



Efficacy of the Marzano High Reliability Teacher™ Program: Evidence and Data

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THE HIGH RELIABILITY TEACHER (HRT) MODEL

was created to help classroom educators improve and hone their craft to the highest possible levels of effectiveness. Opportunities for teacher growth built around concrete and effective instructional models have been noticeably sparse in K-12 education, and often, reform movements have focused on factors other than the growth and development of classroom teachers. Additionally, the frameworks designed for recognizing teacher excellence have not incorporated practices from the science of growth and development. This has led to

mismatches between teachers who want to improve and programs that are designed to recognize good teaching. Arguably, the continual development of the teaching workforce should be at the center of improvement and reform efforts.

Historically, one of the most notable recognition opportunities for teachers has been National Board Certification. According to the National Board for Professional Teaching Standards' (NBPTS; 2020) website, "National Board Certification was designed to develop, retain, and recognize accomplished teachers and to generate ongoing improvement in schools nationwide." These are certainly admirable goals. The National Board Certification process consists of teachers gathering evidence of their practice and submitting it for review, along with an assessment completed by the participant, at the end of a specified period of time. Teachers who pass the assessment and whose evidence meets the standards become National Board Certified Teachers (NBCTs). In effect, NBCTs represent a group of individuals who have successfully gone through the program and demonstrated that they have met the National Board Standards. Of course, it does not naturally follow that these individuals are the "best" teachers in a school or district although such inferences are frequently made. From the HRT perspective, efforts to find and recognize the best teachers in a school or district miss the most important aspect of programs that target teacher expertise—providing clear guidance and support to accomplish it.

Since its inception in 1987, over 120,000 educators have become NBCTs. According to the NBPTS (2020b), "more than a decade of research from across the country confirms that students taught by National Board Certified Teachers (NBCTs) learn more than students taught by other teachers." In fact, some studies do support this assertion and have indicated that NBCTs get better results with students (Cowan & Goldhaber, 2016; Horoi & Bhai, 2018; Vandevort et al., 2004). However, other studies indicate that the National Board Certification program does not lead to improved student learning (Barrow et al., 2020; Rouse, 2008; Thirunarayanan, 2004). Notably, many of the studies which indicate that NBCTs generate improved student learning used very small samples of teachers, and they did not control for student prior achievement or demographics. More recent studies with designs that controlled for student prior achievement showed mixed findings on student achievement (Barrow et al., 2020; Manzeske et al., 2017).

There have been other criticisms of National Board Certification over the years as well, including that the program is very expensive for what it produces (Thirunarayanan, 2004) and that there is no evidence that it helps educators to grow and develop (Goldhaber & Anthony, 2007). The most recent study of National Board Certification investigated individual teachers' impact on students both before and after certification, and found no differences in student achievement when comparing educator performance prior to certification and after (Barrow et al., 2020). Stated differently, educators did not seem to grow and develop by participating in National Board Certification in ways that impacted student learning. Barrow and colleagues (2020) stated:

In spite of the financial and nonfinancial resources by teachers going through the application process and by districts and states encouraging and assisting teachers to become certified, we find no evidence that participating in the process makes teachers more effective at improving student test scores. NB certification was not designed as a professional development program and might not be expected to change teacher practice. Given the time and resources devoted to completing the application process and the financial and nonfinancial supports provided by districts and states to promote NB certification, we would hope that the process might indeed improve teacher practice. (pp. 27-28)

The High Reliability Teacher Program and Expertise

The High Reliability Teacher (HRT) program was designed as a more focused alternative to National Board Certification. There are some similarities between the two programs, but also significant differences that set the HRT model apart. In both programs, teachers have to demonstrate their effectiveness through a series of tasks and data and both approaches are broken down into a few core components. However, while National Board Certification is a fine program, it is not focused on developing teacher expertise. The HRT program is explicitly designed to provide teachers with the knowledge and skills to diagnose their current instructional strengths and weaknesses, design and implement specific interventions to improve on their weaknesses, and then collect quantitative evidence of the effects of their improvement efforts. The HRT model explicitly engages teachers in deliberate practice, which is at the core of the burgeoning science of developing expertise. Stated differently, by definition, a teacher engaged in the HRT certification process is also engaged in the basics of deliberate practice.

Ericsson and Pool (2016) note that deliberate practice requires a person to set well-defined, purposeful goals just outside their comfort zone and work toward meeting them while (1) being overseen by a coach who is familiar with abilities of expert performers, (2) placing full attention on the goals while working on them, (3) receiving feedback and making modifications in response to the feedback from a coach, and (4) developing a mental model for expert performance. The HRT certification process accomplishes this through constant communication and interaction with a highly skilled certification reviewer. Feedback throughout the process is prioritized and integral to the model. Rather than claiming that Certified High Reliability Teachers are necessarily the best teachers in a school or district, the program aims to ensure that Certified High Reliability Teachers have developed the skills and knowledge needed to continuously improve and grow their levels of expertise.

There are substantial and key differences, then, between National Board Certification and High Reliability Teacher Certification related to the purpose of the processes. Rather than seeking to identify the “best” teachers, the HRT process helps teachers understand how to get better, what to look for to improve, how to intervene in areas where they want or need to improve, and how to determine whether or not their efforts are having the desired effects on their students and themselves.

Three Levels of HRT Certification

The HRT model consists of three hierarchical levels; there are multiple growth and development tasks associated with each level. The levels are:

- Level 1** Effective Use of Instructional Strategies
- Level 2** Student Learning
- Level 3** Valid and Rigorous Feedback

To become certified at level 1 of the HRT program, an educator must demonstrate understanding of a comprehensive model of instruction, implement the model in their classroom, create unit and daily lesson plans aligned to the model, self-assess their performance and set growth goals, administer pre- and post-surveys to students in goal areas, record themselves teaching, and self-score their level of expertise on specific instructional strategies, as well as receive feedback from a reviewer. They also identify and focus on areas of instruction where they need improvement and document the effects of their efforts.

To become certified at level 2 of the HRT program, teachers must demonstrate that adequate student learning has occurred in their classroom. To demonstrate this, educators must successfully provide evidence of their use of measurement topics and proficiency scales, ensure that assessments are aligned to those proficiency scales, document the overall growth of the class (as measured by an effect size), and provide appropriate interventions for students who did not show adequate growth. This is a new way to think about achievement and growth for many educators. Focusing on what is happening in the classroom from an achievement and growth perspective, rather than focusing solely on external assessment results, is the linchpin of level 2. While almost any teacher can speak to whether or not students grew as a result of their efforts, teachers certified at level 2 of the HRT program can quantify that growth, discuss whether or not it was adequate for the class as a whole and for each student, share their intervention plans for students who did not show adequate growth in class, and determine to what degree their original efforts and intervention efforts were effective.

To become certified at level 3 of the HRT program, teachers must ensure that the results from level 2 are valid and reliable. They must successfully track assessment reliability using an online tool, explain the level of reliability exhibited by their assessments, and demonstrate that student results in their classroom correlate to a state assessment, other external tests, or an end-of-course/grade-level assessment built by the teacher and approved by their certification reviewer. These teachers understand the concept of reliability as it relates to students' growth and correlations as they relate to external assessments as measures of validity. While a common criticism of teacher-created assessments is that they lack reliability, teachers certified at level 3 of the HRT program are aware of how reliable their assessment systems are and can take action to increase assessment reliability when needed. Importantly, these teachers think of assessment as an ongoing and continuous endeavor rather than an individual event that happens periodically in their classrooms.

Quantitative Data for the Three HRT Levels

As teachers successfully demonstrate competence in the tasks associated with each HRT level, they become certified in that level. While there is ample evidence that teachers who are certified are learning, growing, and reaching much higher levels of effectiveness based upon the products and artifacts that are submitted, there is also quantitative evidence for teacher effectiveness at each of the three certification levels.

Quantitative Evidence for Level 1

At HRT level 1, teacher growth in pedagogical skill is measured through student surveys. These surveys ask students about the teacher's use of specific instructional strategies and the effects of those strategies on the students as learners. Students complete surveys prior to teachers systematically employing strategies and after the teacher believes he or she has reached an acceptable level of expertise relative to the strategies. Each survey employs a Likert-type scale ranging from 1 to 5:

- 5 Strongly Agree
- 4 Agree
- 3 Neither agree nor disagree
- 2 Disagree
- 1 Strongly disagree

The descriptive statistics for the survey results are reported in table 1.

Table 1: Pre- and Post-Student Survey Growth Results

Mean Growth	.39
Median Growth	.31
Range	4.46
Standard Deviation	.48
Standard Error	.03

Note: N= 297; mean growth is significant at the .05 level.

The average student-perceived teacher growth of .39 is corroborative evidence that students see positive changes in the teacher as well as in themselves relative to the instructional element. The standard deviation being low, at .48, indicates that the large majority of Level 1 Certified High Reliability Teachers demonstrate positive increases in student perceptions of teachers' effective use of instructional strategies and the positive effects of those strategies on the students as learners.

Quantitative Evidence for Level 2

At HRT level 2, teachers calculate an effect size that measures student-learning growth in at least three measurement topics for their class. Importantly, these effect sizes measure student growth on teacher assessments of student learning. According to Cohen (1988), effect sizes can be characterized based upon the following:

- 0.2** small effects
- 0.5** medium effects
- 0.8** large effects

The class effect-size growth for Level 2 Certified High Reliability Teachers can be found in table 2. The average effect size of 2.34 is extremely large. Specifically, it is nearly three times the amount of growth characterized as “large effects” by Cohen. While the standard deviation is high, meaning that results vary quite a bit, that should be expected with an effect-size range of 7.76; the highest effect size generated was 8.06 and the lowest was 0.3.

Table 2: Student Effect Size for Growth on Measurement Topics

Mean Growth	2.34
Median Growth	2.02
Range	7.76
Standard Deviation	1.60
Standard Error	0.18

Note: N=79; mean effect size is significant at the .05 level.

Quantitative Evidence for Level 3

At HRT level 3, educators are asked to correlate their class summative scores on the measurement topics to a state test, third-party assessment, or end-of-course assessment that addresses multiple measurement topics with varying levels of question difficulty; these are vetted and approved by their certification reviewer. Correlations measure the strength of relationship between two variables. Using Cohen (1988), correlations can be interpreted using the following guidelines:

- 0.10** small positive correlation
- 0.30** medium positive correlation
- 0.50** large positive correlation

Table 3 lists the descriptive statistics for Level 3 Certified High Reliability Teachers. All of these teachers demonstrated a moderate or strong positive correlation between their classroom scores for students and the state test, third-party assessment, or end-of-course assessment. Over 70% of Certified High Reliability Teachers demonstrated strong positive correlations. This is an indicator that the classroom summative scores they assigned to students are valid.

Table 3: Correlation Between Summative Results on Measurement Topics and State Test, Third-Party Assessment, or End-of-Course Assessment

Mean	0.75
Median Growth	0.78
Range of Growth	0.62
Standard Deviation	0.19
Standard Error	0.06

Note: N=10; mean correlation is significant at the .05 level.

The Future of the HRT Process

While anecdotal evidence, as well as products generated from Certified High Reliability Teachers, have indicated that these teachers improve as a result of the courses and that the results transfer to students, the quantitative data shared in this white paper are indicative of the type of data that will be continually generated and reported regarding the HRT certification process. At Marzano Resources, results are always at the forefront of our work. While we are proud of the efforts and results from Certified High Reliability Teachers, we are also excited about their continued growth and development and their contributions to their schools and districts.

We believe every school can benefit by having as many Certified High Reliability Teachers as possible on staff. Teachers who have successfully developed and demonstrated the skills necessary to be certified by the HRT process can help other staff understand and employ those same skills. In short, teachers who continue to put in the effort to get better, who direct the effort toward the right strategies, and who align their efforts to what is required to generate expertise will continue to improve over time. As a result, student learning will also continuously increase. The High Reliability Teacher model has been thoughtfully designed to enable teachers to accomplish this. It has been a privilege to partner with all of the Certified High Reliability Teachers and we look forward to partnering with many more in the years to come. Our aim continues to be to help teachers increase their instructional effectiveness to the highest possible levels.

References

- Barrow, L., Cavalluzzo, L., Geraghty, T., Mokher, C., & Sartain, L. (2020). *The signaling, screening, and human capital effects of National Board Certification: Evidence from Chicago and Kentucky high schools* (Working Paper No. 2020-06). Federal Reserve Bank of Chicago. Accessed at <https://www.chicagofed.org/publications/working-papers/2020/2020-06> on May 21, 2020.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Mahwah, NJ: Erlbaum.
- Cowan, J., & Goldhaber, D. (2016). National Board Certification and teacher effectiveness: Evidence from Washington State. *Journal of Research on Educational Effectiveness*, 9(3), 233-258.
- Ericsson, K. A., & Pool, R. (2016). *Peak: Secrets from the new science of expertise*. New York: Houghton Mifflin Harcourt.
- Goldhaber, D., & Anthony, E. (2007). Can teacher quality be effectively assessed? National Board Certification as a signal of effective teaching. *The Review of Economics and Statistics*, 89(1), 134-150.
- Horoi, I., & Bhai, M. (2018). New evidence on National Board Certification as a signal of teacher quality. *Economic Inquiry*, 56(2), 1185-1201.
- Manzeske, D., Park, S. J., Liu, F., Borman, T., Gnedko-Berry, N., West, B., & Deng, E. (2017). *Effects of National Board Certified Teachers on student achievement and behavioral outcomes: Studies conducted in two states* (Working Paper). Washington, DC: American Institutes for Research.
- National Board for Professional Teaching Standards. (2020a). *National board certification overview*. Accessed at <https://www.nbpts.org/national-board-certification/overview/> on May 21, 2020.
- National Board for Professional Teaching Standards. (2020b). *Research*. Accessed at <https://www.nbpts.org/research/> on May 21, 2020.
- Rouse, W. A., Jr. (2008). National Board Certified Teachers are making a difference in student achievement: Myth or fact? *Leadership and Policy in Schools*, 7(1), 64-86.
- Thirunarayanan, M. O. (2004). National Board Certification for teachers: A billion dollar hoax. *Teachers College Record*. Accessed at <https://www.tcrecord.org/Content.asp?ContentID=11266> on May 21, 2020.
- Vandevoort, L. G., Amrein-Beardsley, A. & Berliner, D. C. (2004). National Board Certified teachers and their students' achievement. *Education Policy Analysis Archives*, 12(46). Accessed at <https://epaa.asu.edu/ojs/article/view/201/327> on May 21, 2020.