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Assessing higher education learning outcomes in Brazil

by

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Brazil has developed an encompassing system for quality assessment of higher education, the National System of Higher Education Evaluation (SINAES), which includes a test for assessing learning outcomes at the undergraduate level, the National Exam of Student Performance (ENADE). The present system has been running since 2004, and also serves as criteria for accreditation of programmes and institutions, and has been used to regulate the growing private (for-profit) sector of Brazilian HE. We will present an analysis of SINAES and the many challenges it faces to be recognised as a valid tool for quality assurance and regulation for the Brazilian HE system, using data developed within the system for the engineering and medicine programmes in Brazil. The learning outcomes test is similar to the one that the AHELO project has proposed, including both general education and subject area components, thus providing some preview of issues that may arise as that project moves forward.

Évaluation des résultats de l'enseignement supérieur au Brésil

par

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Le Brésil a instauré un Système national d'évaluation de l'éducation supérieure permettant d'évaluer la qualité de l'enseignement supérieur, le SINAES, lequel inclut un test pour évaluer les acquis d'apprentissage du premier cycle d'enseignement supérieur : l'Examen national des étudiants (ENADE). Mis en œuvre depuis 2004, il sert également de critère pour l'accréditation des programmes et des institutions et est utilisé pour réguler le secteur privé (à but lucratif) en croissance dans l'enseignement supérieur brésilien. Cet article présente une analyse du SINAES et les nombreux défis auxquels il se trouve confronté afin d'être reconnu en tant qu'outil fiable pour l'assurance de la qualité et la réglementation du système de l'enseignement supérieur brésilien. Cette analyse repose sur les données développées au sein du système pour les programmes d'ingénierie et de médecine au Brésil. L'examen national des étudiants est proche de celui proposé dans le cadre d'AHELO. Il comprend à la fois l'enseignement général et les composantes par matières et fournit ainsi quelques aperçus sur les questions qui pourront être soulevées au fur et à mesure de l'avancée de ce projet.

Introduction

In the very broad context of the expansion of higher education (HE) systems across the globe, assessing quality – of national systems, individual institutions or undergraduate and graduate programmes – has become one of the major themes of debate in HE policy. As many national HE systems are undergoing an intensive cycle of expansion, which often involves non-traditional education providers that are not directly controlled by public agencies, such as private companies and for-profit organisations, many employing distance learning technology intensively, quality assessment has become increasingly important. The demands for accountability and transparency go beyond the traditional accreditation procedures that have been developed by government or independent agencies that typically involve a self-evaluation report by the institutions or programmes, plus an official site visit by a specialists committee. The new trend is to use student learning outcomes tests to assess higher education programmes and the providing institutions.

This aspect of quality assurance of HE has gathered increasing attention from both specialists and the public, including policy makers and other stakeholders. As an example, a recent study (Arum and Roksa, 2011) presenting a bleak view of the progress of United States (US) students' proficiency, during their college years – in writing, critical thinking, argument construction and other skills – was widely debated by the media, policy makers and the general public. Its methodology included the use of information regarding students' performance in a standardised test called the Collegiate Learning Assessment (CLA). The validity of CLA as an instrument for assessing learning outcomes has been widely debated (Klein et al., 2007; Banta, 2006 and 2007; Pike, 2006).

Calls for learning outcomes assessment have, in the past few years, become more frequent, from both public officials and media commentators (Brooks, 2012). Already in 2006, the US Commission on the Future of Higher Education report (also known as the Spellings Commission) called for the CLA to be used for assessing learning outcomes on a "value-added" basis (US Department of Education, 2006:24), and that the data should be used for accreditation purposes (US Department of Education, 2006:25) as well as be made public.

In 2009, the European Union (EU) commissioned the OECD's higher education division (Institutional Management in Higher Education, IMHE) to develop the Assessment of Higher Education Learning Outcomes (AHELO) project (AHELO, 2011, Coates and Richardson, 2011). The project completed a pilot phase in late 2012 and the reports are now available online.¹ The learning outcomes assessment vehicle includes both general education and subject area components.

Even before these initiatives, some countries were already experimenting with systems to assess HE learning outcomes (Nusche, 2008). Brazil was perhaps the first one to develop a comprehensive HE evaluation system, including a learning outcomes assessment component, for both public and private institutions, the National System of Higher Education Evaluation (SINAES). It includes, as one of its main components, a test to assess learning outcomes (mandatory for students), the National Exam of Student Performance (ENADE), with a format that is much in the spirit of what the AHELO project has proposed. The purpose of this article is to present an overview of the Brazilian system, to discuss issues of validity for the proposed uses of results and others related to the very large and diverse system that it is supposed to be evaluating. It also discusses students' involvement, how they perceive the system and their attitude towards participation.

How SINAES and ENADE work to generate assessment information

Federal law established SINAES and its test component, ENADE, in 2004, under the auspices of the Ministry of Education. Approval of legislation followed heated political and academic debate over a previous system that also had a test component (Verhine et al., 2006). The legislation also established the National Higher Education Evaluation Committee (CONAES), composed of ministry personnel and representatives of various HE organisations, including federal, state (provincial) and private institutions to oversee all SINAES/ENADE activities, and all decisions regarding changes to the system. The National Institute for Educational and Pedagogical Research (INEP) is the Ministry's organ responsible for developing and applying ENADE.

Although the focus of this article is on the learning outcomes assessment component (ENADE) of SINAES, we will first provide a brief outline of the general evaluation system, to place ENADE in the appropriate context. A more detailed description of the entire system may be found in Verhine et al. 2006 or in the INEP report on the system (INEP, 2009).

From its inception, SINAES has been based on three main components: institutional, programme and undergraduate student proficiency evaluation. The National Student Performance Exam (ENADE), taken by both first² and last

year students, assesses student proficiency on topics determined by the National Curricular Directives for undergraduate programmes. Institutional and programme evaluation are based on data collected by the Ministry of Education and on self-evaluations conducted by the institutions. Graduate programmes are evaluated by the Ministry of Education's Graduate Education Department (CAPES), a system that has a long (and successful) history in Brazilian HE, dating back from the mid-1970s (Balbachevsky, 2004; Balbachevsky and Schwartzman, 2010).

The results from ENADE are derived from several input variables, including the scores of graduating classes, a value-added component that makes use of first-year students' results, plus information about infrastructure (facilities, library, etc.), faculty and programme syllabus. These are collected from the institutional database, and then combined into a final score, the Programme Preliminary Score (CPC) for each undergraduate programme. The input variables are weighted as follows: 40% from the ENADE score for graduating students, 30% for the value-added index and 30% from programme and institutional data. The CPC is scored on a scale from one to five, where five is the top score.

Combining CPC (undergraduate) and CAPES (graduate) scores for programmes at a given institution, the General Programs Index (IGC) for that university or college is computed, also on a scale from one to five. Finally, the institution produces a self-evaluation report, which, combined with the IGC, results in the Institution Score (CI), involving various aspects of HE activity, which are defined by CONAES and established in the legislation.

A few more details about ENADE: it uses a mandatory census design, meaning that all students in their last year of studies of each programme under evaluation are required to take the exam (up to the 2010 edition, all first-year students also had to take the exam).³ This characteristic of the system has many consequences in terms of overall confidence in the results of the assessment system, including the issue of student engagement.

A second aspect is that all scores are based on a "norm-referenced" model, meaning that the scores are relative and depend on the data from all institutions/programmes, and are not based on an expected level of performance. Thus, it would not be clear if a score of four or five for the graduating class on ENADE would mean that they had actually achieved some expected proficiency level. Similarly, preliminary programme scores (CPC) also come from a relative analysis and do not actually represent the level of excellence of a programme, per se. An alternative would consist of a "criterion-referenced" approach, which would require a proficiency scale and interpretation to be provided, and what constitutes adequate performance. However, it is important to observe that it is not clear if such a proficiency scale and an adequate

criterion could be established for higher education programmes (Verhine et al., 2006). Most existing learning outcomes assessment systems in HE use a norm-referenced model (Nusche, 2008).

Due to the sheer size of the populations involved and the enormous variety of programmes assessed, the whole system operates on a three-year rotating cycle: all programmes are grouped into three broad areas, each group of programmes assessed every three years. A full assessment cycle is completed every three years, when all programmes at every institution have gone through the whole assessment system. This raises some questions regarding the validity of results for some programmes, since the number of students in a graduating class may be quite small, meaning that it may take a long time, possibly two or three cycles, before anything statistically meaningful can be said about such a programme in terms of learning outcomes.

ENADE in more detail

The 2010 edition of ENADE is used as the main reference for describing how the exam is developed; which is sufficient, since the general structure of the exam is consistent across areas and subjects and along the period the system has been in place.

ENADE has two parts: general education and subject area components. The general education part of the exam consists of 10 items, 8 multiple-choice questions (MC) and 2 open-ended items (short essays). The subject area component consists of 27 MC and 3 open-ended items. The weighting in the final score is 25% for the general education and 75% for the subject area components. Students are given four hours to complete the test.

The general education part is common to all programmes participating in a given year and its content is unrelated to a student's programme of study. In 2010, for example, the health sciences and agricultural sciences programmes were evaluated. In 2011, all engineering, basic sciences and teacher training programmes were evaluated. However, unlike the CLA, which is designed to assess "basic writing and critical thinking skills", the general assessment component of ENADE assesses "general education content"; in other words, the exam content is related to cultural and social aspects of contemporary society. This approach presents problems for interpretation of results, as it assumes a relationship between the aspects being assessed and college and university education in Brazil. Furthermore, as Brazilian regulations do not require HE programmes to include "general education" content, the variation of students' knowledge, not necessarily related to HE, skews the scores. It seems that the proponents of the exam expect that a "good" college or university would provide this type of education to the students. Alternatively,

it may indicate the direction in which the Ministry of Education would like higher education in Brazil to evolve.

Arguably, such a general content test will have results highly correlated to the pre-college education of students.⁴ A cursory analysis of result tables from ENADE shows that scores of first-year medical students (a highly selective programme) are higher than those of first-year nursing school students (a less selective programme). Thus, it is likely that a more careful analysis might reveal that the results of the general content test are strongly correlated to the socioeconomic background or quality of education of students before entering HE.

The subject area part of ENADE is closer to that of the AHELO. It includes assessment of basic areas in an undergraduate programme, gradually moving from basic topics to more specialised ones, according to what are commonly considered the relevant issues in undergraduate education for the specific field. The 27 MC items in the test involve questions and problems on diverse aspects of the programme's contents. The same may be said of the three written essay items, which typically require more work from the students in order to reach an adequate answer. From a qualitative point of view, this part of the exam may be considered adequate, even though there have been no validity studies to test that assumption.

The uses of SINAES/ENADE: Accountability, transparency and political support

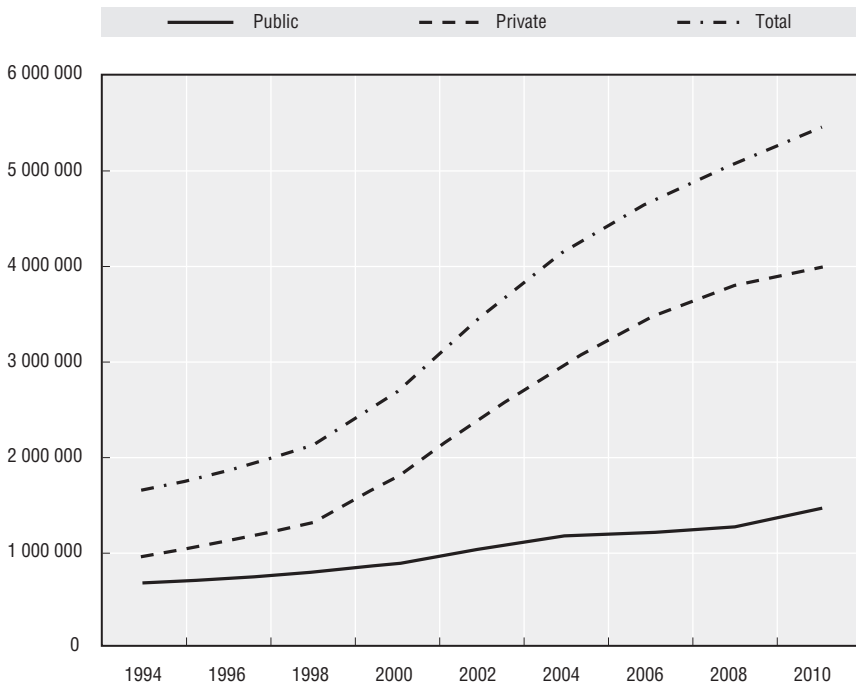
The Ministry of Education (ME) uses the various scores and reports produced during a three-year SINAES cycle for accreditation purposes for both the programme and institution levels. The original SINAES proposal (INEP, 2009) put more emphasis on institutional/process evaluation than on ENADE or final scores. However, media exposure of scores and of accreditation results has shifted focus gradually towards those aspects, especially as various print media produced rankings based on the results.

Every year there are institutions placed on probation when programmes have performed poorly in the last two cycles. The Ministry then imposes cuts in admission enrolment vacancies as a consequence of probation. For example, between 2007 and 2011, the ministry cut 1 114 vacancies in medical school programmes, 514 in 2011 alone; after the 2010 round of SINAES. In law programmes,⁵ no less than 34 thousand vacancies have been closed since 2007. Many programmes have lost accreditation, and in another situation an entire institution was shut down and its students transferred to neighbouring colleges.

These actions have helped the whole system and ENADE, in particular, to gain public and political support. Typically, the institutions that have had

vacancies cut, or programmes shut down, are for-profit private colleges and universities. Part of the rationale put forward by those that support the system is linked to the perceived need of regulation of the fast-growing private sector. That sector has quadrupled in size since 1994, as can be seen from Figure 1. Enrolment in the private sector increased four-fold, growing from a little under 1 million to almost 4 million students, which corresponds to 73% of the total of 5.4 million student enrolment of 2010 (up from a 58% share in 1994).

Figure 1. **Undergraduate enrolment, on-site regular programmes, Brazil, 1994-2010**



Source: INEP (1994-2010), "Sinopses Estatísticas da Educação Superior – Graduação" [Synopsis Statistics of Higher Education – Graduate], Ministry of Education, available at <http://portal.inep.gov.br/superior-censosuperior-sinopse>.

The profile of the private sector has also changed drastically: in 2010, two-thirds of the students were enrolled in for-profit institutions, while in 1994 the relation was reversed as more than two-thirds of students were enrolled in not-for-profit, private HEIs.⁶

All data produced by the ME using ENADE are made public. Although this is in line with transparency goals, it also makes it easy for the media to develop "league tables" and rankings of institutions/programmes, with all the

problems involved in manipulating or eliding information for specific purposes or due to lack of understanding. For example, usually only one of the ENADE scores is used to develop rankings, depending on the purposes of the ranking developer. Some institutions have also used their performance for advertisement purposes. Some of those occurrences have involved clear distortions of the publicised data, to the point that the ME had to intervene and ask institutions to remove their advertisements.

Nevertheless, issues that are more serious surfaced in the past few years that raise concerns about the credibility of the system. The ministry's assessment department found that a large private university was using loopholes in the system to doctor results: they were able to select the group of final-year students to take the ENADE, by holding back regular coursework grade results for part of the class until the end of the semester when ENADE occurred. The ME has since changed the rules, in order to prevent such actions, but it is not clear that there are not other breaches in the system. There were reports that the ME has asked for information from another 30 institutions suspected of using the same scheme to improve their programmes' performance. All this was widely publicised by the national media, since the first institution involved is one of the largest in the country. The cases are under investigation; however, as of early 2013 the ME has not taken actions in regards to the institutions involved.

Criticism of the system and student participation

Ever since the beginnings of the federal HE assessment system, in 1996, when the ME started the National Exam of Programs (known as "Provão" in Brazil), the precursor of ENADE, student participation has been an issue. Early on, the National Student Union (UNE) was very vocal against any type of assessment that involved student testing. There were various arguments put forward to support that position, some of them also used by faculty organisations and specialists in education, namely that:

- tests could not measure college education in a proper way;
- students were being punished, by having to participate;
- assessments were related to the growing privatisation of the Brazilian HE and that the federal government was preparing to privatise the whole system;
- the system violated academic freedom of universities, by imposing curriculum content via the exam's choice of topics; and
- institutions that were not very selective, even if they were doing a good job in terms of overall undergraduate education, could be penalised by the poor performance of students with deficient educational background.

These arguments and others certainly will be familiar to those involved with the present international debate on learning outcomes assessment.

When the system was reformed in 2004, many former critics of Provão hailed the ME's initiative, since SINAES evaluated institutional, process-oriented aspects, and the methodology included a "value-added" component, using ENADE results, that tried to assess if the programme was successful in raising students' knowledge in the areas for which ENADE was concerned. The UNE changed their position officially, but many local and national student organisations still called for boycotting the system. From a practical point-of-view, there have been clear cases of student boycott, but there is also the issue of how much students are engaged in taking part in ENADE. It must be noted that students' individual scores are not reported nor made part of their academic records. One obvious example of a large group of students in nursing programmes boycotting ENADE happened recently (2010) when most of the graduating class, in at least four large public universities, returned blank answer sheets.⁷ That not only distorts the overall scoring (since it uses normalisation procedures), but the programmes at those institutions were scored very low, even though they are seen as among the best in the country among academics and the public. As further evidence of student boycotting, the most selective university in terms of entrance exam scores in the 2011 ENADE (Unicamp), with the top average admission score in 14 of the 30 programme areas covered by that year's ENADE, did not have a single programme scoring among the top 20 programmes (in the respective area) in the ENADE score for the graduating students.

A further point regarding student participation is that many institutions, and most frequently the private ones, have tried to stimulate student participation by giving prizes to the top performers (students have access to their own scores). Some institutions also train students for the test, using previous versions and similarly elaborated items. Both instances of institutional intervention raise issues regarding the objectives of SINAES, in general terms, and how the system is influencing HE in Brazil.

Validity of SINAES/ENADE

The Ministry of Education has issued a few technical reports explaining the methodology employed by SINAES and how ENADE scores are used, but, so far, no comprehensive validity analysis of the uses of the system's results has been developed. Moreover, some points have been raised indicating that the system may require some modifications before it may be considered valid for its intended application of evaluating programmes and institutions for the purpose of accreditation and regulation, at least at the undergraduate level.

A first point is that the scoring methodology is uniformly applied to all areas and types of programmes, and to all types of institutions. Besides treating very different programmes like teacher training and engineering in the same way, the same principles are also used to assess all institutions, disregarding specific mission-related academic characteristics, like an emphasis on research or on teaching. Similarly, technological colleges (that offer 3-year vocational programmes), another expanding sub-system, are treated similarly to universities in the system, with the obvious prevalence of university-type quality criteria (e.g. number of faculty with doctorate degrees and research indicators) as benchmarks for the rest of the system. This may cause the budding technological college system to follow the classical academic drift pattern, diverting their efforts towards becoming “university-like” institutions, which would affect efforts in training a skilled workforce at a level that many see as of strategic relevance at the current stage of Brazilian economic development. This may apply to various other areas in higher education professional programmes.

Secondly, it has been argued that 30 test items are not enough to cover adequately the relevant knowledge developed in a degree programme, since the small number of items would force the test organisers to restrict the breadth and depth of topics covered. It is an issue related to content validity and may be disputed regarding the use of the exam, in the present format, to assess proficiency in any full undergraduate programme. For example, in economics, there is debate among specialists of how much of the exam should be dedicated to quantitative (econometric) methods, to micro and macroeconomics, to development economics and so on.

Thus, similar to the lack of connection between the general education component of ENADE and programme curricula in Brazil discussed earlier, the issue of lack of clear content in the exams seems to be an impediment to properly assess progress of students beyond their specific domain of studies. The “value-added” score that is developed using scores from both first and last year students also deserves some comments. This was one of the strongest points advanced by the proponents of the new system in 2004, in clear contrast to the previously existing system (Provão), in favour of SINAES. However, the way the score is computed is quite complicated and it is certainly not clear what the score actually means. It is based on a basic regression model that uses the scores of first-year students, some other characteristics (like proportion of parents with HE degrees), to compute what should be the scores of the graduating class. That prediction is then compared to the actual performance of the graduating class, generating the “value-added” score. Even though the rationale for such a method may be found (Verhineet al., 2006), there are many critics of the system (Schwartzman, 2008;

Araujo, 2008), and there is no evidence that it is actually measuring what it proposes to assess.

Another problem with SINAES as a whole, especially for its use for accreditation purposes, is that the system has no criterion of reference for any of the scores and indices computed. Therefore, it may well be that even those programmes or institutions with higher scores are not actually performing to standards or above standards, since the whole system is based on statistical norms. Alternatively, programmes or institutions are performing to expectations, but the distribution requires that some be classified at lower levels. Despite the difficulties of establishing criterion-referenced cut points or bands, SINAES must use other available methodologies that provide a more accurate representation of performance.

The complete scoring system of the SINAES is quite complicated and justifiably questionable at various points (e.g. why is weighting used for the various scores and why is regression analysis used in the way it is?). There is very little evidence for the choices made that has been documented and presented to the general audience of the system (e.g. students, universities, politicians, etc.). The validity of any educational evaluation or assessment system depends heavily on having convincing arguments that the decisions made to garner the results are well justified and documented; something specialists have asked for since the inception of SINAES (Schwartzman, 2008; 2012).

One more topic should be mentioned in this brief discussion of validity of learning outcomes systems, which is linked to the CLA: the role played by student-based surveys. One such survey, that is starting to be used by institutions in different countries, is the Student Experience in the Research University (SERU), initially developed at the University of California at Berkeley, by researchers at the Center of Studies in Higher Education. In a recent report (Douglass et al., 2012), SERU data was used to develop an assessment of academic progress during college years. The authors present evidence that such a survey may actually be very useful for that purpose, especially because it is based on a census design, which makes it useful even down to specific programmes inside each institution. The authors also compare SERU's approach to CLA's, providing arguments in favour of the former as a viable and interesting alternative to the standardised test approach used in CLA.

Does SINAES/ENADE provide useful information, after all?

The discussion so far suggests that SINAES/ENADE is not an appropriate system for assessing higher education outcomes or overall quality. However, the main issues raised are mostly related to the use of the system for assessing quality of a single programme or institution via a single final score,

or the lack of a reference criterion for accreditation. Albeit SINAES/ENADE does have several limitations and issues of validity (or lack of evidence in that direction), for aggregates of institutions, grouped according various criteria, the system provides very useful information. For example, using the data for all the engineering programmes, for which results are available up to 2008, it is possible to develop a detailed map of where the system is going, which areas have quality issues, which group of institutions are doing well and, if the system is expanding via better qualified programmes or not.

As a simple example, taken from a study developed at Unicamp for the Brazilian Oil Company (Petrobrás) on programmes related to the oil and gas industry, it may be seen that most of the better qualified programmes, in terms of last-year students' performance, are found in the public sector. Table 1 presents the number of final-year students in engineering programmes, according to their distribution in ENADE's 1-5 scale (5 is highest level of performance), for public and private institutions.

Table 1. Number of final-year students enrolled in engineering programmes, by ENADE's specific area test score, 2008

ENADE test score	Public	Private	Total	%
5	2 217	132	2 349	9.2
4	3 430	1 422	4 852	18.9
3	3 525	4 073	7 598	29.6
2	2 244	6 565	8 809	34.3
1	479	1 564	2 043	8.0
Total	11 895	13 756	25 651	

Source: Compiled using ENADE 2008 data: INEP (2008), "Resultados do ENADE", Ministério da Educação, Brasil, available at <http://portal.inep.gov.br/planelhas-enade>.

The table shows that more than 90% of students in programmes that scored 5 were enrolled in public institutions, and that the large majority of those enrolled in programmes that scored 1-2 (considered "poor" by Ministry's standards) were graduating from private institutions. Looking at this result in tandem with the statistic that in the last 10 years, most of the growth in enrolment in engineering programmes has occurred in private institutions, there is cause for concern by authorities, employers and the students themselves.

The future of SINAES and of other learning outcomes assessment systems

The evidence provided thus far suggests that using SINAES/ENADE as a regulatory/accreditation instrument, given the various issues regarding the validity of results in that context, is problematic. It is still too early for a full and final verdict, however. It may be argued that it is at least a valid

instrument to indicate which areas and sectors need more government control/regulation and which need support and more detailed evaluation. There is need for change: the scoring system should use a “criterion-referenced” methodology; otherwise, the accreditation procedure makes no sense. In addition, the various indicators should not be used to compute a “final” score. A more complex multidimensional scoring system would not only be more valid, but also more useful.

At the VI Meeting of the Brazilian Association of Educational Assessment, in 2011, Schwartzman presented a paper with the title “Beyond SINAES” (Schwartzman, 2011). After presenting a very good analysis of the system, it concludes with several recommendations, a few which are presented here:

- keep the different indicators separate, to avoid integrating them in a totally obscure final score that has very little practical use beyond ranking programmes and institutions;
- include indicators that relate the programmes to the labour markets;
- develop indicators that respect the diversity of institutions and programmes;
- prepare reports that use the information in a way that the general public would be able to understand the main issues under evaluation and what the indicators actually mean; and
- remove the whole system from the Ministry of Education and create an independent agency to deal with evaluation and accreditation processes (avoiding a conflict-of-interest situation, since the whole federal system of HEIs are run by the Ministry itself).

The future of an international learning outcomes system certainly hinges on the AHELO feasibility study’s findings. It may well be that the whole idea will be abandoned, but this is doubtful. Most likely, a variety of systems will continue to coexist, including the student-survey approach, as exemplified by SERU, mentioned in the validity section, that has a growing participating international community of institutions. These two basic methodologies, learning outcomes assessment based on tests and student-based surveys, are actually complementary to each other. Ideally, a programme, institution or system would greatly benefit from having data from both systems available, in order to look for directions and approaches to improve quality of service. National HEI quality assessment systems, such as the SINAES, should closely follow all the results from the AHELO pilots and use these to adjust their own systems to alleviate or ameliorate weaknesses and gaps.

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Notes

1. www.oecd.org/edu/skills-beyond-school/ahelodocuments.htm.
2. Starting with the 2011 edition of ENADE, only final-year students took part in the exam.
3. When the system was initially adopted, a sample of students of each programme participated in ENADE. Starting in 2010, it adopted the census design.
4. Souza (2006) presents evidence in that direction, even for the specific area part of the test, for the accounting programs.

5. Law is an undergraduate program in the Brazilian system, one of the largest, with almost 700 thousand students enrolled in 2010, corresponding to almost 13% of all undergraduate enrolment in Brazil that year.
6. These numbers refer to students enrolled in on-site regular undergraduate programmes; distance-learning programmes are also experiencing a fast growth period, and there are already almost 1 million students enrolled in such programmes, most of them offered by for-profit institutions. SINAES has developed an evaluation system for those programmes as well.
7. This was the situation at Unicamp and the Federal Universities of Brasília, São Paulo and Bahia.

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