suggests that Colombia now needs a tertiary quality assurance body that is to a large degree independent of both the Ministry of National Education and the tertiary institutions, and that is led and administered by professional staff who have experience of the tertiary sector but who are not currently employed by any tertiary institution. Such a body would continue to ensure that quality assurance decisions are based on peer review and peer advice, while also ensuring that peer review teams include people who can offer a range of relevant experience (including from employing past graduates) and innovative approaches.

Assurance of minimum standards

During institutional visits, the team noted that the minimum standards ensured by the processes laid down for admittance to the Register of Qualified Programmes are quite low. While many institutions comfortably exceed these low minimum standards, this is not true of many others,

particularly technical and technological institutions. The review team found that many technical and technological institutions have no credible system of institutional quality assurance in terms of assessment of student outcomes. In several of these institutions, students told the team that everyone or almost everyone passed the exams, and those individuals who did not were allowed to try again until they did. When such institutions were asked about retention, they tended to respond that students who left did so because of financial difficulties, rather than academic difficulties. This reinforced the team's impression that in these institutions the academic bar is being set very low. It is possible, too, that students leave because they realise that the education they are receiving represents poor value for the fees they are paying.

From checking statistical data for the Register of Qualified Programmes, the team also noted that few institutions fail this minimum standard. Under Decree 1295/2010, those institutions that do not immediately secure renewed admittance to the Register of Qualified Programmes are given recommendations to help them secure it when they reapply. Meanwhile they may continue to function provided they submit a contingency plan, but with existing students only – they are not allowed to recruit new ones.

Voluntary accreditation of high quality standards

This part of the quality assurance system was observed to function better. Standards were clear and enforced. As a result, very few institutions have gained full accreditation (of all their programmes or at the institutional level). In technical and technological institutions, relatively few programmes have received high quality accreditation.

A particularly useful aspect of the voluntary high quality accreditation process has been its emphasis on internationalisation.

Assessments for entry to tertiary education (SABER 11)

The national SABER 11 examinations have been significantly improved from those used several years ago. Nevertheless, current SABER 11 tests have what test experts call relatively low "reliability levels",[7] which make it problematic to use the results as the sole criterion for high stakes purposes such as deciding which borderline applicants to admit to tertiary institutions. Other issues are that the risks of misclassifying applicants as below or above the entry standard vary, depending on their subject specialty and which year they took the tests; and the well-researched fact that if tertiary education entry decisions are based on achievement tests, the effects of having attended different secondary schools (usually associated with socio-economic factors) is greatly increased.

Therefore, the modification of the SABER 11 exams planned by ICFES is a very welcome development, which should result in significant benefits to the educational system and lead to fairer assessment of students in the context of tertiary admissions. Because the new SABER 11 exams will give greater weight to generic abilities, the impact on test results of students' socio-economic differences or the different schools they attended should be reduced. For all these reasons, the current exploratory work being carried out at ICFES on a redesign of the SABER 11 examinations should proceed rapidly, so that improved testing and more reliable tests are available as soon as possible.

There have been few studies of how well the results of the current SABER 11 exams predict future performance or success at tertiary level, and those studies that have been done are all by universities which set high academic entry standards. However the new SABER 11 examinations are being designed specifically to provide a valid baseline for the evaluation of value added by tertiary education programmes, which would otherwise be very difficult to establish.

Assessment of outcomes from tertiary education (ECAES and SABER PRO)

As mentioned before, some technical and technological institutes visited appeared to have no institution-level arrangements for evaluating student outcomes. Recent developments and improvements in the national ECAES/SABER PRO external evaluations of outcomes, and the fact that these tests will now be mandatory in all institutions, seem likely to be very beneficial to the tertiary system.

Previous versions of the ECAES exams, in particular those exams testing specific competencies in various academic areas, had serious psychometric problems wherever numbers of test takers were low. The new SABER PRO exams, with their combination of generic and common specific competencies, should prove much more useful. Also, the fact that the new plan establishes reference groups, each with agreed common competencies, will allow a level of comparability impossible to achieve under the previous system.

The fact that ICFES has independent status, and thus is better able to provide impartial and high quality external evaluations, is a very good feature of the quality assurance system.

Recommendations

The quality assurance system as a whole

The review team recommends that MEN should increase the resources devoted to quality assurance, so that it can raise the overall quality level in tertiary education faster, further and more comprehensively. There should be greater financial incentives for institutions to prove that their programmes meet high quality standards, and perhaps penalties for those institutions where quality is found wanting.

Also recommended is greater co-operation between ICFES and CONACES/CNA, so that student assessment information is used to improve the overall design and operation of the quality assurance system.

Articulation of the various quality assurance components

The component organisations of the quality assurance system should be genuinely independent of each other. Members of one organisation should not also have roles in another, sometimes with potential conflicts of interest. It is recommended that the roles of the different agencies be reviewed, with a view to eliminating common membership, overlapping functions and shared responsibilities. International experience suggests that in countries where tertiary institutions have as much autonomy as they do in Colombia, a single national agency, independent of government, can handle all important aspects of quality assurance in tertiary education.

It is also recommended that the role of ICFES should be strengthened and its independence from the Ministry of National Education should be guaranteed, to ensure that it serves as a truly external evaluator of education quality. It could, for example, become an independent organisation reporting directly to the Congress or the Presidency, like similar institutions in other countries.

Assurance of minimum standards

The review team recommends that this aspect of quality assurance be strengthened. There should be additional checks before a programme is admitted onto the Register of Qualified Programmes. Specifically, *(i)* external evaluators should scrutinise more thoroughly the readiness of institutions to provide the programmes for which they apply; *(ii)* all institutions should be required to present evidence of sound, impartial outcome evaluations and careful monitoring of student progress for existing programmes, and to demonstrate that their infrastructure is adequate.

The team also recommends making clear that registration criteria must be fully met, by refusing applications from institutions who submit weak applications and by de-registering institutions which fail to deliver the quality standards promised in their applications. The MEN may wish to consider changing the application process so that it provides for initial and final approval. The initial approval process, which could be quite swift, would check that basic quality standards were met; the final approval process would be more rigorous. It would be helpful to provide incentives to encourage institutions to proceed to full approval, either in the form of "carrots" (financial incentives) or "sticks" (setting a time-limit on operating with initial approval only).

Accreditation of voluntary high quality standards

This part of the system is generally functioning well, though an increase in the number of international participants in the peer review system is recommended.

Assessments for entry to higher education institutions

The review team recommends that ICFES proceeds with and indeed accelerates the development and implementation of major improvements to the SABER 11 exams, which will introduce more emphasis on generic skills and common specific skills and improve system capacity to assess the value added by education institutions. ICFES should also conduct extensive research to ascertain the new exams' validity and appropriateness for use in admissions to various types of tertiary institution and various tertiary programmes.

Assessment of outcomes from education

The team also strongly endorses the action ICFES has in hand to develop improved SABER PRO exams, and recommends that ICFES be given all necessary funding and support. The revised exams will be a significant improvement over the previous exams, and will enable full value-added assessment of tertiary education programmes. Value-added assessment will be key to demonstrating the quality of particular tertiary programmes and the value to students of undertaking them. Value-added measures will also allow judgments to be reached on how effectively different institutions have used the resources invested in them by students and the public purse, and so enhance accountability. The team therefore sees this development as a priority for the educational system and for educational spending.
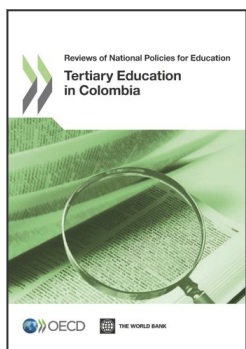
It is recommended too that ICFES assessments of outcomes and value added should encompass all programmes in the technical and technological institutions, which are in some respects the weakest link in the tertiary quality chain. The fact that many of these institutions function as family businesses makes it especially important to monitor their quality carefully, using impartial external evaluators and evaluation methods.

Notes

1. Ministry of National Education-SACES. Data as at 2 October 2011. Includes SENA programmes with and without Register of Qualified Programmes, as well as UNAL programmes.

2. CAN, *www.cna.gov.co*.

3. CNA Presentation, October 2011.

4. ICFES Presentation, October 2011.

5. Phonoaudiology is the study of how the auditory system perceives the sounds that make up human speech. A phonoaudiologist is someone who diagnoses and manages hearing disorders related to speech.

6. ICFES Presentation, October 2011.

7. In the technical sense relating to the ability of the test scores to be replicable, for example from one test occasion to another.

References

ICFES (2011*a*), Document "Transition to new SABER PRO", Colombian Institute for Educational Evaluation (ICFES), October 2011.

ICFES (2011*b*), Document "Restructuring the *Examen de Estado* for Secondary Education", Colombian Institute for Educational Evaluation (ICFES).

MEN (2011a), "Background Report on Higher Education in Colombia", Ministry of National Education, Republic of Colombia, October 2011 (electronic file).

MEN (2011*b*), "Presentation made by the Minister of National Education María Fernanda Campo Saavedra" to the review team, 18 October 2011, Bogota, Ministry of National Education, Republic of Colombia (electronic file).

World Bank (2009), "Integrating the Poor into Labor Markets: Policy Recommendations for Colombia", World Bank.