

## Quantitative Skills and Reasoning (MATH 1001) Course Redesign at Georgia Highlands College

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Quantitative Skills and Reasoning (Math 1001) is a designated gateway course at Georgia Highlands College (GHC). In an effort to increase student success in this course, GHC partnered with the Gardner Institute in the Gateways to Completion (G2C) initiative. Two outcomes resulted from this effort. The first created a method for more frequent personal contact with students concerning their progress throughout a semester. Secondly, an active learning strategy was devised and termed class wrappers. Following classroom instruction, students utilize class wrappers in groups to solve problems and apply concepts over newly covered material in order to better self-identify perceived strengths and weaknesses.

### STATEMENT OF THE PROBLEM

The Gateways to Completion (G2C) process was initiated during the spring of 2016, to help Georgia Highlands College create and implement an evidence-based plan for improvement. Fundamental areas for improvement included not only teaching, but also student learning and success in high-enrollment courses that have historically experienced high DFWI rates. A course-specific committee was created and began collecting and analyzing evidence to create a plan of improvement for the Quantitative Skills and Reasoning (MATH 1001) course as part of the first year of the G2C process. The plan continued to be implemented and refined for improvement of MATH 1001 courses throughout the next two years.

The G2C journey began with an institutional self-study process that was set up to identify the opportunities and conditions necessary for change. Course-specific reports and actions plans, as well as a comprehensive college report and action plan were developed. Six principles and related indicators were studied to help determine strengths, challenges, and ideas for improvement at the course and college levels. These principals were learning, faculty/instructors, improvement, academic practice and policy, students, and support. Also examined was a Gateway Course Success Inventory and a Student Learning Gains Survey. A MATH 1001 course-specific analysis self-study process was completed on the G2C principles and indicators in order to initiate recommendations and suggestions for improvement of the course. The first recommendation for action was to put in place two additional progress reports for students. The second recommendation was to incorporate class wrappers into MATH 1001 courses. The use of class wrappers is an active learning strategy formatted to allow students the opportunity to self-reflect on individual class sessions. Following classroom instruction, students utilize class wrappers in groups to solve thought provoking problems and apply concepts over newly covered material. This strategy provides students an immediate chance to self-identify strengths and weaknesses. Class wrappers were also designed to promote student attendance and enhance necessary support outside of the classroom. Other intended benefits are to help students more effectively communicate, organize, self-reflect, and self-evaluate.

### METHODS

Two additional progress reports for students were put into place in MATH 1001 occurring during week four and week eight of a fifteen-week course. These new progress reports fell in between GHC-wide regularly required reporting currently in place during week two (attending/non-attending) and week six (satisfactory/unsatisfactory) of each semester.

All instructors of MATH 1001 were provided class wrappers for their course. Consistent use of these class wrappers aids students outside of the classroom by emphasizing the life skills of attendance, organization, studying, and self-reflection leading to self-evaluation. Students utilize class wrappers in groups during the last ten minutes of class. This creates opportunity for the instructor to give proactive and immediate feedback in order to help prevent students from developing misconceptions or incorrect practices over new material. Some instructors use class wrappers as a “ticket” out of the classroom for attendance purposes, while others utilize them to determine if

students need additional assistance from either the instructor or college tutorial center. By using class wrappers, instructors are creating time during class to clarify student misunderstanding and determine if any concepts need revisiting. Another benefit of their utilization is that the instructor is provided the opportunity for the best practices of closure and scaffolding.

## OUTCOMES

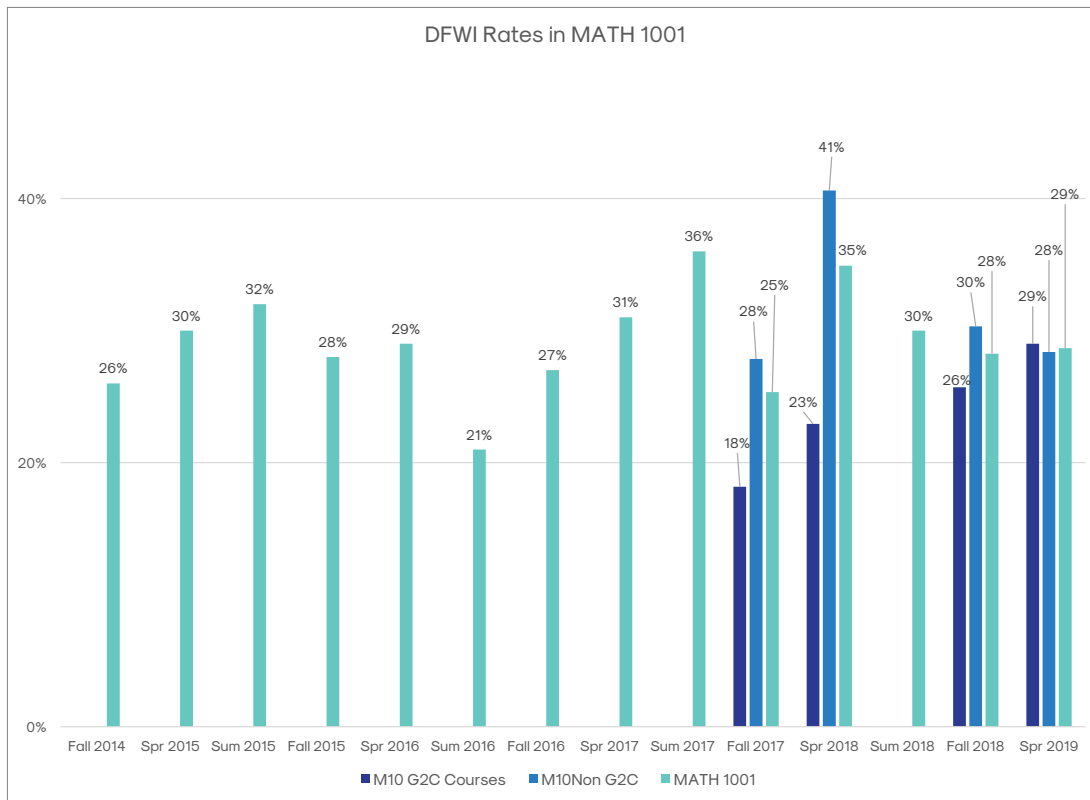
Throughout the G2C process, the dates and number of progress reporting to students changed several times. It was determined to only be necessary to provide one new progress reporting date positioned at the beginning of the eighth week of each semester, immediately before the GHC drop date (the last day to drop a course without academic penalty). Student progress reporting was also made more convenient and consistent by some instructors with the implementation of Intelligent Agents in Desire2Learn (D2L/Brightspace), GHC's learning management system.

The implications of the use of class wrappers have been evident in and out of the classroom as detailed above. One of the greatest benefits has been the authentic student engagement promoted by this strategy. Because of the generality and simplicity of the use of class wrappers, they can be easily applicable to other disciplines. They can be utilized by any classroom instructor, especially one looking for ways to foster engagement, use of metacognition, and self-directed learning.

Areas of improvement and growth over the three-year time period was evident by the revision of the class wrappers due to the reorganization of the course and the utilization of class wrappers in the online setting. The G2C effort concluded during the fall of 2019, with the use of the class wrappers and three total student reports implemented division-wide in all MATH 1001 courses. A second version of class wrappers was created so there could be rotation in the use of them. Feedback from students and instructors, as well as statistics gathered, indicate this strategy has been beneficial.

Course sections that piloted class wrappers had considerably lower DFWI rates (see Table 1). Fall 2017 DFWI rates were 18% for courses using this strategy, as compared to 28% for courses not utilizing the strategy. Spring 2017 DFWI rates were 23% for courses using this strategy, as compared to 41% for courses not utilizing the strategy. Fall 2018 DFWI rates were 26% for courses using this strategy, as compared to 30% for courses not utilizing the strategy. Spring 2019 DFWI rates were 29% for courses using this strategy, as compared to 28% for courses not utilizing the strategy. The gap in DFWI rate between G2C and non-G2C sections lessened as more sections, teachers, and delivery types were involved. But importantly, that gap was mostly still there. Statistical outcomes also suggested that the use of this teaching strategy may be particularly helpful for female and part-time students, which leads to the retention of students from historically underrepresented groups. Something that is not seen in this set of data is the spread of G2C techniques over the years to an increased number of course sections, and therefore, an increased number of students affected.

**Table 1**  
*Comparison of DFWI Rates in MATH 1001*



## PLANS FOR CONTINUATION AND EXPANSION

The use of three student progress reports and class wrappers continues to be an integral part of the MATH 1001 gateway course at GHC. Currently, all the college’s instructors of the course are encouraged to utilize both the progress reporting and class wrappers consistently in their courses. As part of an ongoing process, we will continue to quantitatively review DFWI rates in this course to analyze the future effectiveness of these two methods. In addition, opportunities to generate qualitative information will be provided through discussions at faculty meetings. This will be a way to determine not only how things are currently going, but also to ascertain if adjustments need to be made.

## LESSONS LEARNED AND POTENTIAL IMPLICATIONS

In conclusion, Georgia Highlands College used this initiative to foster improvement for teaching and learning. The process helped increase student success in high-enrollment courses as measured by grades and retention rates. The experience also fostered an understanding of the importance of improved learning and success in gateway courses. Energy and effort centered around engaging students and self-directed learning is always time well spent. Student engagement with their peers and instructors will always tend to point to positive results. A possible implication is the transfer of this method to a variety of other instructional settings that could benefit from this student focused, engaging concept. It is exciting to see how others will get creative and transfer these concepts to fit their own uses in the classroom.