

Goal Attainment Scaling as an Annual Assessment of Faculty

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Abstract

Currently, no systematic evaluation protocol exists for annual assessment of faculty performance. Efforts to quantify student evaluations demonstrate acceptable levels of validity and reliability but fail to encompass totality of faculty performance on a quantitative level. The central problem of faculty performance evaluations is the lack of universality. Since evaluative criteria are left in the hands of the department, evaluation outcomes are uneven. Simply put, some evaluation protocols are considerably more stringent than others. The application of Goal Attainment Scaling provides a universal standard that enables university administrators to assess faculty performance in a more equitable and systematic manner. We employ qualitative methodologies to assess to use of Goal Attainment Scaling for annual evaluations of faculty.

Keywords: Goal Attainment Scaling, transparency, flexible evaluations, faculty evaluation, universality

INTRODUCTION

The first major paradigm shift for faculty evaluation emerged from the Carnegie Foundation report which conceptualize evaluative categories for faculty members (Boyer & Hechinger, 1981). Three categories emerged from this report which included teaching, scholarship, and service. Since the early 1980s, these three categories have been measured in a variety of ways and reconceptualize more times than a human can count. To this date, we continue to acknowledge the problematic nature of faculty evaluations (Chapman, 2012; Han, 2015; Marson, 2020; Porter, 2012; Sorcinelli, 2002).

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One finding is undisputed. The conceptualization of teaching, scholarship and service varies based on the discipline and/or the profession found in the diverse academic departments. Thus, it is a herculean task to establish an equitable manner to quantify faculty evaluations across a single campus. To date, there is no unified or systematic evaluation protocol other than the three categories that were first articulated in the early 1980s.

Essentially, a faculty evaluation protocol must take into consideration polar opposites. An acceptable and effective evaluation protocol must be applicable across a campus but also capturing the needs of semi-autonomous departments. Simply put, the evaluation protocol would need to be both general and specific -- *simultaneously*. Goal Attainment Scaling (GAS) may be the only evaluation protocol that embraces these polar opposites. GAS can assess the

- Progress or change of a professor's skill over time.
- Specific uniqueness of a department's vision of professorship quality.
- Departmental functioning in contrast to other departments.
- Performance of faculty while reducing biased subjective impressions of an evaluator (usually the department chair).

The unique characteristics of Goal Attainment Scaling may be the perfect protocol for the evaluation of faculty across a campus and within semi-autonomous departments.

Review of Literature

In the 1960s, the United States' National Institute of Mental Health was under pressure from minorities, women, and other disadvantaged groups to evaluate psychiatrists who dominated mental health services. This pressure placed on psychiatrists was contrary to the primary theme within the medical model. That is, psychiatrist knew everything, and mental health consumers knew nothing. However, psychiatrists had no formal training in administration, management, financing, and measurement.

In the minds of many mental health practitioners, including psychiatrists, the medical model was slowly characterized as being flawed. The central problem of the medical model is the assumption that psychiatrists had god-like insight into successful treatment of their clients and patients. The National Institute of Mental Health was slowly starting to demand transparency related to the measurement of treatment outcomes. In response to the demands of the National Institute of Mental Health, Kiresuk and Sherman (1968) introduced Goal Attainment Scaling (GAS). In reviewing the GAS literature, we are overwhelmed with the vast amount of research findings regarding the practical application of GAS and

the verification of its psychometric qualities. Both of these dimensions are reviewed:

First, GAS has been employed in a wide variety of evaluation settings. Since its first development in 1969 (Kiresuk, Smith & Cardillo, 1994), the frequency and application of GAS has been nothing less than astonishing. More recent successful applications include:

- Monitoring of Multiple Sclerosis-Related Spasticity treated with Botulinum Toxin (Baccouche, Bensmail, Leblong, Fraudet, Aymard, Quintaine, Pottier, Lansaman, Malot, Gallien, & Levy, 2022);
- Self-management of dementia (Chester, Beresford, Clarkson, Entwistle, Gillan, Hughes, Orrell, Pitts, Russell, Symonds & Challis, 2021);
- Substance abuse among pregnant women (Chiang, Siedlik, & Templeton, 2022);
- Assessment of rural health care (Cox & Amsters, 2002);
- Therapy for stuttering (Eslami Jahromi & Ahmadian, 2021);
- Assessment of bowel and bladder control (Goldstine, Knox, Beekman, Cobussen-Boekhorst, Conti, Gray, Inglese, England, Rodriguez, Stanley, Vaughn, Howlett & Rockwood, 2021);
- Brain injury rehabilitation (Grant & Ponsford, 2014);
- Assessment of cognitive rehabilitation among multiple sclerosis patients (Hanssen, Šaltytė Benth, Beiske, Landrø & Hessen, 2015);
- Comparable achievements (Herdman, Vandermorris, Davidson & Troyer, 2019);
- Progress after knee surgery (Hoorntje, Waterval-Witjes, Koenraadt, Kuijer, Blankevoort, Kerkhoffs & van Geenen, 2020);
- Tracking student skills (Jung, 2018);
- Major depression disorders (McCue, Parikh, Mucha, Sarkey, Cao, Eramo, Opler, Webber-Lind, & François, 2019); (McCue, Sarkey, Eramo, François & Parikh, 2021);
- Monitoring the progress of exceptional children (Roach & Elliott, 2005);
- Progress of developmental and intellectual disabilities (Shogren, Dean, Burke, Raley & Taylor, 2021).
- Clinical training of an interdisciplinary team (Steenbeek, Ketelaar, Galama & Gorter, 2008);
- Coaching clients (Tee, Shearer & Roderique-Davies, 2019);
- Activities of daily living retraining for posttraumatic amnesia (Trevena-Peters, McKay & Ponsford, 2019);

- Stroke rehabilitation (Youngsu, Jaehoon, Joonhyun, Jongmoon & MinYoung, 2020).

These citations represent a very small but recent assessment of the practical application of GAS.

Second, the validity and reliability of GAS has also been intensely studied. Like the articles on the application of GAS, the amount of literature is overwhelming. Every minute aspect of validity and reliability related to GAS has been thoroughly assessed. In addition, since 1969, many of these studies have been replicated. Following is a list of recent research articles that have that address the validity and reliability of GAS:

Bouwens, Van Heugten & Verhey (2008); Chiang, Siedlik & Templeton (2022); Cusick, Lannin & Lowe (2007); Dunn, Stanley, Knox, Stanojevic, Howlett & Rockwood (2022); Gaasterland, Jansen-van der Weide, Weinreich & van der Lee (2016); Gaasterland, van der Weide, Roes, & van der Lee (2019); Hurn, Kneebone, Cropley M. (2006); Jones, Walley, Leech, Paterson, Common & Metcalf (2006); Malec (1999); Marson, Wei, & Wasserman (2009); McCue, Sarkey, Eramo, François & Parikh (2021); Meeus, Van Petegem & Engels (2009); Newton (2002); Sakzewski, Boyd & Ziviani (2007); Sakzewski, Boyd & Ziviani (2007); Schlosser (2004); Shefler, Canetti & Wiseman (2001); Steenbeek, Ketelaar, Galama & Gorter (2007); Stolee, Stadnyk, Myers, Rockwood, Stolee, Stadnyk, Myers & Rockwood (1999); Urach, Gaasterland, Posch, Jilma, Roes, Rosenkranz, Van der Lee, Ristl & Van der Lee (2019).

The validity and reliability have GAS has been thoroughly studied and assessed. The results consistently demonstrate that GAS is a valuable assessment protocol.

How Does GAS Work?

The best explanation on the inner workings of GAS can be found in the work of Kiresuk, Smith and Cardillo (1994). Within this volume, all the tiny minute details related to the construction and use of GAS are spelled out. Here, we offer a breakdown of the commonly asked questions asked by users who are first introduced to GAS. First, GAS is illustrated and used within a landscape format. Generally, each GAS form consumes an entire page. Thus, when assessing teaching, scholarship, and service, three landscape pages are used. Figure 1 is a copy of a GAS form used to assess teaching that has been reduced to fit within a portrait framework.

Goal Attainment Scaling Teaching 50% for Stephen M. Marson, Ph.D. Full Professor						GAS Title
Weights and Titles	Levels of Predicted Attainment	Scale 1 94 Syllabi	Scale 2 15 Student Survey Form	Scale 3 30 Student Written Comments	Scale 4 86 Books Read Relevant to Teaching	Scale 5 73 Continuing Ed Hours
+2 Much more than expected outcome	Complies with campus & dept standards for syllabus & more	Above Dept Average	All written comments were positive	4	> or = 40 hours	
Evaluation Year	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	
+1 More than expected outcome			Over half of the written comments are positive	3	> or = 30 hours	
	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	
0 Expected outcome	Complies with campus & dept minimum standards for syllabus	At Dept Average	No written comments	2	> or = 20 hours	
	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	
-1 Less than expected outcome			All written comments are negative	1	> or = 10 hours	
	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	
-2 Much less than expected outcome	Fails to comply w/ UNCP & Dept minimum standards	Below Dept Average	All written comments are negative	0	< 10 hours	
	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	
Record Keeping	GAS Composite Scores: 1 = 422 2 = ____ 3 = ____ 4 = ____ 5 = ____ 6 = ____ 7 = ____ 8 = ____					

Ordinal Scales

Figure 1, Goal Attainment Scaling Form

Using Figure 1, each part of the GAS form that has caused confusion among new users are illustrated and explained individually. First, we have the “GAS Title.” Here we include the name of the faculty member and category of focus being measured. For example, Figure 1, GAS Title illustrates Stephen M. Marson as the name of the faculty member and teaching as the category of focus for this particular GAS form.

Immediately below the title is the “Weights and Titles” section, where we find the name of each subcategory of teaching to be measured and the weight allotted to that particular subcategory. For example, Figure 1, Wights and Titles, illustrates five subcategories of teaching that are being assessed: Syllabi, Student Survey Form, Student Written Comments, Books Read Relevant to Teaching, and Continuing Ed Hours.

Mutuality, a concept borrowed from mental health, is the central component that enables GAS to gain respectable levels of reliability and validity. By mutuality, we mean the collegiality and consensus to establish content to be measured and ranking the importance of each subcategory relative to the other subcategories. In terms of faculty evaluation, it is absolutely essential to establish consensus in developing measurement components and the relative importance of each component. In practical terms, mutuality requires departmental faculty meetings to establish the subcategories to be measured and to determine the weights (wt.) of all of

the measurable subcategories. In other words, faculty work together to move abstract subcategories to a measurable form – a variable.

Working in consensus to develop meaningful subcategories and weighing their importance is nothing less than a Herculean task. The first attempt at developing subcategories and weighing them is likely to be unsatisfactory. However, after using the subcategories and weights for one evaluation period, meetings among departmental faculty are very likely to bring about a higher quality platform for evaluation. Using the measurements and weights leads to improving the quality of the measurements and weights.

In the current example of Figure 1, during a departmental meeting, five subcategories and corresponding weights were mutually developed to assess quality of teaching. These included:

- the clarity of the syllabus (93wt.),
- assessment of student survey forms (15wt.),
- student written comments (30wt.),
- books faculty members read that addressed course content (86wt.),
- amount of continuing education hours relative to one's specialty (73wt.).

The relative importance of each of these subcategories also had to be addressed. The faculty decided that all weights would be between 0 and 100. The weights for all the subcategories must be on the same metric. When faculty make contributions to the value of the weights, it is best to calculate the average. In this way, the weights are rarely even numbers.

The final stage for the development of our GAS protocol is securing a measurement, labeled in Figure 1 as “Ordinal Scales,” for each of the weighted subcategories. There are several rules for establishing ordinal scales within the GAS matrix. These include:

- At least three ordinal scales must be completed on every GAS matrix
- As illustrated within the vertical cells on the left side of the matrix, the ranking must be arranged from “much more than expected outcome” to “much less than expected outcome.”
- Although blank cells are permitted, two consecutive blank cells are not permitted
- There should be no “expected” levels which are so high that there is no possible “better than expected” level. There should be no “expected” goals which are so low that there are no possible “less than expected” levels. There should be a possible outcome for every scale even if some are left blank.

In developing the scales as faculty members within a department, the process becomes less cumbersome when the expected outcome cell (the

middle cell) is completed first. After that, “much more expected outcome” and “much less expected outcome” become easily manageable.

The two record keeping components of GAS are found within each cell and at the bottom of Figure 1. The “Evaluation Year” numbers at the bottom of each cell are used to keep track of when the faculty member received the evaluation. Circling the number 1 would indicate the evaluative location for the first evaluation. Multiple circles in a single cell would indicate that the faculty member continues to receive the evaluation in that particular cell. The circling of the number 2 would indicate the second time the faculty member was evaluated in the particular cell.

The GAS composite scores, labeled “Record Keeping” at the bottom of Figure 1, house a record of the GAS scores over time. On each line the sum of the three (Teaching, Scholarship, Service) GAS scores are placed. Members of the department mutually decide on the weights of the three evaluative concepts. In this scenario, it was decided that teaching would be valued at 50%, scholarship at 35% and service 15%. The GAS composite score equals the sum of these three weights. The next step is simple arithmetic.

Table 1, Teaching Scores							
	Level of Prediction		Scale Score		Total		
Syllabi	+2	X	94	=	188		
Student Survey	+1	X	15	=	15		
Written Comment	0	X	0	=	0		
Books	+1	X	86	=	86		
Continuing Ed	+2	X	72	=	144		
					Grand Total 422		
Teaching Composite Scores	1 = 422	2 = ____	3 = ____	4 = ____	5 = ____	6 = ____	7 = ____
50% Teaching Composite Scores	1 = 422	2 = ____	3 = ____	4 = ____	5 = ____	6 = ____	7 = ____
35% Scholarship Composite Scores	1 = 542	2 = ____	3 = ____	4 = ____	5 = ____	6 = ____	7 = ____
15% Service Composite Scores	1 = 229	2 = ____	3 = ____	4 = ____	5 = ____	6 = ____	7 = ____
(422 X .5) + (542 X .35) + (229 X .15) = 435.05 Grand Composite Score							

The Arithmetic

The arithmetic involved in completing a GAS evaluation is simple and can be completed in one’s head faster than inputting the data into an Excel file (Table 1). However, when a departmental chair is completing GAS evaluations for an entire department, Excel would reduce the tedium. To illustrate how to complete the math we use the data from a fictitious assessment of a teaching evaluation.

Following are the steps to prepare doing the math.

- Identify the appropriate evaluative cell by circling the number. In this case we will circle the number one to indicate the first evaluation.
- We multiply the value in the “levels of predicted assessment” cell by the value of the corresponding weight.

- Follow the same procedure for the rest of the scales.
- In the case of our fictitious example, we will have five products.
- Sum the five products.
- place the sum of the five products appropriate location where we find the composite scores.

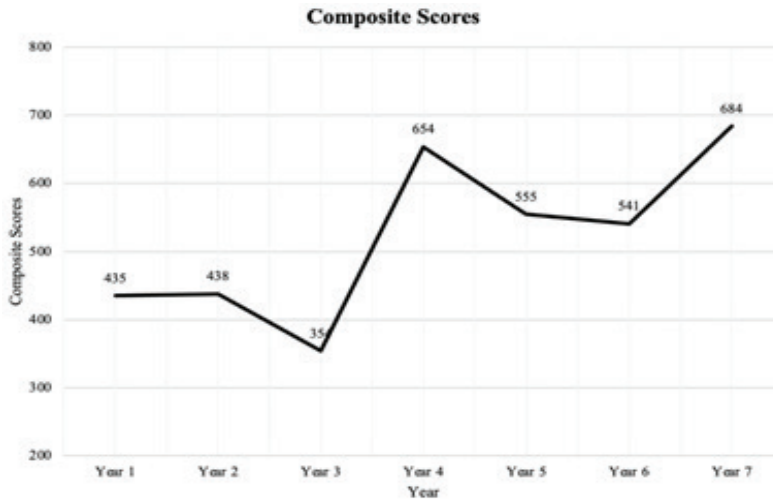


Figure 2, Longitudinal Progression GAS Scores

Evaluation of GAS by Departmental Chairs

Department chairs are often responsible for annual evaluation of faculty. In an effort to elicit input and feedback on the use of Goal Attainment Scaling, departmental administrators from a rural, Southeastern American university with a primary emphasis on teaching were interviewed by members of the university's Faculty Welfare Committee, who were exploring options for strengthening the faculty evaluation process across the university. The research question being considered was "What are the perceptions of department leadership on using the goal attainment scale for faculty evaluation?"

Participants

Department administrators were selected using purposeful selection due to their experience and knowledge of faculty evaluation as well as availability to this particular campus community and willingness to participate. The sample of participants consisted of five department chairs from different disciplines and departments and one faculty member in a leadership role, but not department chair.

Methods

All participants were shown the *Goal Attainment Scaling: Applications, Theory, and Measurement* (Kiresuk, Smith & Cardillo, 1994). The provost supported the efforts of the Faculty Welfare Committee and purchased several copies of the book for the library. Semi-structured interviews were conducted during which participants were shown an illustration of the Goal Attainment Scale and provided with a demonstration of how Goal Attainment Scaling could be used as a faculty evaluation tool. Participants were asked three open-ended questions regarding their thoughts on faculty evaluation and the potential uses of the Goal Attainment Scale. Probing questions were used to elicit additional information or seek clarification (Creswell, 2008). Interviewers documented participants' responses to the interview questions.

Data Analysis

Participants in this study provided information using a qualitative approach. Summaries of the interviews were analyzed using qualitative data analysis methods. To ensure accuracy, all field notes and transcripts underwent multiple reviews by two independent coders. The field notes were used to document recurring themes. Data analysis took place after data collection had concluded.

The interview data was coded and classified. The overall themes of the study were then determined using the codes. The core of any qualitative research strategy is the theme (Mishra & Dey, 2022). Four steps were taken to get the themes. Transcribing the field note data into digital format was the first step in arranging the data for analysis. Transcripts are important for bringing context to research participants' unique perspectives (Rutakumwa et al., 2020). The data were examined in the second step in order to interpret the information. After data collection, data is reviewed by organizing the overall meanings and ideas (Creswell, 2009). The third step involved coding and categorizing. Coding and categorizing are the methods that are most frequently used for data analysis in qualitative analysis (Cho & Lee, 2014). The data were transferred to Dedoose (2023) by copying and pasting from the transcription. Dedoose [see: <https://www.dedoose.com>] is a cloud-based application that allows the researcher to organize and analyze research data. The participant responses were categorized, and codes were identified using Dedoose. Overall themes were identified using the codes. Large amounts of data can be easily organized and managed by means of categorizing and coding. Categories, themes, and patterns are outlined in the coding process (Craig, 2009). The fourth step was converting key findings into overall themes that reflected participant views.

Results

Three primary themes related to the department chairs' input and feedback on the potential use of GAS in faculty evaluation were identified. These themes help explain the potential considerations and strengths that department chairs may have in regard to the use of Goal Attainment Scaling in faculty evaluation.

Considerations. Participants identified two overall considerations when it came to their perceptions of using goal attainment scaling in faculty evaluations. First, there were multiple questions around definitions of teaching, research, and service and the application of weights and subcategories within each. Second, several implementation considerations were shared.

How to Define. All six participants discussed how the teaching, research, and service focus areas of faculty evaluation may be defined for the purposes of using the GAS and identifying the weights and subcategories. Participant responses indicated that evaluator subjectivity may come into the faculty evaluation process when defining the overall focus and subcategories of each focus. For example, participant 5 indicated "research" may be evaluated on the basis of peer reviewed publications, conference presentations, and student engagement in class activities while participant 6 referred to research as "initiatives that lead to the publication of reports, studies, and/or professional standards, policies, and procedures." Participant five described "service" as including university, department, or community involvement, while participant 6 focused on service as "serving on board of directors, chairing state-wide organizations, and writing or working on grants." Participant four indicated the various definitions of scholarship and teaching effectiveness across various departments is a problem, while participant five highlighted that the evaluation of a faculty member's performance is based on a comparison with other members of the department, indicating that each department chair may have a different baseline on which they base evaluation of teaching, research, and scholarship.

How to Implement. Three participants discussed considerations with the implementation of a campus-wide use of the Goal Attainment Scale in faculty evaluation. Participant six provided positive feedback that GAS in faculty evaluation "might work on campus as long as modifications are made or identified." Participant four noted that implementation "will not be an overnight success story" but will take many years to achieve and fully implement on campus. Participant two shared that faculty incentives and discussion during department meetings around the possibility of using GAS for faculty evaluation might be useful for faculty buy-in.

Strengths. In addition to considerations, participants provided several strengths regarding the implementation of Goal Attainment Scaling in faculty evaluation. Participant four raised the potential for departments to have the autonomy to elaborate on GAS using their own evaluation scales, while participant two stated that GAS could allow for more emphasis to be placed on scholarship. Participant one shared that GAS would “probably be an effective resource for the faculty.” Several participants expressed favor for changing the current faculty evaluation model in order to increase objectivity used during the faculty evaluation process. Participant five specifically agreed with the use of GAS to develop quantitative measurements for faculty evaluations. Participant three indicated that they “loved” the idea of using a more standardized model for faculty evaluation.

Discussion

Understanding department leadership perceptions of using GAS for faculty evaluation is important in strengthening the faculty evaluation process. Department chairs and leadership can incorporate this knowledge for more accurate and productive evaluations. The research question was addressed in this study using participant responses and overall themes.

Qualitative analysis revealed two primary themes in response to the perceptions of using GAS for faculty evaluation. The two main perceptions were “Strengths” and “Considerations” All (100%) of the participants had favorable views about using GAS for faculty evaluation. However, half (50%) of the participants had questions about how to implement or modify the current faculty evaluation model. Goal attainment scaling may provide some flexibility for departments as well as helpful quantitative measures for faculty evaluation. However, it may be beneficial for universities to consider piloting the use of goal attainment scales for faculty evaluation across several departments in order to allow leadership and faculty the opportunity to reach consensus on how to define scholarship, teaching, and research, as well as how to weight subcategories within their institutions, prior to moving to a wide-scale implementation.

There has been a lack of research on the process for faculty evaluations. This can make it difficult to evaluate the effectiveness of current processes for evaluating faculty. According to Lin et al. (2021) the question of how to thoroughly evaluate an academic using systemic evaluation is vital in academia. There was a gap in the published literature regarding using goal attainment scaling for faculty evaluations. According to Jung (2018), one proposed research methodology for monitoring progress toward individualized goals is goal attainment scaling. This study filled the identified gap in the literature by focusing on department leadership for

perceptions on using the goal attainment scale for faculty evaluation. Goal attainment scaling makes expectations and performance levels for any goal clear and straightforward (Jung, 2018).

Limitations

There are limitations that impact the generalizability of this study. First, the research took place on one, rural university campus with a small subset of department leaders. Second, interviews were not recorded so interview transcripts were not available for analysis. Future research should be conducted with department leaders, faculty, and university administration to gain further insight into the potential strengths and considerations of the use of goal attainment scaling in faculty evaluation. Further, studies that measure outcomes related to the actual implementation of goal attainment scaling in faculty evaluation would be beneficial.

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