IMPACT

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Impact-Cost Analyses

A Review of Major Approaches

Background

Kamehameha Schools (KS) supports a wide range of educational programs and collaborations that are intended to achieve the KS mission. The Impact-Cost Structure Initiative will assess the collective strengths and limitations of the current portfolio of educational programs and services to support executive decisionmakers as they seek to optimize the use of KS resources.

The Initiative will combine information on impact, reach, and cost to develop a systemic picture of the KS portfolio of educational programs and collaborations. This work is particularly timely as KS arrives at the threshold of a major strategic planning endeavor to occur during the final years of the 2000-2015 Strategic Plan.

Key Findings

There are four major approaches used to combine information about impact and cost. Each approach is designed to address a particular type of question.

1. Which alternative creates the greatest impact for a given cost, using a single measure of effectiveness? (Cost-Effectiveness)
2. Which alternative creates the greatest impact for a given cost, using multiple measures of effectiveness? (Cost-Utility)
3. Are the benefits of an alternative greater than its costs? (Cost-Benefit)
4. Can an alternative be carried out within the budget? (Cost-Feasibility)

Implications for KS

A review of the major approaches suggests that a combination of the cost-effectiveness and cost-utility approaches is best suited to the context and purpose of the KS Impact-Cost Structure Initiative.

As the work on the Initiative moves forward, the multiple check-points built into the work plan will be critical for ensuring value for key stakeholders.

KAMEHAMEHA SCHOOLS

Background

Kamehameha Schools (KS) supports a wide range of educational programs and collaborations that are intended to contribute to achieving the KS mission. These programs and services are based on the bequest of Ke Aliʻi Pauahi, the history of KS, the KS Strategic Plan and Educational Strategic Plan, the strengths and capabilities of KS, the needs of the Native Hawaiian community, and opportunities presented by potential collaborators. In the 2009-10 fiscal year, the KS educational portfolio comprised more than 40 programs operated by KS which were complemented by over 60 collaborations.

Over the last decade the KS strategy has matured and assessment of the impact of more programs and services has become increasingly feasible.[1] In 2009-10, KS introduced the practice of strategic or initiative evaluations. This approach examines a set of programs and collaborations designed to support a particular goal (such as Kindergarten readiness or college completion). Strategic evaluations are designed to assess how specific collections of programs and services contribute to achievement of an overarching goal and how future efforts can be strengthened.

With the emerging lessons from the strategic evaluation process and the increasing maturity of current programs and collaborations, KS is now at a point where it is valuable to assess and portray the collective strengths and limitations of the current portfolio of educational programs and services at an even higher level for executive decisionmakers. The Impact-Cost Structure Initiative combines information on impact, reach, and cost to develop a systemic picture of KS effectiveness and efficiency in achieving its goals. The Initiative will provide information to executive decisionmakers that can be used to optimize the use of KS resources. This work is particularly timely, with KS on the threshold of a major strategic planning endeavor as it enters the final years of the 2000-2015 Strategic Plan.

Major Approaches to Combining Impact and Cost Data

Henry Levin, the major theorist and author in this area, describes four approaches to combining data on impact and cost: cost-effectiveness, cost-utility, cost-benefit, and cost-feasibility.[2]

Cost-Effectiveness is used to identify which alternative yields a given level of effectiveness at the lowest cost.

Cost-Utility is used to identify which alternative yields a given level of utility at the lowest cost. Used primarily in health care contexts, Cost-Utility is distinct from Cost-Effectiveness in that utility represents the preferences of individuals and involves weighing multiple factors rather than a single measure of effectiveness.

1 See Timing is Everything at http://www.ksbe.edu/spi/PDFS/Reports/Timing_is_everything.pdf for a brief discussion of matching monitoring and evaluation to the level of program maturity.

2 This summary is based on Levin, H. M., & McEwan, P. J. (2001). Cost-Effectiveness Analysis: Second Edition. Thousand Oaks, CA: Sage.

Cost-Benefit is used to identify which alternative yields a given level of benefits at the lowest cost and requires quantifying impact in monetary terms.

Finally, **Cost-Feasibility** is used to determine if a single alternative can be carried out within the existing budget.

Highlights of each of these approaches are provided at the end of this report.

Examples of questions addressed by the four major approaches

What is the impact of a one-year vs. two-year preschool program on student vocabulary scores at exit from preschool? (Cost-Effectiveness)

What is the impact of a one-year vs. two-year preschool program on student readiness for Kindergarten at exit from preschool, as measured by cognitive and social skills? (Cost-Utility)

What is the financial return on investment to for every $1 spent on preschool education? (Cost-Benefit)

What are the projected costs of providing needs-based child-care assistance for all single parents receiving scholarships through the Hana Lima program? (Cost-Feasibility)

Selecting an Analytic Approach

The selection of one of the four approaches is driven by the questions KS is trying to answer, the receptiveness of key stakeholders to different methods, time constraints, and available expertise. The purpose of the Impact-Cost Structure Initiative is most aligned with the cost-effectiveness and cost-utility approaches owing to the multiple domains of interest. These domains are organized under three comprehensive indicators: Educational Engagement, Cultural Engagement, and Civic Engagement.

Within each of the three indicators, several measures are needed to adequately reflect the multiple dimensions or factors the indicator represents. For example, Educational Engagement includes achievement in multiple subject areas (at a minimum, verbal and quantitative skills), attitudes toward school (or the program), attitudes toward self as a learner, and attendance.

While simplicity, transparency, and standardization are important to the success of the Initiative, selection of measures within each domain needs to be appropriate to the nature and intended impact of the various programs and collaborations. The intended effects, priorities, and expected magnitude of effects will be different for a full-day, full-year preschool program and a three-week Kindergarten transition program.

Finally, selection of measures needs to be appropriate given the ages of the learners. It is clear that verbal skills will be measured very differently for learners in preschool than for learners in elementary school where reading skills become more relevant. Even within elementary school, the nature of reading changes greatly from the primary to upper elementary grades.

Impact data can be related to costs for each of these measures of educational engagement so findings can be reviewed at this more discrete level (i.e. a series of cost-effectiveness analyses). This will be particularly valuable for division- and program-level directors.

However, to maximize the value of the results for decisionmakers at all levels, a system-wide perspective is also necessary. The Cost-Utility approach permits the combination of different measures within each domain.

Next Steps

Many parameters for the Impact-Cost Structure Initiative are currently defined. KS has selected three indicators of impact for scrutiny at the strategic level: Educational, Cultural, and Civic Engagement. Models have been developed for aggregating costs that include direct costs, partially-loaded costs (with some organizational overhead allocated to programs), and fully-loaded costs (with all organizational overhead allocated to programs). Timelines for deliverables have been set and phasing for each of the domains of impact has been established.

An inventory of the measures currently in use by the KS programs has begun and will be complete by the end of 2010. The first of three planned reviews of the research literature is underway. The purpose of these reviews is to ensure the factors being used in the analyses represent research-based key drivers of for each domain of impact. These results will inform any possible recommendations for changes to measures currently used by programs.

Having identified cost-effectiveness and cost-utility as the most appropriate analytic approaches, the Impact Cost Structure Initiative team will evaluate and select specific methods of determining utility based on their feasibility and transparency.

Table 1. A Summary of Four Approaches to Cost Analysis[3]

Approach	Analytical Questions	Measure of Cost	Measure of Outcomes	Strengths of Approach	Weaknesses of Approach
Cost-Effectiveness	Which alternative yields a given level of effectiveness for the lowest cost (or the highest level of effectiveness for a given cost)?	Monetary value of resources	Units of effectiveness	Easy to incorporate standard evaluations of effectiveness Useful for alternatives with a single or small number of objectives	Difficult to interpret results when there are multiple measures of effectiveness Cannot judge overall worth of a single alternative; only useful for comparing two or more alternatives
Cost-Utility	Which alternative yields a given level of utility at the lowest cost (or the highest level of utility at a given cost)?	Monetary value of resources	Units of utility	Incorporates individual preferences for units of effectiveness Can incorporate multiple measures of effectiveness into a single measure of utility Promotes stakeholder participation in decision making	Sometimes difficult to arrive at consistent and accurate measures of individual preferences Cannot judge overall worth of a single alternative; only useful for comparing two or more alternatives
Cost-Benefit	Which alternative yields a given level of benefits for the lowest cost (or the highest level of benefits for a given cost)? Are the benefits of a single alternative larger than its costs?	Monetary value of resources	Monetary value of benefits	Can be used to judge absolute worth of a project (in contrast to Cost-Effectiveness and Cost-Utility analyses) Can compare Cost-Benefit results across a wide variety of projects in education or other areas (e.g., health, infrastructure)	Often difficult to place monetary value on all relevant educational benefits
Cost-Feasibility	Can a single alternative be carried out within the existing budget?	Monetary value of resources	None	Permits alternatives that are not feasible to be immediately ruled out, before evaluating outcomes	Cannot judge overall worth of project, because it does not incorporate outcome measures

3 Source: Levin & McEwan, 2001, Table 1.5, pp. 27-28.