# Goal Attainment Scaling (GAS) Software for Progress Analytics

**Product:**
Goal Attainment Scaling (GAS) Software for Progress Analytics

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Beta Testing/Pre-Market Validation

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Goal setting is a useful and universal exercise. Typical goal setting is a binary process, in which the established goal is either met or unmet, resulting in success or failure. This approach provides limited outcome data. For example, subjects who are progressing at a slower rate, but still demonstrating some improvement, would have their goal achievement measured as "failure." Conversely, a subject who is exceeding or outpacing original expectations would have their goal achievement measured simply as "met."

In response to the shortcomings of binary metrics for tracking progress, Goal Attainment Scaling (GAS) was developed in 1968 to measure progress in various fields such as healthcare and education. GAS uses a 5-point scale to measure progress for a given goal, ranging from a baseline to less-than-expected, to expected, to more-than-expected, and finally to much more than expected. The GAS method is particularly suited to measuring incremental, meaningful changes over time, such as medical and functional changes experienced in rehabilitation therapies and student learning throughout a semester.

Although numerous binary goal setting software applications exist, the authors were unaware of any GAS-focused software, and therefore saw the need to develop a user-friendly software package that not only implements the GAS methodology but also takes advantage of database and digital computing power to enhance the user experience and facilitate administration of programs.

**Technology Description**

Researchers at WMU have created a software application that implements Goal Attainment Scaling (GAS) using a 5-point scale to measure progress for a given goal, ranging from a baseline to less-than-expected, to expected, to more-than-expected, to much more than expected. The user-friendly software allows enhanced implementation of the GAS method of monitoring progress towards goal achievement.

Users as well as administrators benefit from this innovation, as it facilitates individualized goal setting and scaling, enables monitoring and analysis of small but meaningful changes over time, automates manual data entry and analysis, and allows for comparison of scores among multiple subjects with different goals, providing a time- and cost-effective outcome measurement suite. The WMU software provides a highly individualized outcome measurement tool, with changes in score easily computed for single or multiple goals. Aggregate measures of improvement can also be provided.

One important and unique feature of the GAS software is that it employs a hierarchy of user types, including

subjects/students/patients, clinicians/instructors, supervisors, administrators, etc. Different user types can have different permissions and access privileges to different features and data sets. For instance, goal setters (therapists, instructors, etc.) can update their subjects' goals and criteria (e.g., via kiosk, laptop, mobile device). Administrators can log in to view individual or overall program evaluation data. Users can view up-to-date statistics of their progress.

The GAS software also provides customizable analytics and statistical reports in real-time, which allows for monitoring and analysis at any desired point throughout the GAS process. Customizable dashboards are useful for program evaluation reports, when comparing outcomes among varied providers and programs within an organization.

An additional feature is the ability to communicate progress between the subject and goal setter, using comment fields, making the tool useful for telehealth purposes. The GAS software can measure both subject-perceived change over time as well as provider-perceived change over time. Providers can provide feedback to subjects via the software, to facilitate increased self-awareness or to encourage the subject to continue treatment as usual or to alter the intervention, before the next scheduled office visit.

Two generic examples of the GAS software being applied to specific cases are shown in Figures 1 and 2. Figure 1 shows a comparison of binary evaluation/achievement of a physical therapy treatment vs. goal attainment scaling for the same goal, provided to an infant with motor delays, over three months. Figure 2 shows a comparison of binary evaluation/ achievement of an occupational therapy student learning goal vs. goal attainment scaling for the same goal, a learning goal to increase knowledge in a specific practice area, over the course of a semester.

## Potential Benefits

- User-friendly software allows enhanced implementation of GAS method of monitoring progress towards goal-oriented achievements
- Allows for comparison of scores among multiple subjects with different goals
- Provides communication between subject and goal setter for remote telehealth
- Eliminates the need for manual data entry and analysis, providing a time- and cost-effective outcome measurement
- Enables monitoring and analysis of small but meaningful changes over time
- Implements a hierarchy of user types, such as subjects/students/patients, clinicians/instructors, supervisors, administrators, etc.

## Figure 1. Comparison of GAS v. Binary for Healthcare

| | |
|---|---|
| Typical binary goal setting, i.e., success or failure to achieve | Goal: **When supported at the pelvis, the child will sit and use both hands to play with toy for 60 seconds** |

| *Goal Attainment Scaling (GAS) Objectives/Measurement* | | | | |
|---|---|---|---|---|
| *0 (pre-treatment/baseline)* | *1 (less than expected)* | *2 (expected outcome)* | *3 (better than expected)* | *4 (much better than expected)* |
| ***When supported at the pelvis, the child will:*** | | | | |
| Sit without arching her trunk for 10 seconds | Sit without using her hands for support for 30 seconds | **Sit & use both hands to play with toy for 60 seconds** | Sit erect at the trunk & use both hands to play with toy for 60 seconds | Sit erect, using both hands to play with toy for 60 seconds & rotate to either side to reach for a toy |

## Figure 2. Comparison of GAS v. Binary for Education

| | |
|---|---|
| Typical binary goal setting, i.e., success or failure to achieve | Goal: **I will become proficient in completing assessments for clients and complete documents with minimal corrections by mid-semester** |

| *Goal Attainment Scaling (GAS) Objectives/Measurement* | | | | |
|---|---|---|---|---|
| *0 (pre-treatment/baseline)* | *1 (less than expected)* | *2 (expected outcome)* | *3 (better than expected)* | *4 (much better than expected)* |
| ***When assigned assessment task, the student responds:*** | | | | |
| I have read no articles related to sensory strategies | I will read 5 articles related to sensory strategies for treatment of ADHD, by end of semester | **I will read 5 articles related to sensory strategies for treatment of ADHD, by midterm** | I will read five articles related to sensory strategies for treatment of ADHD, and will share summary of findings to my peers, by midterm | I will read five articles related to sensory strategies for treatment of ADHD, and will share summary of findings to my peers, by week 4 |