

# The <br> Standards- 

Based
Grading
Reuolution

## F The SBG Revolution


"In education, we have tended to think of fairness as uniformity. All students have been required to do the same assessments in the same amount of time, and their grades have been calculated in the same way from the same number of assessments. But students are different in many different ways, and so treating them the same can actually be unfair. Fairness is much more about equity of opportunity than it is about uniformity. For example, some students need to wear glasses when they need them; for fairness we do not say, 'You are taking a test today, but you cannot wear your glasses because everyone is not wearing glasses,' or 'Some students in this class need glasses, so you will all wear them (whether you need them or not).'

- Ken O'Connor, A Repair Kit For Grading (2007)


## The SBG Revolution



## What prompted this change?

## "What's in a grade?"

I remember being asked this seemingly simple question while attending a seminar in the spring of 2008. Immediately, I thought of "points". Grades are made up of points. The more points you get, the better your grade. Simple. Then came the crushing follow-up question...

## "What does that grade reflect?"

Again, my thoughts returned to "points". A good grade, like a "B" or an "A", reflects that the student was willing to do her/ his homework, projects, and extra credit, and they must have scored decently on all quizzes and tests.
"What part of that grade reflects what the student truly understands?"

And then it hit me. Up until that moment, grades in my class showed that students were able to "play the school game". They knew how to work the point system. Grades in my class, at that time, reflected whether or not students gathered enough points. My grades were NOT true reflections of their mastery of the material. Suddenly, it all made sense. Points are problematic... and students are "point hounds". The only reason many students do assignments are for the points. Many students don't care if they learn anything... they just want to get enough points to pass the class. So, I got rid of them (the points, not the students).

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How does school normally work?


Susie Sophomore got a "D-" in history.
Susie Sophomore got a $60 \%$ in her history class. She never did the homework, the projects, or the extra credit. Despite this, she scored exceptionally well on tests. Does her "D-" course grade reflect what she knows? Is it fair to dock Susie's grade because she didn't do homework, projects, or extra credit? Is she being punished for her laziness? Should she?

Jeff Junior got a "C" in history. .
Jeff Junior got a $75 \%$ in his history class. Jeff did the absolute bare minimum and exerted minimal effort. He participated only if called upon. He was hit-or-miss when it came to homework completion. In the end, his "C" grade appears to match his enthusiasm and motivation... but does it really reflect what he truly knows?

## Sally Senior got an " $F$ " in history...

Sally Senior got a 58\% in her history class. Sally enthusiastically participated and showed an understanding of the material when asked questions in class. However, she failed every test. Does this mean Sally learned nothing? What if she has testtaking anxiety? Does she deserve to fail the class?

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## What should a grade truly reflect?

Should it be what a student knows at the particular moment when they take a test? Should it be a representation of what they know from a variety of assessments? What role do grades play in truly assessing what a student does or does not know?
"From age zero to two, human beings experience their fastest growth spurt. We develop more physically, emotionally, and intellectually during this time than at any other point in our lives. The speed of this development is different from person to person. Knowing this, it would be ridiculous to expect that all kids recite the alphabet in the eighth hour of the fifth day of the tenth month in the second year of their lives."

- Rick Wormeli, Fair Isn't Always Equal (2006)

What is more important, that $70 \%$ of my 150 students grasp the material on November $7^{\text {th }}$, an arbitrary date picked by me as the day in which every student must prove their mastery of the American Revolution, or that $100 \%$ of my 150 students mastered the material eventually... even if it is after the test? Can students recall the information they have been taught? Can students apply what they have learned to a future set of problems? Will students remember it when they leave the classroom? Are students just memorizing it for the test and then forgetting it?
"Thus, what or how much material we teach our students matters little. It's what our students learn or what they've mastered that speaks volumes about us as educators." - Rick Wormeli

## The SBG Revolution

## What is Standards-Based Grading?

Educators love acronyms. They think of them as secret handshakes... and they enjoy using them because they make them sound, well, important. But acronyms are as irritating as trying to decipher text jargon. That being said, you keep seeing "SBG" mentioned in association with this classroom... and "SBG" sounds super-fancy. Do you want to know the secret handshake?
"SBG" stands for Standards-Based Grading.
OK. So it's not as cool as you thought it would be. Still, it's pretty important to know how $\operatorname{SBG}$ is designed to work for you! Standards-based grading directly utilizes standards, benchmarks, and indicators as a checklist for the material students need to master before they leave the classroom. In such a system, the teacher assigns grades specifically for each indicator as the class moves through the units.

Academic standards and benchmarks form the backbone of the material taught in any given core subject. In 2002 and 2010, the State of Ohio restructured its Social Studies curriculum. Dr. Hartnell uses these history standards to create the Essential Questions (EQs) for each unit. Along with key vocab and questions from the textbook, EQs form the Pathways Packet and help Dr. Hartnell assess students in his class.


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## What is the Pathways Packet?

At the start of every unit, students receive a Pathways Packet. The Pathways Packet contains key vocabulary and questions from reading assignments. This material is contained in the course textbook (United States History \& Geography: Modern Times), which you can access by visiting Hartnell University's McKimBatterson Library (DrHartnell.com/library.html). Also included are the 20 Essential Questions (EQs), which are the state standards used to design the unit as well as form the initial assessment. Answers for the EQs are found in the notes taken in class. Reviewing the Pathways Packet and answering the EQs after each lecture or discussion will help students further their understanding of the unit's major themes. As such, it is VERY important that students visit the weekly schedule on a regular basis so as not to fall behind. Completion of the Pathways Packet is REQUIRED in order for students to be granted re-assessment following the test (more on this later).


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Pictured below is the section containing the key reading vocabulary and questions as seen in the Pathways Packet.

## Unit \#2: Reading Assignment \#1

Read the following pages in the course textbook to locate the key vocabulary and answer the questions below.


1. vigilance committee:

| The key |  |
| :---: | :---: |
| vocabulary terms |  |
| are highlighted |  |
| in yellow in the |  |
| textbook to make |  |
| it easy for |  |
| students to <br> locate and <br> define. | Students read <br> pages \#74-79 in <br> their textbook. |
| Do NoT just <br> "Google" |  |
| these terms! |  |

## C2,L1 KEY READING QUESTIONS:

1. What role did mining play in the development of the American West?
2. Describe the reasons for the growth of the cattle industry on the Great Plains?

The key reading questions can be answered by reading the pages in this particular lesson. Students need to keep up with these reading assignments (posted on the calendar page) so as to not fall behind, which can happen quickly.

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Pictured below is the section containing the EQs from the Pathways Packet.

## Unit \#2: America 2.0

## Unit \#2: Essential Questions (EQs)

EQ 2.05
What was the Monroe Doctrine? How did it shape early U.S. foreign policy?


The "EQ" means it is an "Essential Question".

The "2" means
it is "Unit \#2".

The "06" means it is the sixth EQ of the unit.

Students are expected to use the class calendar to know what EQs will be covered each day of the unit. They will take notes during lectures and discussions and then use these to help answer each EQ addressed by that particular day's lecture/discussion.

Students should keep pace with the calendar and chip away at this Pathways Packet. They should try to answer the EQs while the information is still fresh in their minds. Waiting to complete all 20 EQs the day before the test is the WRONG way to go about preparing.

## The SBG Revolution

What is the SBG classroom's "purpose"?

For starters, the SBG classroom is NOT some sort of "cure-all" system that magically makes every student an "A" student. It is designed to make Dr. Hartnell a better assessor of students and their knowledge of the classroom material.

The SBG classroom produces a grade that is $100 \%$ authentic and reflects what a student truly knows by cutting out all the "fat" that traditionally beefs up grades (like homework, extra credit, etc.). It is essentially like a college course (except more user -friendly). Here, students are assessed as to how well they understand the material. If they understand it, then their "grade" reflects it. If not, then the teacher and student have some work to do until they get it.

| People generally |  |
| :---: | :---: |
| remember... (learning activities) |  |
|  |  |
| 10\% of what they read |  |
| 20\% of what they hear |  |
| $30 \%$ of what they see |  |
| 50\% of what they see and hear |  |
| 70\% of what they Participate in Hands-On-Workshops say and write <br> Design <br> Analyze <br> essons Define |  |
| 90\% of what they do. |  |

## The SBG Revolution

## What is assessment?

A standards-based classroom contains $\underline{\mathbf{2}}$ types of assessment:

- formative (influential)
- summative (cumulative)

Formative assessments help teachers see where students are, and, more importantly, where they need to go next. (Ex: homework.)

Summative assessments are the "final" assessments that help teachers see if students understand the material. In other words, they "sum up" their mastery. (Ex: tests.)

## Time for a sweet basketball analogy...



A basketball player shoots 100 free-throws at the end of practice on Monday, Tuesday, Wednesday, and Thursday in order to get ready for the game she has on Friday. She makes 20 free-throws on Monday, 40 on Tuesday, 60 on Wednesday, and 80 on Thursday. Not a single one of these free-throws counts toward her game statistics or adds any points to the scoreboard on Friday. What counts is her performance when she goes to the line to shoot a critical free-throw with three seconds left in the fourth quarter of the game. Because she chose to work during the week at the end of practice when she was tired, she is ready for this free-throw at the end of the game, when she is also tired and the game's final outcome is at stake. The practice free-throws shot from Monday through Thursday are formative assessments of how ready she is for the game. The shots she takes during the game on Friday represent summative assessments, or the culmination of her practice during the week... and are the only shots that "count" in assessing her skill level (or mastery) as a basketball player.

## The SBG Revolution

## The 5-Steps to Re-Assessment

STEP \#1. The unit test occurs. This comes in the form of a multiple choice test designed to mimic the state-mandated End of Course assessments. Each multiple choice question is aligned with one or more of the unit's 20 Essential Questions (EQs).

STEP \#2. The test is graded, and a "raw score" is generated. This raw score is out of 25 points for the first test, 50 points for the second, 75 points for the third, and 100 points for every test after that. This "raw score" serves as an indicator for where a student's mastery starts. It is recorded in Power School as being out of $25,50,75$, or 100 .

STEP \#3. All 20 EQs covered by the test are given a "1" through "5" score (see pages \#11-15), as calculated by the SBG Scorecard (see page \#16). The 20 EQs are then recorded in Power School as being out of 5 points $(5 / 5=100 \% ; 4 / 5=80 \%$; $3 / 5=60 \%$; $2 / 5=40 \%$; $1 / 5=20 \%$ ). This means every test carries with it 100 additional points generated from the EQs (20 x $5=100$ ).

STEP \#4. Re-assessment occurs for the next two weeks (this may be shortened or extended). During re-assessment, students attempt to demonstrate mastery over missed concepts (which would be any EQ where they scored a "1", "2", "3", or "4"). To do this, students sign up for VERBAL and WRITTEN re-assessment on specific days and periods. Unless otherwise noted, HALF of a student's re-assessment must be verbal and HALF must be written. Verbal re-assessment consists of a student holding a discussion with Dr. Hartnell about an EQ. With written re-assessment, a student writes a short response to a revised version of the requested EQ. (Examples of the "EQ Sign Up" and "EQ Entrance Ticket" can be seen on page \#17. These forms are available in the classroom and on DrHartnell.com.) EQ grades can only go UP and can never decrease. Students are granted ONE attempt per EQ.

STEP \#5. As students demonstrate mastery, points are added back to their EQ scores on Power School. This means EQs that were originally a "1", "2", "3", or "4" could become a "5". (NOTE: This applies to EQ scores only. Raw scores do NOT change.)

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The 1-5 SBG Scale


## LEVEL 5 = MASTERY ACHIEVEMENT

- The student has earned credit for this EQ.
- The student has demonstrated complete knowledge of the EQ.
- The student has no difficulty applying the material from the EQ to other concepts/sets of problems.
- A "5" is a 90-100\% ("A") on the traditional grade scale.


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## The SBG Revolution

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The 1-5 SBG Scale
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LEVEL \(\underline{4}=\) PROFICIENT ACHIEVEMENT
- The student has earned credit for this EQ.
- The student has demonstrated good knowledge of the EQ.
- The student struggles occasionally when applying the material from this EQ to other concepts.
- A "4" is an 80-89\% ("B") on the traditional grade scale.

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\section*{LEVEL \(\underline{3}=\) BASIC ACHIEVEMENT}
- The student has earned credit for this EQ.
- The student has demonstrated some knowledge of the EQ.
- The student struggles when applying the material from this EQ to other concepts.
- A "3" is a 70-79\% ("C") on the traditional grade scale.

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\section*{E The SBG Revolution}
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The 1-5 SBG Scale

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\section*{TAG TEAM CHAMP}

You've shown great improvement but still rely heavily on help from a partner (your teacher). In time, however, you' ll be strong enough for an exciting solo career!

LEVEL \(\underline{2}=\) DEVELOPING ACHIEVEMENT
- The student has NOT earned credit for this EQ.
- The student has demonstrated little knowledge of the EQ.
- The student is unable to apply the material from this EQ without prompts and/or clues from the teacher.
- A "2" is a 60-69\% ("D") on the traditional grade scale.

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\section*{The SBG Revolution}

The 1-5 SBG Scale
continued...


LEVEL \(\underline{1}=\) INSUFFICIENT/INCOMPLETE ACHIEVEMENT
- The student has NOT earned credit* for this EQ.
- The student has demonstrated no knowledge of the EQ.
- The student is unable/unwilling to apply the material from this EQ even with prompts and/or clues from the teacher.
- A "1" is a 0-59\% (or "F") on the traditional grade scale.
* This level also serves as a placeholder for incomplete work.

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\section*{The SBG Scorecard}

\title{
Unit \#5: "The American Overhaul" SBG Scorecard
}

\section*{Question Types (Point Values)}

MC = Multiple Choice (1pt.); SA \(=\) Short Answer (5pts.)
Mastery Levels
\(\mathbf{5}=\) Mastery; \(\mathbf{4}=\) Proficient; \(\mathbf{3}=\) Basic; \(\mathbf{2}=\) Developing; \(\mathbf{1}=\) Insufficient/Incomplete Credit earned with Level 3, Level 4, or Level 5
\begin{tabular}{|c|c|c|c|c|}
\hline \[
\begin{aligned}
& \text { Unit } \\
& \text { EQs }
\end{aligned}
\] & Questions that covered the EQ & \[
\begin{gathered}
\text { Possible } \\
\text { Points }
\end{gathered}
\] & Your Points & Mastery Level \\
\hline 4.01 & \[
\begin{aligned}
& \text { MC: } 1,8,9,10,13,14,18 \\
& \text { SA: YES }
\end{aligned}
\] & 12 pts. & & 12345 \\
\hline 4.02 & \[
\begin{aligned}
& \mathrm{MC}: 3,4,5,7,16 \\
& \mathrm{SA}: \mathrm{NO}
\end{aligned}
\] & 05 pts. & & 12345 \\
\hline 4.03 & \[
\begin{aligned}
& \text { MC: } 9,10,19 \\
& \text { SA: YES }
\end{aligned}
\] & 08 pts. & & 12345 \\
\hline 4.04 & \[
\begin{aligned}
& \text { MC: } 3,5,20,21,23,25 \\
& \text { SA: NO }
\end{aligned}
\] & 06 pts. & & 12345 \\
\hline 4.05 & \[
\begin{aligned}
& \mathrm{MC}: 11,12 \\
& \mathrm{SA}: \mathrm{YES}
\end{aligned}
\] & 07 pts. & & 12345 \\
\hline
\end{tabular}

Look at EQ 4.05. This EQ is covered by two multiple choice questions and one short answer question. With the multiple choice each worth 1 point and the short answer worth 5 points, EQ 4.05 is valued at 7 points. Let's say a student misses both multiple choice but gets the short answer correct. That gives the student 5 points out of the possible 7 (or \(5 / 7=71.4 \%\) ). If you look at the SBG Scale, a 71.4\% falls within the 70-79\% needed to earn a "3". This means the student has "basic" knowledge of the material covered by EQ 4.05. It is recorded in Power School as a "3". If the student completes verbal or written re-assessment for EQ 4.05 and shows improvement, the "3" moves to a " 4 " or a "5", and this score is changed on Power School. (NOTE: These sheets are not returned since the point of this is to get students to stop worrying about which questions they missed and focus on what topics they don't understand. However, these sheets are available upon request.)

\section*{E \\ The SBG Revolution}

\section*{EQ Sign Up \& EQ Entrance Ticket}


KRITTEN RE-ASSESSMENT REQUEST

After viewing their scores on Power School, students check Dr. Hartnell's EQ binder to see what periods/days have been set aside for reassessment. Students are permitted to do up to 5 VERBAL and 10 WRITTEN per session. This means they might need multiple periods/days in which to complete re-assessment.


Students need to fill in the "Entrance Ticket" once they've secured the periods/days. If a student misses their time (and it's not excused), a new time will NOT be granted. Half of the EQs need to be re-assessed via VERBAL and half via WRITTEN. (If you have an odd number to do, the split will be uneven.)

 may not be yo-asasaaed without 16 . Uaing the VEREAL ox WRITTEN
boxaa (or both), liat the EQa you whan to re-master. boxaa (or both), liat the Iga you wian to re-mastar.


\section*{WRITTEN RE-ASSESSMENT REQUEST}

IQ Oxiginal gcoxe Date a Rexiod Requated

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\section*{SBG \& Power School}

The screen shot below is how my Power School account looks. From this screen alone, \(I\) can get a quick glimpse into how well my students are doing on any given EQ - and, more importantly, to see which students have taken advantage of re-assessment to improve their mastery of the material (as well as overall grade).
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline Grade &  &  &  &  &  &  &  &  \\
\hline 100.00\% & 4 & 4 & 4 & 4 & \(4^{\text {® }}\) & 4 & \(4^{\text {® }}\) & 4 \\
\hline 100.00\% & 4 & \(4^{\text {® }}\) & 4 & \(4^{\text {® }}\) & \(4^{\text {® }}\) & \(4^{\text {® }}\) & \(4^{\text {® }}\) & \(4^{\text {® }}\) \\
\hline 94.29\% & 4 & & \(4^{\text {® }}\) & \(4^{\text {® }}\) &  & 4 & 4 & 4 \\
\hline 88.57\% & 4 & & 4 & \(4^{\text {G }}\) & & \(4^{9}\) & \(4^{\text {® }}\) & \(4^{\text {® }}\) \\
\hline 72.14\% & 4 & & 4 & 3 & & 3 & 4 & \(4^{\text {® }}\) \\
\hline & \multicolumn{3}{|l|}{\multirow[t]{9}{*}{From 2008-2016, I used a 4 -point scale (1-4). The scores of "4" you see in this screen shot indicate "Mastery Achievement" (or a "5" on the new scale).}} & & & & & \(4^{\text {© }}\) \\
\hline 91.43 E & & & & \begin{tabular}{l|l} 
a \\
\(e\)
\end{tabular} & \multicolumn{4}{|l|}{\multirow[t]{18}{*}{\begin{tabular}{l}
Blue hyperlinks indicate re-assessment has been completed and contains comments that are viewable to students/guardians. These comments say things \\
like "Verbal reassessment complete; score moved from 2 to 5." No blue hyperlink? Either the student didn't complete re-assessment, or the re-assessment hasn't been score yet.
\end{tabular}}} \\
\hline 97.86 & & & & e \(4^{\text {a }}\) & & & & \\
\hline 85.71 S & & & & n 3 & & & & \\
\hline 78.57 & & & & & & & & \\
\hline 92.14 & & & & \(4^{\text {® }}\) & & & & \\
\hline 94.29 & & & & 4 & & & & \\
\hline 98.57 & & & & \(4^{\text {® }}\) & & & & \\
\hline 57.86 & & & & - 3 & & & & \\
\hline 77.86\% & 4 & 3 & 4 & \(4^{\text {® }}\) & & & & \\
\hline 94.29\% & 4 & 4 & \(4^{\text {® }}\) & 4 & & & & \\
\hline 96.43\% & \multicolumn{3}{|l|}{\multirow[t]{6}{*}{From here, I can track average initial and re-assessed scores for each EQ for every student.}} &  & & & & \\
\hline 94.29\% & & & & 14 & & & & \\
\hline 99.29\% & & & & \(1 \quad 4{ }^{\oplus}\) & & & & \\
\hline 98.57\% & & & & \(4^{\text {® }}\) & & & & \\
\hline 93.57\% & & & & \(4{ }^{\text {® }}\) & & & & \\
\hline \(77.86 \%\) & & & & & & & & \\
\hline 86.43\% & 3 & 4 & 3 & 4 & & & & \\
\hline 81.43\% & 4 & \(4^{\text {® }}\) & 4 & \(4^{6}\) & & & & \(4^{\text {® }}\) \\
\hline 96.43\% & 4 & & \(4^{\text {® }}\) & 4 & 4 & 4 & 4 & \(4^{\text {® }}\) \\
\hline 89.29\% & 3 & & 4 & 3 & 4 & 3 & 4 & 4 \\
\hline 90.89\% & 3.9 & 3.8 & 3.9 & 3.9 & 3.7 & 3.8 & 3.8 & 3.9 \\
\hline 94.29\% & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\
\hline 100\% & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\
\hline
\end{tabular}

\section*{The SBG Revolution}

\section*{SBG \& Power School}
continued...

Pictured below is a student's Test Feedback Sheet, which can be accessed in Power School by students and guardians. From this, students can see how they did on each of the unit's EQs.


\section*{The SBG Revolution}

\section*{Does SBG really work?}

YES! The "old way" of grading is broken. In the old system, a student's failure on a test is recorded in Power School as a 54\%. The student never masters the material, and the groundwork for future failures begins to take shape. The student limps into the next unit without having grasped the necessary concepts to give her/him a chance at succeeding. The ugly cycle continues.

By using SBG, teachers can specifically identify which EQs a student understands and which EQs a student does not. Parents and guardians are also able to see exactly what their student did well and where they need improvement. This helps alleviate the guess-work that often goes into traditional letter grades.

Students still have homework with SBG... it just doesn't need to be worth any "points". Homework is the perfect formative assessment. It's that "practice free-throw" from the sweet basketball analogy on page \#9. With SBG, homework can be used to help assess where students are during the course of the unit and allows teachers to make adjustments where needed. Gone too is the need for "extra credit". With SBG, consider extra credit as "yes, you can do extra in order to get credit". This "extra" comes in the form of re-assessment.

Realistically, though, students can STILL fail in a SBG classroom. However, a failing grade in a SBG classroom isn't because the student didn't do their homework, projects, or extra credit. It means s/he truly didn't master the material.
> "Thanks to SBG, when we talk with parents, we move from generic comments like 'Freddie scored well on the first three tests, but blew it on the last one, so he now has a \(C\) in the class,' to comments that provide detail as to Freddie's struggles. We can now say, 'Freddie understands the powerful impact of the Byzantine Empire but is struggling with how events in the last two hundred years of the Middle Ages led to so many changes during the Renaissance.' The first comment tells us nothing, but the second one provides plenty of information to which we can respond."

\author{
- Rick Wormeli, Fair Isn't Always Equal (2006)
}

\section*{E \\ The SBG Revolution}

\section*{Does SBG really work?} continued...

The entire idea behind standards-based grading is nothing new. I studied the benefits of using standards-based grading while completing my doctorate in 2011 and then again at Otterbein University in 2015. Such an approach was shown to have a motivational effect (in the form of grade motivation) on students enrolled in a SBG classroom. Additionally, when examining student scores between Start of Course Assessments (SOCA) and End of Course Assessments (EOCA), the 2015 Otterbein study, which included 327 ninth graders, found significant improvement for the 124 SBG students. On average, these 124 SBG students saw their SOCA score jump from 28.7 (out of 70 , or \(41 \%\) ) to 58.2 ( \(83 \%\) ), a gain of \(71.5 \%\). This was compared to the 203 non-SBG students that saw gains of \(63.6 \%\) (from 25.8 , or \(36.9 \%\), to 53.9 , or \(77 \%\) ). The table below shows the specifics, with the \(N\) indicating the number of classes that participated for each group of students.
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline Group & \(\boldsymbol{N}\) & SOCA & EOCA & \begin{tabular}{c} 
Hake \\
Gains
\end{tabular} & \(\boldsymbol{t}\) & \(\boldsymbol{p}\) \\
\hline Non- SBG All Students & 8 & 25.80 & 53.90 & \(63.57 \%\) & 1.679 & .121 \\
SBG All Students & 5 & 28.68 & 58.22 & \(71.49 \%\) & & \\
\hline Non- SBG Non-Honors & 5 & 24.83 & 51.08 & \(58.11 \%\) & 3.125 & .020 \\
\begin{tabular}{c} 
SBG Non-Honors
\end{tabular} & 3 & 28.47 & 57.67 & \(70.31 \%\) & & \\
\hline Non-SBG Honors & 3 & 27.41 & 58.60 & \(73.20 \%\) & -.002 & .999 \\
\hline
\end{tabular}
* A "Hake Gain" is the increase in each student's pre-test score divided by the increase that would have resulted if each student had a perfect score on the post-test. It is a meaningful measure of how well an intervention works when comparing populations that have different pre-test scores. To calculate the Hake Gain for the non-SBG students \(\rightarrow\) (EOCA - SOCA) / (70 - SOCA) \(\rightarrow\) (53.90 - 25.80) / (70 \(25.80) \rightarrow 28.1 / 44.2=0.6357 \rightarrow\) There was a Hake Gain of \(63.57 \%\) for the non-SBG students.


This SBG Guide belongs to:```

