

The Application and Modification of Goal-Based Evaluation as A Multifunctional Evaluation Method: A Systematic Review and Meta-Evaluation Study

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ABSTRACT

The Goal-based evaluation is an evaluation method introduced by Tyler as a pioneer in evaluating programs and policies in education. In practice, this method is also widely used by evaluators and researchers to evaluate programs in non-educational fields. Many publications report the results of evaluations from the 80s to the present, but have not made generalizations about these studies. This study aims to determine the application of goal-based evaluation as a generalized multifunctional evaluation method from various studies published online. Systematic reviews and meta-evaluations were carried out to investigate the characteristics of the evaluation research using the goal-based evaluation method, identify the steps of this method and discover the novelty of this method which can be adapted for subsequent applications. Data in the form of evaluation report articles were collected by searching online sources and selecting articles that met the criteria. Then each article is analyzed to find answers to the research objectives. The results of the study show that 1) the goal-based evaluation method can be used to evaluate various fields of study, 2) the steps of goal-based evaluation vary depending on the purpose of the evaluation, 3) modifications are carried out by the researcher by summarizing the evaluation steps, determining evaluators from various related fields, as well as determine program objectives at the outset in accordance with the parties related to the program. The application of goal-based evaluation and its modifications can be used as reference material for future evaluators in evaluating similar policies or programs as well as for researchers who will further develop this method.

Introduction

Each policy or program needs to be evaluated in order to see its effectiveness, impact, and to make recommendations for the continuation of the program or policy. Tyler defines evaluation activities as a process to determine whether program objectives have been realized or not (R. Tyler, 1985). According to Cronbach, evaluation is a process of preparing information before making a decision (Putra, 2018). Based on these two formulations, it can be formulated that evaluation is a process of seeking information about a program or activity to provide value or decision whether the objectives of the program or activity have been fulfilled or not. One of the pioneer evaluation methods that is widely used in the evaluation of educational programs and curricula is the goal-oriented evaluation method, often known as Goal-Based Evaluation. This method was proposed by Ralph W. Tyler in the 1950s. Tyler formulates an evaluation of learning outcomes from learning objectives based on the taxonomy of learning objectives developed by Bloom and Krathwohl (R. Tyler, 1985). The purpose of this evaluation is to determine the effectiveness of an institution, provide valid information or instructions related to the program, help institutions clarify program objectives, and become a reference for further program implementation (RW Tyler,

1942) . Steps to determine the extent to which policy/program objectives have been achieved or not are 1) establishing general objectives, 2) classifying goals or objectives, 3) defining objectives in the context of behavioral terms, 4) determining situations where achievement of objectives can be demonstrated, 5) developing or choosing measurement techniques, 6) collecting performance data, 7) comparing performance data with behavior that describes goals (Fitzpatric et al., 2011) . Therefore, before carrying out an evaluation, the evaluator needs to know clearly the goals of the program so that they can see whether the things that have been found have reached their goals or not.

Evaluation is based on objectives, so the results of the evaluation are straightforward. Information will be obtained whether a program has reached its goals or not. This is the strength of this evaluation method. In addition, the steps of this method are easy to follow and perform. This empirical evaluation method is to collect data to describe the value of goals, hear panel opinions to review and evaluate goals, carry out studies of documents and archives, and carry out pilot studies to see whether goals are achieved (Putra, 2018) . In addition, the steps in this method are general in nature, thus stimulating the development of methods, measurement procedures, and instruments according to the researchers' objectives and the scope of the evaluation. Objective-based evaluation makes it easier for program owners to see more clearly the achievements of a program so that they can assess and consider program sustainability (Nurman, 2016) .

However, there are some criticisms of objective-based evaluation methods. Evaluation activities emphasize more on measuring the achievement of goals than the worth of these goals, lack of standards to determine the gap between observations and levels of performance, ignore the value of the goals themselves, ignore important alternatives in considering program planning, ignore other important findings outside the program objectives (Fitzpatric et al., 2011) . This criticism actually opens opportunities for researchers and evaluators to modify and perfect the objective-based evaluation method so that it is appropriate to use it to obtain information from the program as a whole.

The application of goal-based evaluation has been widely used as a method for evaluating programs and policies from the past until now. In 1982, Shaw & Gaynor conducted an evaluation of the psychological health program at the University of California (Shaw & Gaynor, 1982) . Until now, many evaluation activities have been carried out using the goal-based evaluation model, namely evaluating learning methods (Annishia & Ramadhina, 2022) , evaluating the implementation of urban planning or urban planning . (Li et al., 2022) , evaluation of lecture implementation (Evenddy & Nurlily, 2021; Setiawati et al., 2021) , and curriculum evaluation (Wijaya & Sholeh, 2021) . Based on publications that report the use of the goal-based evaluation method , it is known that this method can be used not only in the realm of education, but also in other fields.

goal-based evaluation method is a multifunctional method to be used in program or policy evaluation with the aim of whether the implementation of the program is in accordance with the objectives or not. However, no research has been conducted that generalizes the implementation and modification of goal-based evaluations by researchers. Therefore the purpose of this research is to reveal the application of goal-based evaluation and its modifications in evaluating programs based on published studies. The application of goal-based evaluation and its modifications can be used as reference material for evaluators in evaluating similar policies or programs as well as for researchers who will further develop the evaluation model as a development of goal-based evaluation.

There are two approaches to this study, namely systematic review and meta-evaluation. The emphasis of this synthesis is on exploring objective-based evaluation methodologies. Researchers collect articles that report the process and results of the evaluation using the goal-based evaluation method. Articles were collected with the criteria of being published in reputable international journals or from Sinta 1 and 2 journals. Articles that met the criteria were then analyzed to answer the following research questions.

1. What programs or activities are evaluated using goal-based evaluation ?
2. What are the evaluation steps for each of these themes or programs?
3. How about innovation and novelty as a modification of the objective-based evaluation model?

The first research question is descriptive in nature concerning what topics or programs are being analyzed, who is doing the evaluation, what type of data is being collected. The second question looks at what steps the researcher took in evaluating the program, whether it was in accordance with the goal-based evaluation step or not. Furthermore, the third question is answered by identifying what new things are added, modified, or updated by researchers in evaluating programs using the objective-based evaluation method.

Research Methodology

Inclusion exclusion criteria and data collection procedures. This systematic review-meta-evaluation study was conducted by collecting articles on the results of program or policy evaluations that were published online. Table 1. The following is the inclusion and exclusion criteria for selecting the articles analyzed.

Category	inclusion	exclusion
Evaluation method	Policy or program evaluation articles that use goal-based evaluation methods	Articles that are not program or policy evaluations and evaluation articles that do not use goal-based evaluation methods
Year of publication	Year 2012 to 2022	Published research is out of range
Publication language	Studies published in English	Studies published in languages other than English
Publication ranking	Articles published in international journals indexed Scopus/Thomson or Sinta 1 and 2.	Articles other than those published in reputable international journals and published in Sinta 3 journals and above
Article completeness	Full downloadable article (fullpaper)	Articles that are not open access

Table 1. Inclusion and Exclusion Criteria for Article Selection

Articles were collected through web search publications namely Google Scholar, Scopus, Springer, Proquest with the keywords "Goal-Based-Evaluation". Each article is downloaded and then selected articles that meet the criteria for analysis.

Search Results and Data Extraction

A search for published documents was conducted from April to May 2022. A search with the keywords Goal-Based-Evaluation yielded 648 links consisting of research-based and systematic review articles published online. Furthermore, the authors select articles that meet the inclusion criteria and can be downloaded, namely as many as 6 articles. Determination of the sample in this study is briefly described in the following figure 1

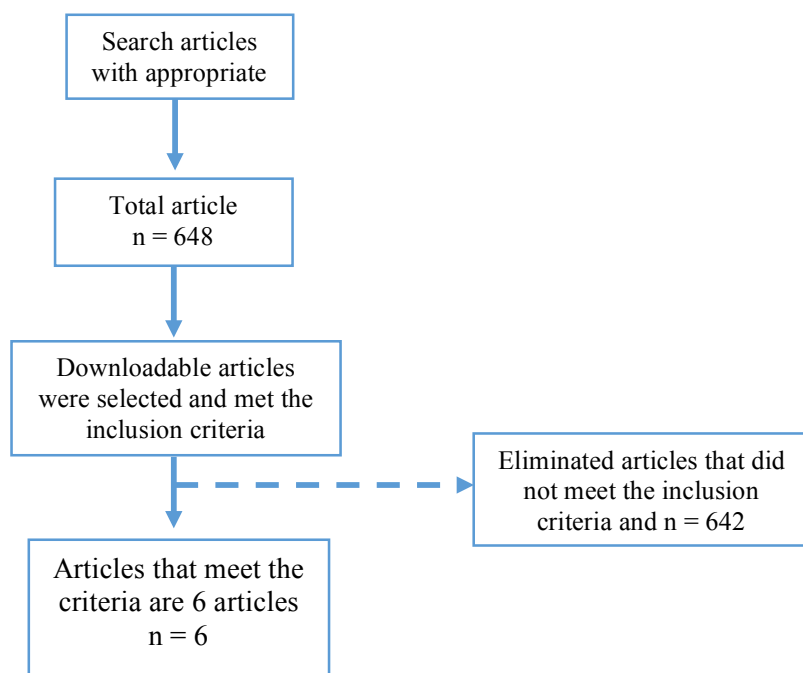


Figure 1. Determination of the sample in this study is briefly described

Data analysis technique

Data analysis was carried out by first identifying the identity of each selected article, namely the name of the author, year of publication, country of author, name of program or policy, field, sample size, and data collection technique. The published data set was used to answer the first research question about the characteristics of objective-based evaluation research. Each article is then reviewed to find evaluation steps and evaluation results. Even though the same evaluation method is used, namely goal-based evaluation, each researcher implements the method with different steps. The author develops these steps according to research needs. The innovation steps and modifications are described descriptively to answer the third research question .

Results and Discussion

The synthesis process reveals various findings, both about the nature of the evaluation study and the results of the evaluation. The synthesis findings are presented in the order of the research questions outlined in the introduction section.

Research questions 1. What programs or activities are evaluated using goal-based evaluation ?

To determine the characteristics of the studies included in the synthesis, we summarize the characteristics of the studies which cover the topics or programs analyzed, who conducted the evaluation, what types of data were collected in Table 2 below.

Writer	Name of Program/Activity	Field	Evaluation Type	Origin of evaluators	Journal reputation	Sample Size	Data collection technique
Welle (2018)	Road construction project in Norway	Transportation	Summative	external	Scopus Q1	14 stakeholders in each sector	Document study Interview
Galavotti, et al. (2012)	Mobility of CSWs in Avahan	Health	Implementation	Internals	Scopus Q1	Not defined	Surveys
Setiawati, AS, Wagiran, Subyanto ro (2021)	Nihongo Noryoku Shiken Learning in Japanese Language Study Program	Education	Implementation	Internals	Sinta 2	75 students	Pretest Posttest Questions Document study guide (RPP, other teaching materials)
Jens Drawehn, Matthias Blohm, Maximilien Kintz and Monika Kochanowski (2022)	<i>Text Mining</i> Results on Industrial Use cases	Industry	Implementation	Internals	Scopus indexed proceedings	Not defined	File and Document Data Collection
Aulia Akbar, Johannes Flacke, Javier Martinez & Martin FAM van Maarseveen (2020)	Public participation in Musrenbang activities	Village development planning	Sustainable Development Goals (SDGs)	external	Scopus Q2	56 participants	Observations, questionnaires, and in-depth semi-structured interviews

Shih-Yun Lu, Chu-Lung Wu, and You-Ming Huang (2022)	The impact of the STEAM curriculum on students	Education	Case study	Internals	Scopus Q1	3 participants (students)	-
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Table 2. The Characteristics of the analyzed studies

Based on several publications on the results of these evaluations, information can be obtained that the goal-based evaluation which was originally developed for educational evaluation was not limited in its use. This method can be used to evaluate regional development programs, industry, and even health. Tyler's evaluation method was developed at the beginning of the development of evaluation methods. However it turns out that this objective-based evaluation method is adaptive and can be used by researchers and evaluators to this day, even the resulting publications can still be published in reputable journals.

Research question 2: What are the evaluation steps and results obtained for each of these themes or programs?

The evaluation step with the goal-based evaluation method varies in each study. In the Welde article (2018) a goal-based evaluation process was developed including the activity of forming a multidisciplinary team to carry out each evaluation, 2) then each team determines criteria and breaks them down into more specific indicators, 3) the team collects data that can be used to answer evaluation questions, 5) the team summarizes its assessment for each criterion, and 6) reporting of the results of the assessment. In the study, 6 criteria were determined as a goal-based evaluation framework, namely efficiency (to what extent the output was achieved with the financial, human and material resources owned), effectiveness (whether the objectives had been achieved and to what extent the project contributed to the achievement of objectives) , impact (whether the project has positive or negative consequences other than those planned), relevance (whether the project meets user needs), sustainability or sustainability (does the positive effects of the project allow for project sustainability), and value of money (whether the project provide a fairly good net profit). The evaluation results show that the road construction project in Norway has succeeded in meeting all the criteria. The project was implemented efficiently and has largely achieved its objectives. The project provides an acceptable environmental impact and supports smooth transportation. Road construction projects can reduce congestion and reduce accidents and are carried out without exceeding a predetermined budget.

In the study of Galavotti et al. (2012) an evaluation of the mobility of CSWs in Avahan India was carried out using a goal-based approach to describe the extent to which the program can run as it should according to the theory underlying the program. The researcher uses a predetermined set of program objectives from the underlying program theory. The theory is described in a logic model to describe how the program is expected to work. The evaluation was carried out by first testing the program's theoretical model in other areas with the highest HIV prevalence in India. Data were obtained through surveys conducted at the group or cluster to individual levels.

Goal-based evaluation is one of the evaluation models developed for evaluation in the field of education, namely learning, curriculum, and other educational programs. As done by Setiawati et al. (2021) , namely the evaluation of lectures in new subjects which are implemented along with the new curriculum in the Japanese Language Study Program. Evaluation is carried out in 3 steps, namely 1) data collection, 2) data processing and analysis, 3) formulation of recommendations. This step is more concise than the 7 steps of goal-based evaluation proposed by Tyler. Data collected by pretest and posttest techniques to observe individual changes and measure the extent of these changes. Questions were developed based on the guidelines of The Japan Foundation. Besides that, a study of lesson plan documents and teaching materials prepared by the lecturer was carried out. The evaluation results showed that the students' Japanese language skills were good, but the online learning process was not effective because it hampered the evaluation and monitoring of students.

Research by Aulia et al (2020) uses the SDGs framework to evaluate public participatory practices in annual development planning in Indonesia, which is called the Musrenbang. The SDGs evaluation framework is used to measure the success or failure of the public participatory process in Musrenbang activities. Musrenbang is a participatory planning practice that provides a forum for citizens to participate in the development planning process.

The evaluation criteria and framework used by researchers is in the form of developing an SDGs evaluation framework, this is deemed relevant to provide a solid foundation in participatory public theory and practice. Researchers took 2 (two) of the 232 indicators within the SDGs framework. The two indicators (11.3.2 and 16.7.2)

offer ideas on how public participation should be implemented. Where, public participation must be carried out regularly and democratically, as well as inclusive and responsive (UN-Desa, 2018). Next, the researcher developed an SDGs-based evaluation framework by classifying ideas from indicators 11.3.2 (regular, democratic) and 16.7.2 (inclusive, responsive) into three main themes, namely: regular, democratic/inclusive, and responsive and adding social learning as a the fourth theme because the learning process is also an important factor in achieving the SDGs. Data collection includes direct observation, questionnaires, and in-depth semi-structured interviews. Data collection was carried out from January to May 2018. Data analysis from interviews used qualitative content analysis of 56 interviews. The analysis was performed using ATLAS.ti software.

In Aulia et al's research (2020), three main evaluation results were obtained which illustrate several gaps in Musrenbang practice, including problems in complying with the law, integrating knowledge sharing, and managing power relations. Regarding legal compliance, Musrenbang is held regularly but not on time. Based on the results of the second study, it shows that the Musrenbang is not effective in supporting the integration of knowledge and learning. While the results of the third study show that power relations exist in Musrenbang practices. Musrenbang implementation is also prone to power struggles. Following the issuance of law 6/2014, village powers have become more substantial as the new law decentralizes the tasks of planning, implementing and monitoring rural development to village governments.

Research Question 3: How are innovations and novelties a modification of the objective-based evaluation model?

Evaluations carried out involving various multidisciplinary or various fields need to consider the objectives of each field. For example, the construction of a highway will involve contractors, road users, environmentalists, so that when setting project objectives, the objectives of each sector must be considered (Welde, 2018). In evaluation activities, evaluators can be selected from various disciplines who have criteria for achieving their respective goals.

The goal-based evaluation method will be easy if the objectives of the program have been set and known by the evaluator. Objectives can be based on the theory underlying the implementation of the program. By first determining an explicit program theory, it can help in evaluating (Galavotti et al., 2012). The evaluation will be more focused on looking at anything, who the participants are, and how it was achieved.

Objective-based evaluation can be carried out by educators in a formative way to see how effective and efficient the learning is. Learning objectives are clearly written in the learning planning document (RPP or RPS). With evaluation, educators can find out the shortcomings of the learning instructions carried out, find out the progress of students, and prepare strategies or recommendations for implementing the next lesson (Setiawati et al., 2021).

Evaluation can be linked to the goals formulated with reference to the Sustainable Development Goals (SDGs). The SDGs are a global action plan agreed upon by world leaders, including Indonesia, to end poverty, reduce inequality and protect the environment. The SDGs contain 17 Goals and 169 Targets that are expected to be achieved by 2030. These goals are (1) Zero Poverty; (2) No Hunger; (3) Healthy and Prosperous Life; (4) Quality Education; (5) Gender Equality; (6) Clean Water and Adequate Sanitation; (7) Clean and Affordable Energy; (8) Decent Work and Economic Growth; (9) Industry, Innovation and Infrastructure; (10) Reduced Gaps; (11) Sustainable Cities and Settlements; (12) Responsible Consumption and Production; (13) Climate Change Handling; (14) Ocean Ecosystems; (15) Mainland Ecosystems; (16) Peace, Justice and Strong Institutions; (17) Partnership to Achieve Goals. Each of these objectives can be known whether or not they have been achieved by looking at the indicators of achievement. The evaluation carried out by Aulia et.al (2020) focuses on indicators 11.3.2 and 16.7.2, which are about sustainable cities and settlements and peace, justice, and strong institutions. Aulia et al. will see whether public participation in Musrenbang activities has reached these indicators or not.

Conclusion

The Objective-based evaluation method is a multifunctional method. Based on a systematic review and meta-evaluation, it was found that the method which was originally developed for educational evaluation purposes can actually be applied to fields other than education, namely regional development, industry, and health. The goal-based evaluation method consists of 7 steps proposed by Tyler, namely 1) setting general goals, 2) classifying goals or objectives, 3) defining goals in the context of behavioral terms, 4) determining situations where goal achievement can be demonstrated, 5) developing or choose measurement techniques, 6) collect performance data, 7) compare performance data with behavior that describes goals. However, in practice, researchers can modify these steps according to the policies and objectives of the evaluation carried out, and there are even researchers who summarize it into just 3 steps. In principle, researchers collect data to answer whether the program is implemented according to the expected goals or not. Program objectives can be set by adopting existing ones and then building a logical model structure or objectives can be based on the parties involved in the program. This

modification and innovation in the development of goal based evaluation can be used as a reference by researchers or evaluators in the future so that they can see the achievement of program objectives in an innovative way.

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