

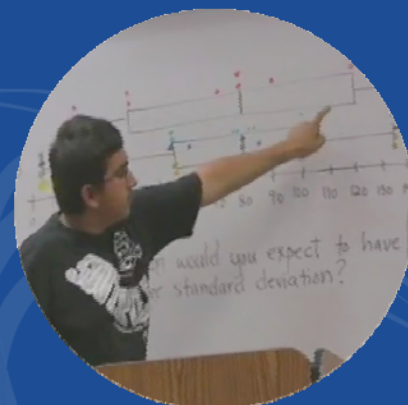


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***Quantway*[®] :** Using Quantitative Reasoning to Teach Developmental Math to College Students

Cinnamon Hillyard

Associate Professor, University of Washington Bothell
Carnegie National Faculty, Carnegie Foundation



The Quantway® Pathway

QW1

Beginning Algebra

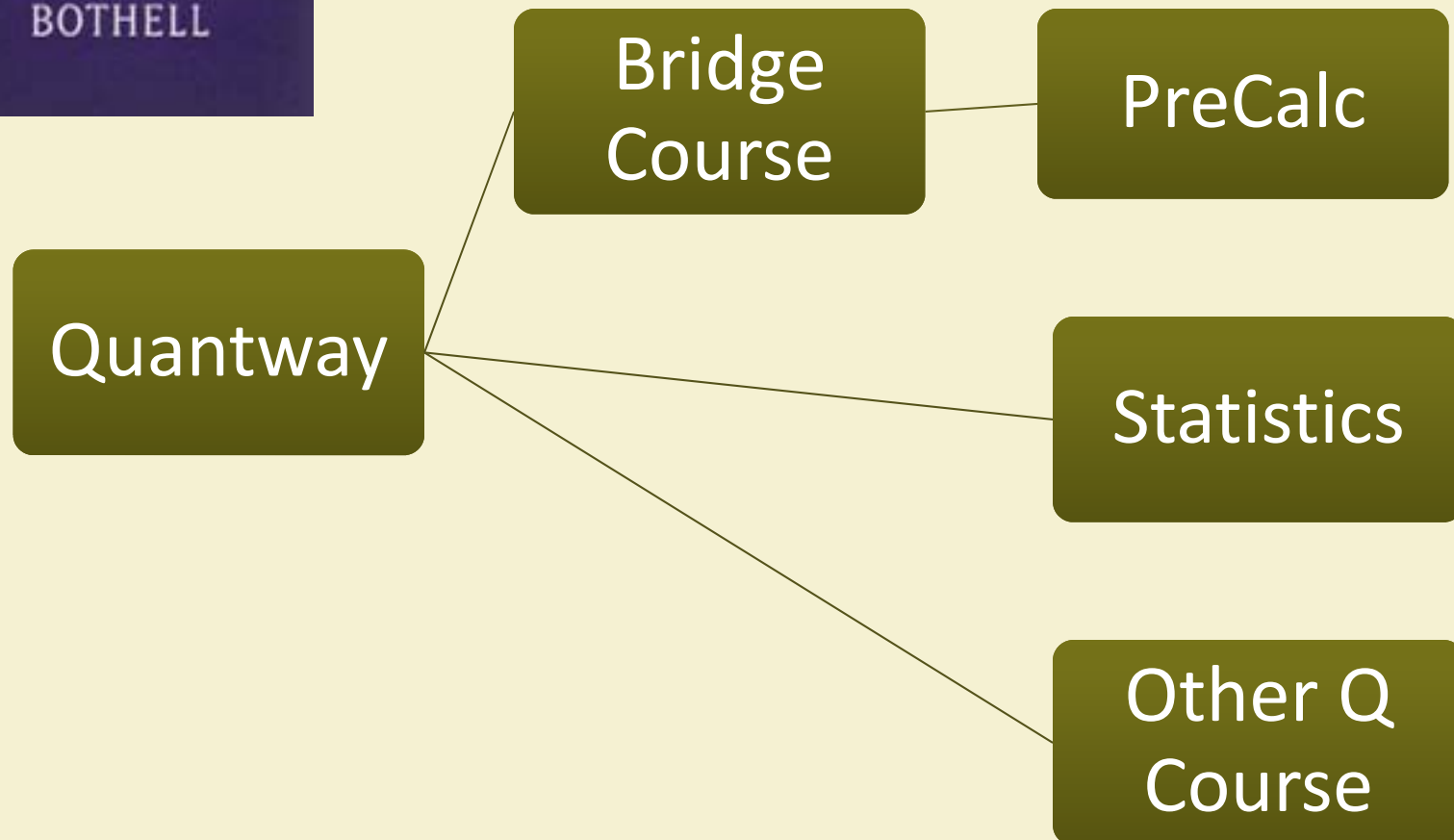
Intermediate
Algebra



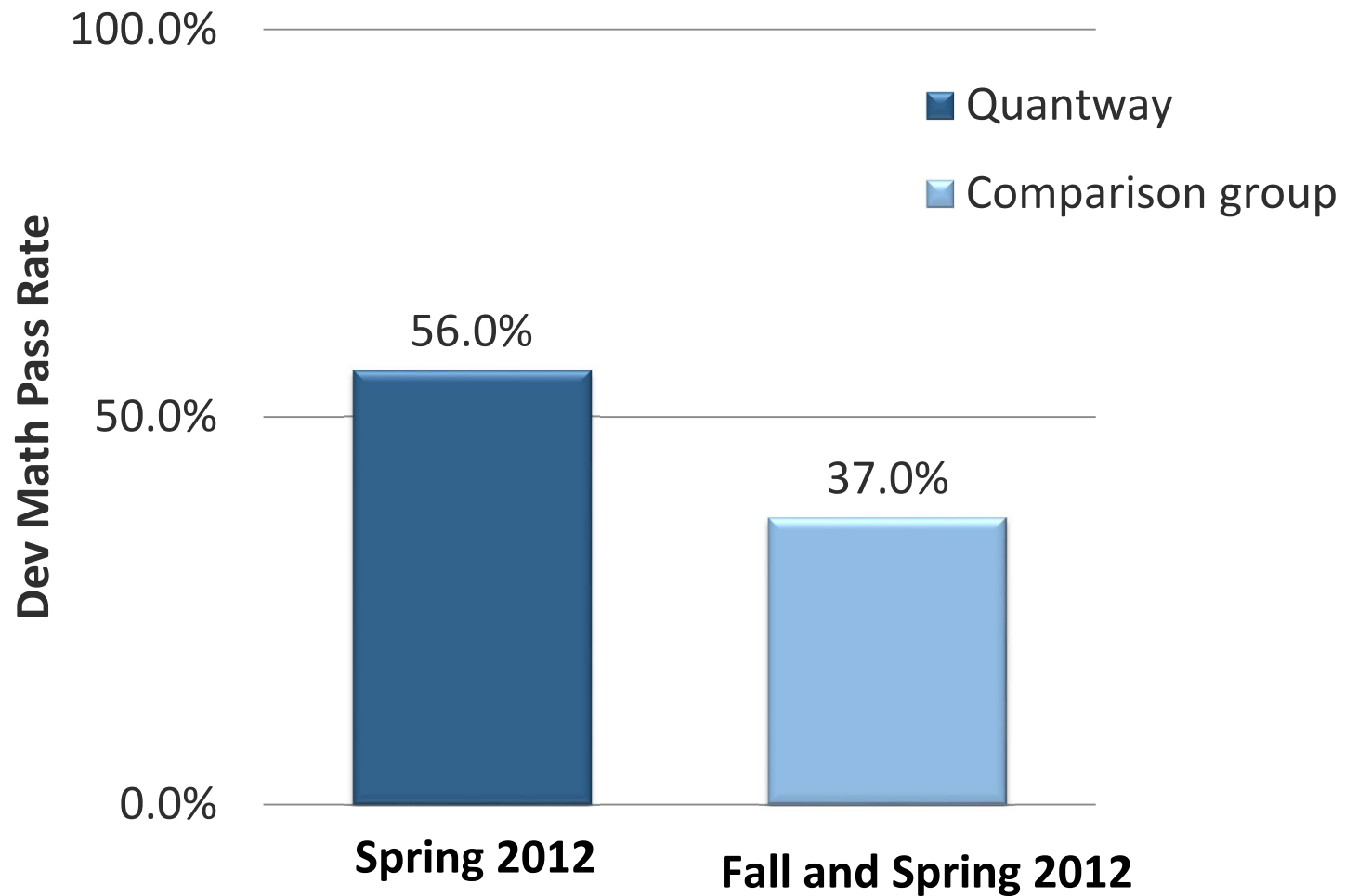
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Semester
I

Semester
2



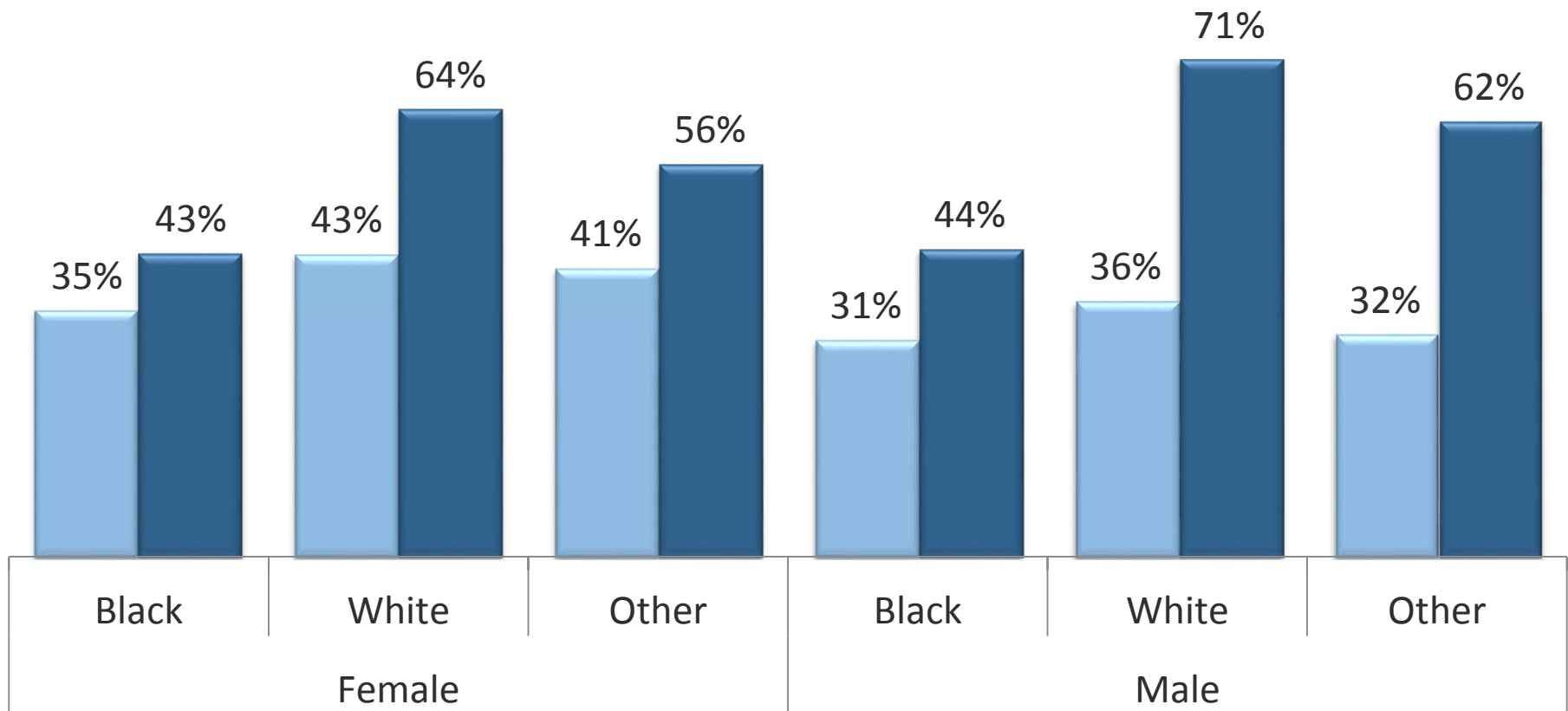
Quantway's success rate exceeds the comparison group's in one half the time



The pass rate of the comparison group was calculated as successfully fulfilling dev math within two semesters as opposed to one semester for the Quantway group.

Quantway is effective across different gender and race/ethnicity groups – Spring 2012

■ Non-Quantway ■ Quantway



Note. “Other” also contains data from unknown race/ethnicity status.





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The Curriculum

Algebra through a QR Lense





“The curriculum help students get a fundamental understanding in mathematics ... By presenting real world problem and asking them to figure it out ... They work collaboratively to figure out what the problem means, what do I have to do mathematically to solve that problem.”

Jim Wills, Quantway Faculty



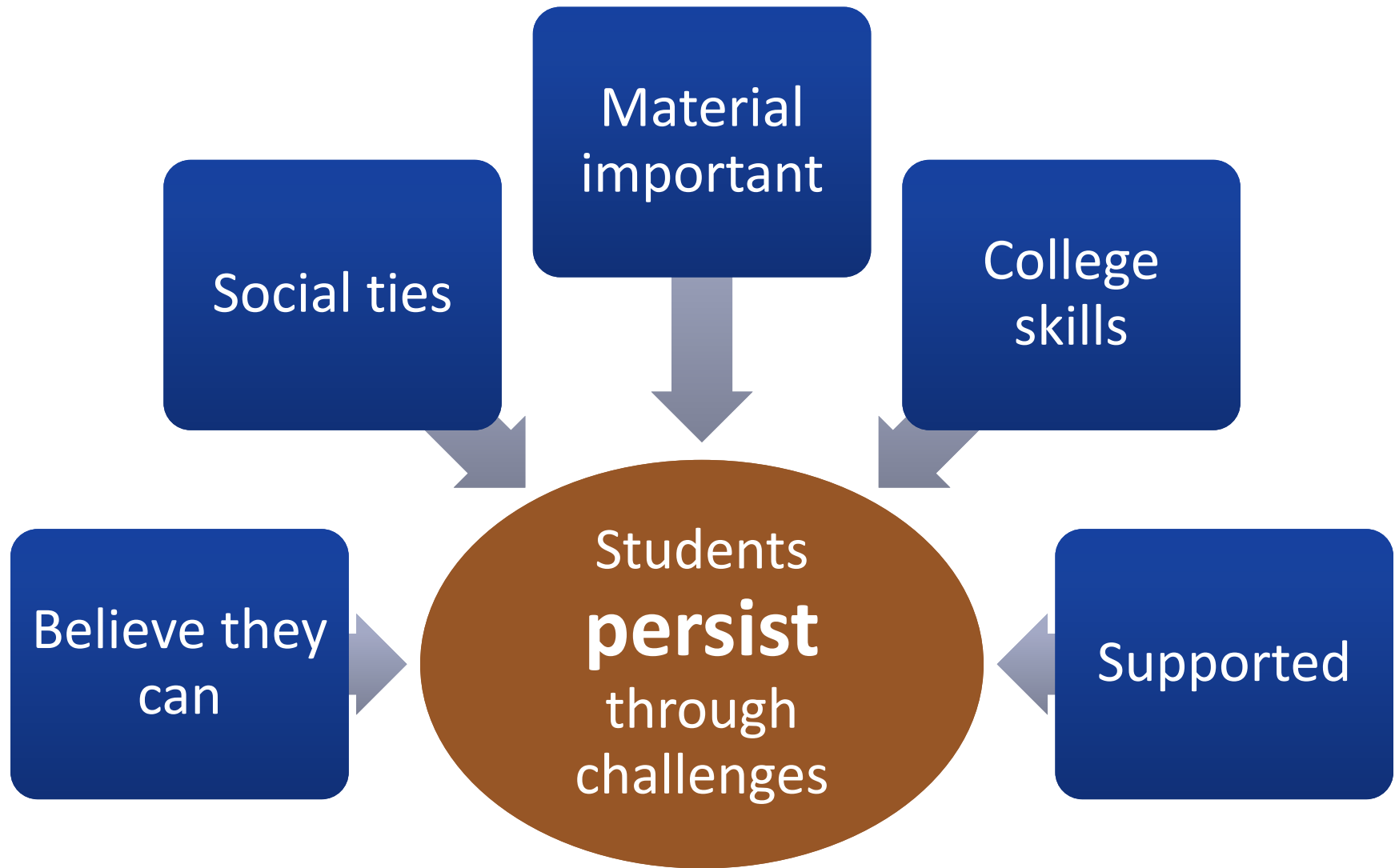
Together, Finding Solutions: The Quantway



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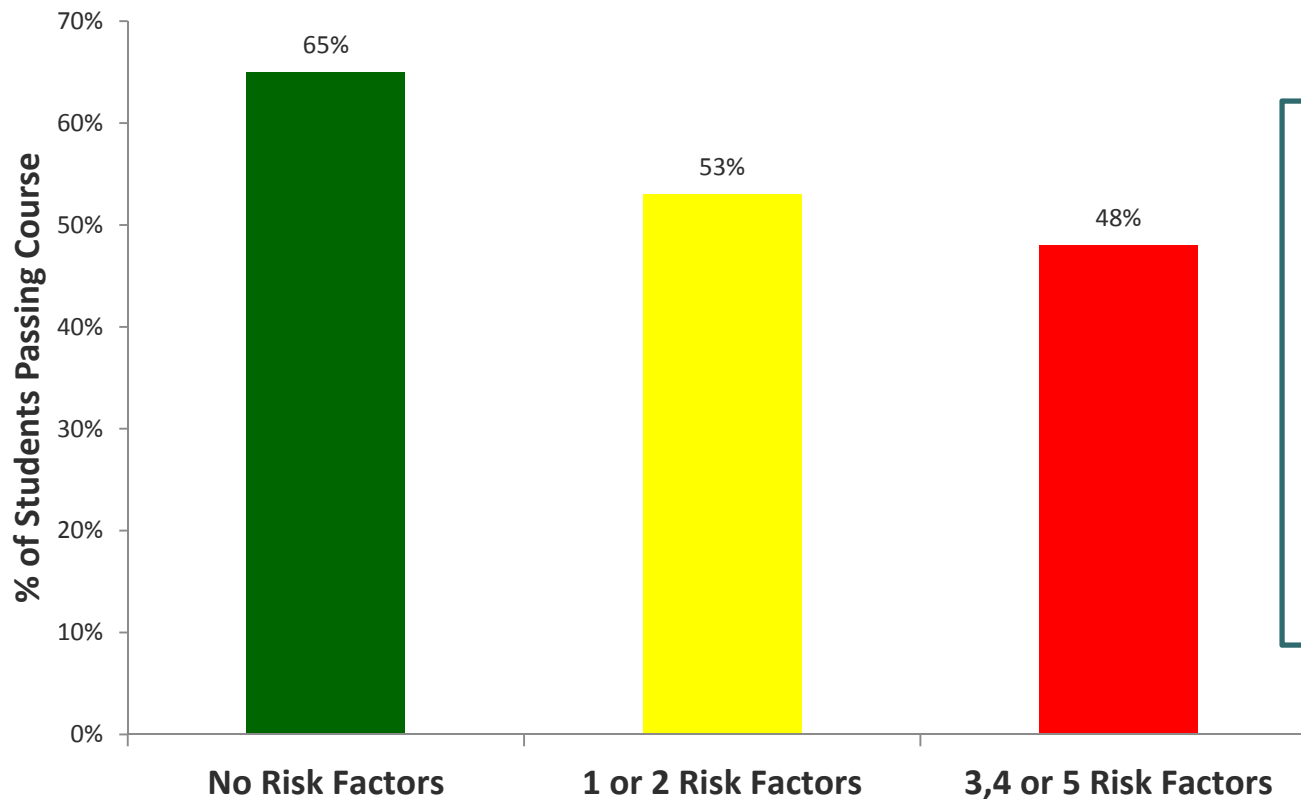
Supporting Students with the Curriculum:

Productive Persistence



Students with multiple risk factors are less likely to get a passing grade

Quantway



Productive Persistence Risk Factors

- Belonging uncertainty
- Math/statistics anxiety
- Fixed mindset
- Stereotype threat
- Grit



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New Roles for Faculty



"I felt bad teaching math to my students that I knew they weren't going to use .. I had to go outside my comfort zone .. When you are in a network, you can get better ideas on how to tackle your and your students' struggles."

Rachel Mudge, Foothill College



02:54

HD



Changing Equations: The Statway Faculty Experience

Changing Faculty Mindsets

Faculty reported that they needed to ...

- Move from being a lecturer to a **guide**
- Develop **new skills** such as managing groups, leading discussions, and developing productive persistence routines.
- Learn about new settings and applications along **with** students
- **Trust** a new process of learning
- Become more **flexible** with how material unfolds in the classroom
- **Share** successes and failures within a national community in order to learn from each other.



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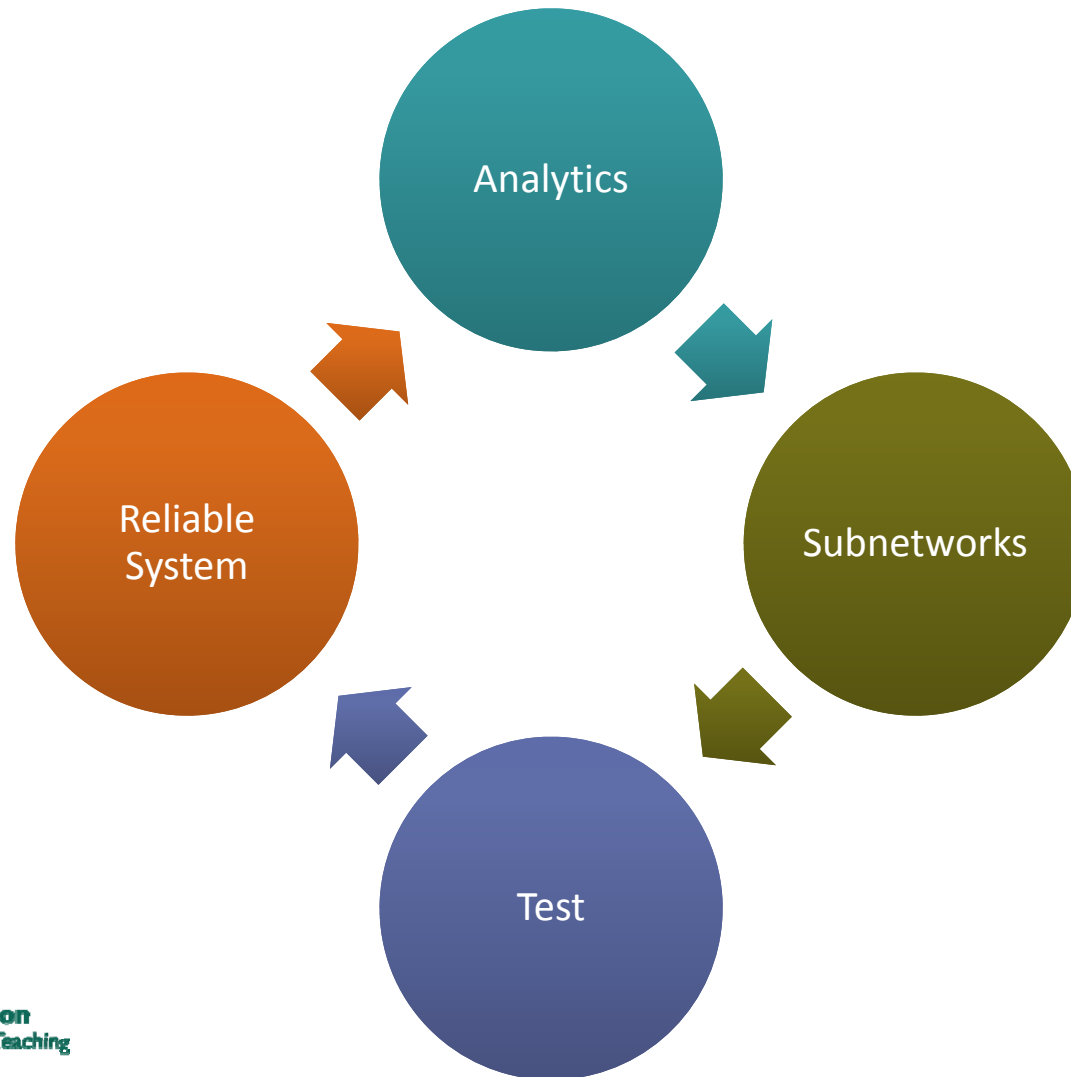
Network Improvement Communities

Networked Improvement Community

- A **community** tackling on a high leverage problem
- Combining the worlds of **research and practice**
- Focused on **continuous improvement**



Improvement Cycle





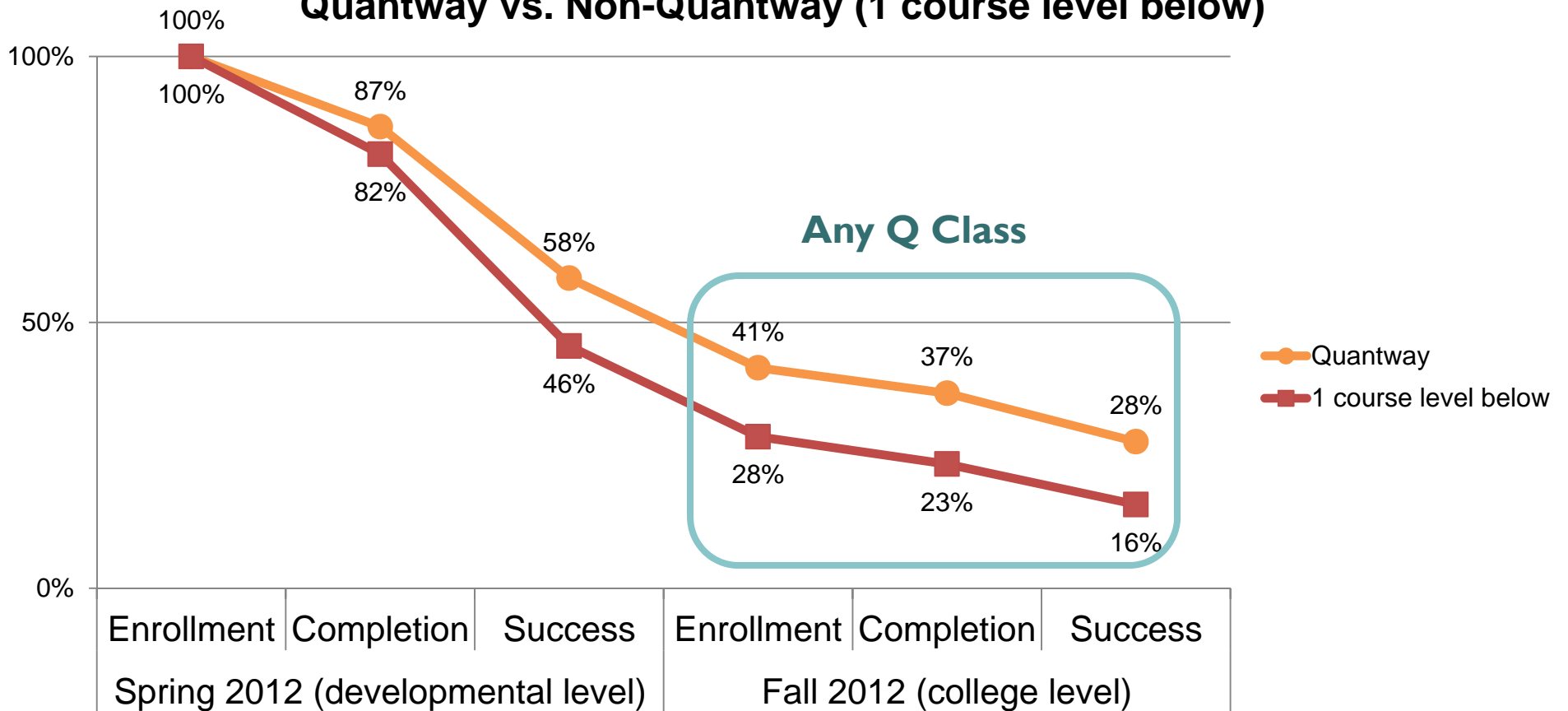
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New Curriculum & Pedagogy + Support for Faculty & Students + Network Improvement Community **RESULTS**

Continuing Success – Quantway

Preliminary Year 2 results

College Level Math Success Rates In Fall 2012: Quantway vs. Non-Quantway (1 course level below)



QW Grads @ UWB



- Many students who completed (but not necessarily passed) tested into a higher level math course and passed it.
- Students struggled in the beginning with lectures and online platform.
- Most formed study groups and utilized campus services
- One wants to be a math major!



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Thank You