

DETERMINING THE IMPORTABILITY OF EDUCATIONAL PRACTICES, PROGRAMS AND PRODUCTS

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One of the ways that educators have found to meet their educational needs and problems is to utilize programs, practices, or products, here after referred to as practices in this paper, that other educators have developed. There is a saving in both time and costs of needlessly reinventing solutions to common educational problems if practices that other educators have found to be effective can be adopted or adapted to your educational needs. In theory this

is an excellent idea and one which should be used very frequently. However, there are a number of operational problems such as: (1) How does one determine if a practice meets one's desires or need?, (2) How does one determine which practices are effective?, (3) How does one determine if the practice will be effective in your situation?, and (4) What is needed to implement the practice into your situation? Thus there is need for some guidelines for using educational practices that other educators have developed. For example, in the Arab Gulf States as well as the Arab world in general, there is currently a need for educational programs in the areas of reading, mathematics, and sciences, as well as testing. Possibly educational programs that have been proven to be effective in other countries might be effective in the Arab world.

The purpose of this paper is to present some guidelines and to discuss the factors that should be considered when considering practices that other educators have developed. The aspects of any practice that would be considered fall into four areas: (1) Determining whether or not the program will meet your needs or desires, (2) determining the effectiveness/success of the practice, (3) determining the efficiency of the practice, and (4) determining the start-up and on-going costs involved.

Description of the Practice

The practice being considered should be described in detail so that a judgment can be made with regard to the following factors. First of all, the specific purpose (s) of the practice should be delineated so that the reviewer can determine whether or not the practice is desired or meets an educational need. The description should include both process or enabling objectives that describe the events, ways of learning, activities, or other major aspects of the practice, and product or performance objectives which delineate what the practice accomplishes. The latter should include what expected change can be anticipated in terms of absolute or judgmental standards or with reference to normal expectations. Enough information should be provided so that the reviewer can determine whether or not the practice has merit enough to be considered.

The activities of the practice should be delineated in detail, including such elements as what the learner does in the activity, i.e., what the learner participation is, what the instructor does differently from the traditional or regular practice, the duration and intensity of the practice, i.e., whether or not there is a daily involvement, number of hours per day, etc., and whether or not others are involved in the practice, e.g., special education personnel, school psychologists, consulting instructors, parents, or other personnel.

After one determines that the objectives and results of the practice are desired, then one looks at the specifics as to how the practice was implemented and all of the situational/context factors that must be consi-

dered. The target population should be delineated, giving specifics such as age levels, ethnic composition, income levels of parents, student achievement backgrounds, urban/rural make up, and any other factors which are deemed important to consider with regard to whom the practice is directed.

The institutional variables such as special physical facilities, teaching staff, school administration, teacher/student ratios, and other variables that are necessary to import the practice should be specified. Community or home variables that might be critical to the success of the practice, such as parental support, community involvement, social programs, or industrial facilities should be delineated. If these are important variables, then one determines if your situation has similar variables operating. If not, then there is the possibility that the practice will not be as effective for you. Special equipment or unique facilities required for the practice, and the essential materials needed by students, teachers, and others to implement the practice should be specified as well as the source of those materials. The personnel requirements for implementing the practice — with regard to types, numbers, and qualifications — need to be detailed. If training is required, how extensive is the training, what procedures and materials are necessary, who does the training and are these people available, and what other technical assistance is required for either implementation or continuation of the practice.

All of these factors should be considered to determine whether or not it is possible to implement the practice or even consider the practice. Often an excellent practice is identified, but due to differences in facilities, personnel, types of students, or any number of other factors, it is not possible to implement the practice. Thus these factors must be considered very carefully.

Effectiveness/Success

Nearly every textbook on educational research, such as Ary, Jacobs, and Razavieh (1979), Mason and Bramble (1978), Moore (1983), and Van Dalen (1979), includes a section on determining the validity of experimental research, most of which are based upon Campbell and Stanley (1963) and more recently Cook and Campbell (1979). The factors which are delineated in determining whether or not an experiment is valid fall into four areas: (1) Was there an effect?, which is commonly known as statistical conclusion validity, (2) Can alternative explanations or hypotheses be ruled out to account for the results?, which is known as internal validity, (3) Are terms and concepts defined in the same way that you would define them?, which gets into what is called construct validity, and (4) Can the practice generalize to the other situations?, which is called external validity. Each of these factors will be expanded to include both the theoretical and practical considerations in determining whether or not a practice is effective in bringing about a desired result and can be imported.

Was there an effect? There are a number of things to consider in answering

this question. First of all, one has to consider the goals and objectives of that practice. Most often these are stated as performance/product objectives, or in some cases as criteria to be met. If performance objectives have been used, these should specify: (1) who is able to do what, (2) at what level of performance, and (3) under what conditions. The exact behavior should be delineated and the criteria should be stated as to what level is satisfactory for attainment of that objective. If performance objectives are not stated, then one would look for a purpose statement which indicates the degree to which a practice is more efficient, cost-effective, or whatever change is specified. It is essential that the effectiveness of the practice be considered as a first step, since often it is discovered that what the practice accomplishes is not what is needed or desired, or that some standard was set which is not appropriate for your situation.

After one determines that the objectives are consistent with one's needs and goals and the practice has resulted in the desired effect, then the next step is to take a look at the evidence that is presented to support the attainment of that practice. There are a number of ways to measure the degree of change or effect, such as the level of significance used for statistical comparisons, or change can be defined in terms of absolute or judgmental standards, e.g., a 30 percent increase in achievement. The main consideration here is whether or not there is convincing evidence that a change has been brought about that is consistent with your needs and goals.

One then needs to review the evaluation/research design that was used to insure the validity of the results. There are a number of research designs that are considered appropriate dependent upon the type of practice being considered. If a decision is to be made between two or three different practices, this would call for a research design comparison ideally involving a true experimental design, as delineated by Campbell and Stanley (1963). If the practice supposedly results in a change in behavior or efficiency, then possibly a pre-practice to post-practice comparison would be satisfactory. The main consideration is whether or not the evaluation design provides you with convincing evidence that the change in behavior or efficiency was due to the practice and not other factor. This gets us into the consideration of internal validity, which will be discussed later.

If the evaluation design is appropriate, then one looks at the way that the evaluation design was implemented. How was the data collected, what kinds of instruments were used and are these reliable and valid, who collected the data, what timelines were used, and how were scores computed and tabulated are questions that need to be answered. Is the measure used to collect data sensitive to measure the range, scope, and nature of the behavior being measured? One of the most important considerations here is whether or not the instrument used reflects the operational definition of the objectives of the practice, or in other words, has face or content validity. For this consideration

one has to define what he-she would consider a valid measure to determine the degree of effectiveness of a practice, and then determine if the measure used was consistent with that definition. One also has to consider the level of performance or change desired level of performance or change. Finally, as is true when considering any instrument, one should have some evidence of reliability so that any change noted is not due just to the lack of reliability of the instrument. The developer of the practice should provide evidence that the instrument used to measure performance or change is valid, reliable, and appropriate for the stated objectives.

Another important aspect of determining the effectiveness of the practice is whether or not the data analysis procedures are appropriate. The first question is whether or not the analyses measure what is called for in the objectives. For some objectives, a simple percentage gain is called for, whereas for others an inferential statistical analysis is appropriate. Regardless of what statistical evidence is presented, the ultimate standard is whether or not the evidence presented convinces you that the practice produced an effect which meets your standard so that you consider it worthy of your effort to adopt or adapt that practice. This gets into the consideration of statistical significance versus educational significance. The educator considering a practice should first look for the statistical evidence, and then consider the educational significance of the effect. A standard that is often used in educational research is that the gain or increase from pre-to post-practice, or the difference between practice and non-practice groups, should be at least one-third of the standard deviation of the measure used (U.S. Department of HEW, 1975, p. 75). For example, if the standard deviation of a measure is 12 points, then any change above four points would be considered educationally significant.

After one is convinced that an effect has occurred and one is convinced that this effect has been measured in a satisfactory way and is consistent with your goals and needs, then one has to look at the evidence that the practice was the cause of the attainment of the effect. In research terminology, this is known as internal validity which indicates whether or not one can make cause-effect conclusions. One has to look at what evidence is provided to link the effect with the practice and not due to other factors which may have caused or may have contributed to the effect. Here one has to identify the factors which one considers as important to be controlled, and then determine if these have been controlled in that particular research. For achievement studies, one might believe that intelligence is an important factor that should be controlled. If intelligence has not been controlled in a study, then any differences between the practice group and the comparison group may be due to difference in intelligence, not to differences in the effectiveness of the practice. Identifying such factors is especially important for cross-cultural studies, since what may be an important factor to consider in one culture may

not be a factor in the culture in which the practice was developed.

The potential user of a practice must delineate the factors which he/she considers as being important, and then determine whether or not these were controlled in the research supporting a particular practice.

In addition to these specific factors, there are general sources of invalidity such as contemporary history effects, maturation, pre-test sensitization, changes in instrumentation from pretest to posttest, statistical regression, differential selection of subjects, experimental mortality, and the possible interaction of these seven factors which must be considered (Campbell and Stanley, 1963). In determining the validity of a research study, one has to determine which of these sources of invalidity may be important to control, and then determine if these have been controlled in that study. For example, if specific cultural, religious, or political factors are important in your situation but these were not considered in the practice as it was developed and researched then the probability that the practice will be effective for you is greatly reduced. Thus it is imperative that one develop a model for determining the validity of a study for your use which includes all of the factors which you think are important for your situation.

Another important consideration in determining the effectiveness/success of a practice in your situation, is the method that was used to select subjects for the research on the practice being considered. The completely randomized model which utilizes both random selection from a well defined target population and random assignment to experimental treatment groups is the most ideal to use. However, in most educational studies, random selection of subjects is not possible since one has to study those who are enrolled, nor is it possible to have random assignment since often classes have been preformed. In such situations, the quasi-experimental designs have to be used which may or may not reduce the validity of a study. The most important consideration in the selection of subjects is whether or not the subjects used in a particular study are similar to the students in your situation with regard to the factors which you deem important. For example, if you know that there are specific background or motivating factors operating in the groups of students for whom you are selecting a practice, then you have to consider whether or not those same factors were considered in researching that practice. Often what works for one group of students in one culture may or may not work for students in another culture. As with other aspects of practice considerations, one has to develop a list of subject characteristics which are important, and then determine if these were considered in the research supporting the practice being considered.

Efficiency

Efficiency is usually defined as the characteristic of a practice that identifies it as less costly in terms of actual costs for materials and equipment, time or effort. The efficiency of practice is relative to the urgency of the need for that practice as viewed by those needing or wanting the practice. If a practice is deemed to be highly desired and/or will reduce an urgent need, then the cost

impact of the activity becomes more tolerable, that is, higher costs are a lesser consideration than the impact of the practice. Thus a high priority need would take precedence over the costs associated with the activity.

If cost data is available, the per unit or per student costs of the practice should be compared to the per unit or per student costs of what is presently being done. Another type of cost comparison is to compare the per unit cost before the practice was implemented with the per unit cost after implementation. However, for most published reports of practices, cost data is probably not available and estimates have to be made regarding costs.

Another aspect of efficiency is data on the time saved in terms of both real time, i.e., instructional time, and actual man hours. Again, the same type of comparisons can be made as for actual costs as described above.

The efficiency of a practice can also be determined by comparing the results or outcome of the practice with the results or outcomes of similar practices either within the person's system or outside of his/her system. If the amount of time devoted to the practice and the costs for implementing the practice are comparable, then the practice that has the greatest achievement gain or level of attainment is the most efficient.

All of these factors have to be considered in light of the long-term benefits of the practice and the extent to which the practice can be absorbed into the regular budget. Often a new practice will replace an existing practice and thus the new costs will simply replace the costs associated with the present practice. If the benefits of the practice over a period of time were considerable, then a high cost could be justified. Thus efficiency and costs are related, and both have to be taken into consideration when making decisions about adopting or adapting new practices.

Costs

The costs associated with a new practice can be divided into those required for the initiation or start-up of the new practice and those associated with the on-going operation and management of the practice. Start-up costs are any costs that a user would have to make to begin a practice in his/her educational system, including staff development and technical assistance needed for present personnel to use the practice, essential materials, facilities, and equipment needed for both training and implementation, contracted services, and payment of personnel for their time during training or for released time for substitutes.

On-going costs would include the personnel needed to continue the activity or practice including the types, numbers and qualifications of the personnel required to operate the practice successfully, the administration, supervision or management required to sustain the practice, the equipment, facilities, and materials required to continue the practice over a period of time including utilities, and the essential materials used by teachers, students, and others to continue the practice.

All of the costs associated with a new practice must be considered in terms

of whether the new activity replaces a similar practice or if it is a complete addition to what was being offered at the present time. If the new activity replaces an existing practice, then one computes the differential costs between the two programs. If this is an entirely new practice being added, then this is an add-on expense and all costs would be added to the present budget with the possible exception of administrative costs which could be absorbed by the present administration.

Importability Rating Scale

Throughout this paper emphasis has been given to determining what the important factors are that have to be considered when considering using an educational program that other educators have developed. The most important considerations to look for are determined by what the importing institution considers key elements, that is, which factors are most important to consider. Thus the potential user must develop a priority system in which the most important elements to be considered are judged. Once these key elements are listed, then one looks for convincing evidence that these key elements meet the standard that you have set for such a practice.

One possible method for rating the potential practices being considered is to develop a scale which incorporates both the rating of the key elements that are considered important, and the weighting of the importance of each of those key elements. Such a configuration is presented in Figure 1. The potential user of a practice would first list the key elements that he/she would want to consider under the heading "Factors." Once the key elements are listed for the practice that is desired or needed, then the same key elements would be rated for each practice being considered. Each of the key elements would then be rated on a seven-point scale, from -3 to +3. If there was convincing evidence that a key element was taken care of, controlled for, or is a compelling/distinct advantage, then a +3 rating would be given. If the evidence is such that this element is a compelling/distinct disadvantage or the evidence is very detrimental, then a -3 rating would be given. If there is no evidence, then the rating would be "0".

Each rating would then be multiplied by the importance factor, i.e., whether or not that element is essential, somewhat important, of some concern, or of no concern. The products formed would then be compared for the various practices being considered, and the practice that has the highest rating would be considered over the others. For other needs and desires, i.e., consideration of other types of practices, another rating form could be developed which would include the key elements to be considered for that practice. Many of the same elements would be considered for different types of practices. However, some of the key elements for one practice may not be important for other practice being considered for young children, but may not be a factor for college student, or physical facilities might be important for a physical education program but not for a mathematics program. Thus, one has to consider which factors/elements are important to rate and include these on the rating form for those specific practices.

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Figure 1

Importability Rating Scale for Educational Practices

Key Elements	Rating	Import	Score
(Continued)			
Composite Rating			_____

Rating Scale for Key Elements

- +3 Convince Evidence/Compelling advantages
- +2 Substantial Evidence/Substantial advantages
- +1 Persuasive Evidence/Persuasive advantages

- 0 No evidence - No listed advantages
- 1 Slightly detrimental evidence/Persuasive disadvantages
- 2 Somewhat detrimental evidence/Substantial disadvantages
- 3 Very detrimental evidence/Compelling disadvantages

Importance Factor

- +3 Essential/Very Important
- +2 Somewhat important
- +1 Of some concern
- 0 Of no concern/Not Important