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Do performance indicators measure outcomes of education?

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Introduction: The context

The current focus in higher education on quality, and the current interest in using performance indicators are reflections of the context in which higher education is operating.

That context can be characterised in terms of a period of significant change and adjustment. Universities have been challenged by a series of dilemmas. It has been a period of significantly increased participation in the final year of secondary education leading to increased demand for higher education from school leavers. In parallel there has been the adoption of more flexible entry provisions to address issues of equity and access, leading to increased demand for access to higher education from groups other than school leavers. And the prevailing economic conditions have reduced the availability of alternatives to higher education. They have also changed patterns of demand for courses. The current downturn in demand for Education courses is but one example.

This increase in demand and the resulting increase in higher education places has occurred in an environment of general economic constraints, reducing resources and increasing competition for scarce resources. Partly as a result of these resource constraints, and partly also because of the perceived slowness of change in universities, there have been persistent and increasing calls for improved efficiency and public accountability in all aspects of higher education.

This has been reflected in pressure for the development of more objective and systematic procedures for the evaluation of universities, and for systematic monitoring of the performance of universities and the higher education system as a whole.

There has been accelerating change toward more formal, routine and quantitative approaches to evaluation of higher education. The focus has been on monitoring performance and productivity to assist institutions to improve their efficiency and accountability.

Some key developments

It is important to acknowledge some of the recent milestones which have influenced the way in which performance indicators are currently viewed.

1. The Review of Efficiency and Effectiveness in Higher Education (CTEC, 1986) marked a significant advance in government pressure for visible progress in establishing systematic mechanisms for performance appraisal of higher education institutions. To that time such performance appraisal had been largely at the discretion of the institution, intermittent, predominantly subjective, confined essentially to single institutions with inadequately defined central data systems giving little basis for comparability.

This Review encouraged the further development and application of performance indicators both within institutions and across the higher education system to assist in identifying strengths and weaknesses and in measuring progress toward specified institutional and systemic objectives.

2. The Discipline Review of Engineering (Williams 1988) which reported in 1988 systematically attempted to define and apply a range of input and performance indicators for higher education institutions, which to some degree covered the major functions of

higher education in professional discipline areas.

3. The Green Paper (Commonwealth of Australia 1987) marked a strengthening of government policy on institutional evaluation and performance appraisal. That paper proposed in specific terms that institutional performance in its various forms be quantitatively assessed and that this assessment should have some influence on institutional funding. The paper explicitly stated the Government's intention 'to fund on output and performance'. Importantly, there was an acceptance that performance indicators needed to be acceptable to both institutions and the Government.

The Government expects institutions, as part of their strategic planning, to give consideration to indicators that would help in measuring the achievement of their goals. In time, such indicators that are agreed to be useful would be built into the general funding system.

The need for performance indicators acceptable to both institutions and the Government points to the likelihood of further demands on the higher education statistical information base. (Commonwealth of Australia 1987, p.42)

4. The AVCC/ACDP Working Party on Performance Indicators was jointly established by AVCC and ACDP in response to these proposals in the Green Paper. This joint working party attempted to define what they saw as 'a proper context' in which performance indicators should be used.

The joint working party sounded some warnings to those tempted to enthusiastically embrace performance indicators:

Something resembling a Cargo Cult seems to have grown up around the notion of performance indicators, so that all manner of powers and virtues are ascribed to them and expectations are aroused that by collecting and using them great benefits will miraculously result. (AVCC/ACDP 1988, p.1)

In their report of December 1988, they proposed that 'a proper context' for the use of performance indicators be established by a policy agreed by institutions:

the best manner of assessing performance is by the judgement of knowledgeable and independent people, and that

an agreed set of indicators will form part of the material available to those conducting the reviews. (AVCC/ACDP 1988, p.4)

They went on to try to identify a range of possible indicators which would be acceptable to both institutions and the Government. They proposed that, in selecting performance indicators among the things that should be kept in mind were:

- indicators should be clearly related to the institution's prime functions and objectives
- indicators should cover as many of the institution's prime functions and objectives as possible
- indicators should form a coherent set
- indicators are of greater significance when considered in groups than singly
- as few indicators as possible should be used

- indicators should be valid, reliable and verifiable
- indicators should be defined and collected in a uniform and agreed fashion
- trends in indicators over time are likely to be more significant than comparisons at a particular time.

The Government welcomed this initiative and in the White Paper encouraged the development of performance indicators along the lines proposed by the Joint Working Party.

5. The White Paper (Commonwealth of Australia 1988) stated *The Government supports the development of a funding system that responds to institutional performance and the achievement of mutually agreed goals. It intends to develop funding arrangements that take into account a range of output, quality and performance measures...*

It also stated

As soon as practicable, indicators which are agreed to be useful and appropriate will be incorporated into the Commonwealth's general funding arrangements for higher education.

It also gave some indication of the scope of performance indicators it had in mind:

The range of indicators to be developed should cover such issues as student demand and course completion rates, quality of teaching and curriculum design, relative staffing provision and measures of academic staff performance in various aspects of research, publication, consultancy and other professional services. Indicators of performance against equity goals and measures of organisational efficiency should also be included in this process. (Commonwealth of Australia 1988, p.86)

6. The Trial Evaluation Study of Performance Indicators in Higher Education (Linke 1991), funded by DEET, investigated a range of indicators, and recommended definitions of such indicators based on their analysis. In addition, the Research Team recommended, inter alia:

- the collection and analysis of data required to generate the proposed range of context, performance and social equity indicators be undertaken.
- the annual publication of summary data on these indicators, with appropriate explanatory details.
- further research and development of performance indicators in higher education.
- studies on the links between educational input and output measures.

In its report it distinguished:

- Indicators of Institutional Context
- Performance Indicators - Teaching and Learning
- Performance Indicators - Research and Professional Services
- Participation and Social Equity Indicators

It recommended that further work needed to be undertaken in the development of performance indicators in two key areas in which the performance of universities should be monitored, namely research, and equity and participation.

DEET has funded subsequent studies in these areas.

7. The Higher Education Council report on *Higher Education: Achieving Quality* (Higher Education Council 1992) recommended a national structure to invite universities to participate in a regular review and audit of their mechanism for monitoring and improving the quality of their outcomes.

8. The Government responded by setting up a Committee for Quality Assurance in Higher Education, with the following Terms of Reference:

provide public advice on the condition of quality in the higher education system. In doing this it may...

1. Invite universities to participate in a regular review and audit of their mechanisms for monitoring and improving the quality of their outcomes, and:

(a) examine portfolios volunteered by universities showing what they have put in place to assure and improve quality;

(b) evaluate how they have assessed the effects of their policies and processes, including summaries of their own assessments of their performance;

(c) conduct interviews and visits as appropriate; and,

(d) use existing, nationally-based, data.

2. Recommend direct to the Minister on the allocation of the specially designated funds to universities to recognise achievements demonstrated by the effectiveness of policies and procedures as demonstrated through an evaluation of their assessment of the quality of their outcomes.

With an annual allocation of \$76 million in prospect, institutions found the invitation irresistible. Nothing focuses the mind as much as the prospect of additional funding, and the fear of being excluded from the designated 'Quality Club'.

The result has been the expenditure of a great amount of effort as institutions attempt to collate data which will convince the committee that they can demonstrate quality outcomes, and therefore should be doubly rewarded by being designated as part of the in-group of "quality institutions" and by additional funding.

Under what conditions can performance indicators measure quality of outcomes of higher education?

This is not a simple question. I will attempt to answer it by focusing on a series of Key Issues.

KEY ISSUE 1: Performance areas sampled by indicators

It is essential that the performance indicators used to measure the quality of a university's performance should be related to the university's prime functions and objectives. It is also essential that the set of indicators used should be an adequate and representative sample of the whole set of the university's prime functions and objectives.

In this regard, a set of performance indicators is like an end-of-course examination, which must also adequately sample the whole set of the course objectives.

The set of performance indicators must not focus on a few unrepresentative areas, nor should it focus on areas in which data is more readily available in preference to those in which data is relatively difficult to gather. It must also be recognised that the same set of performance indicators may not be equally appropriate in all areas of a university's operations.

It is also important that performance indicators directly measure the performance concerned, and that the infidelity of indirect measurement is minimised or avoided.

A related issue arises if an external agency defines the set of performance indicators to be used. This situation has the potential to divert the institution's functional objectives toward those valued and measured by those externally imposed performance indicators. This is particularly the case if that external agency is perceived to be powerful, influential or likely to reward performance as measured on those indicators.

KEY ISSUE 2: Purpose for using performance indicators

It is important to know the purpose for using performance indicators before deciding which indicators are appropriate, and how they should be used. If the purpose is essentially formative (i.e. institutional development), a different approach may be appropriate than for summative evaluation of an institution's performance, or for differential funding allocation purposes. For institutional development purposes, the focus is on identifying areas where improvement in performance is required. By contrast for summative evaluation

purposes the focus is on accurately demonstrating institutional achievements in key areas.

KEY ISSUE 3: Comparative basis for interpretation of the data

It is important to distinguish between three bases for interpreting data gathered on performance indicators. In norm-referenced interpretations, a university's performance is compared with that of other universities to demonstrate relative performance. Such interpretations lead to judgements such as the university's performance being above or below average, the best or the worst etc. The focus is not how good the performance is, but how it compares with that of others.

In criterion-referenced interpretations, performance is compared with a pre-defined criterion or standard for performance, leading to the judgement of whether or not the desired standard has been achieved.

In self-referenced interpretations, trends in a university's performance over time are examined with a view to demonstrating improvement in performance in desired areas.

Each of these three types of interpretation has its place, and a contribution to make to understanding performance.

KEY ISSUE 4: Level of aggregation of data

The trial evaluation study (Linke 1991) demonstrated that various levels of aggregation are appropriate for different performance indicators if they are to be meaningful. These include

- institution
- AOU
- department
- award
- discipline
- Field of Study

For each performance indicator, an appropriate level of aggregation and reporting of data needs to be determined. There is a fine balance to be struck. Inappropriate aggregation of data which is not comparable across the groups being aggregated will lead to a reduction in meaning. On the other hand, excessive division of data into minute groupings tends to lead to excessive amounts of data and to data of low reliability because it is based on very small numbers.

KEY ISSUE 5: Quality of basic data

Many of the applications of performance indicators have been based on data compiled and collected for purposes that are essentially different. Such data must be used cautiously for purposes other than that for which it was originally collected. Often the data contains errors, and can be outright misleading. It is a good rule to check the validity and accuracy of the data used before that data is used to represent or to interpret performance outcomes.

KEY ISSUE 6: Efficiency of data versus triangulation

Performance indicators are of far greater significance when considered as groups or constellations than when considered singly. The

attraction of developing a small set of indicators which efficiently measure a range of outcomes must be tempered with the increased validity likely to be produced by triangulation of data from several related indicators. It must be acknowledged that many performance indicators will be indirect measures of the target performance. Under such circumstances, triangulating performance from several indirect measures is a prudent approach.

KEY ISSUE 7: Relationship between input and output variables

Institutional context variables such as staff-student ratios, quality of student intake and resource richness are likely to be related to performance outcomes. Accordingly, performance outcomes cannot be considered in isolation from a range of contextual inputs. It is therefore inappropriate to report outcome measures in isolation from measures of the institutional context in which those outcomes are produced.

KEY ISSUE 8: Do current sets of performance indicators provide an adequate basis for funding allocation?

Before performance indicators can be used for this purpose, both universities and governments must be confident that sets of performance indicators have been developed which accurately, reliably and validly measure the full range of prime purposes and objectives of universities. They must also be sensitive enough to reflect the increasing diversity in purposes of different universities as they shape their post-merger missions.

In my opinion that situation has not yet been reached, although impressive progress has been made in the last decade, and continues to be made.

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