

U-Pace Instruction: Replication of Greater Academic Success and Greater Learning across Disciplines and at Adopting Universities

Diane Reddy, reddy@uwm.edu

Laura Pedrick, lpedrick@uwm.edu

Ray Fleming, mundo@uwm.edu

U-Pace Instruction Was Designed to Foster Students Sense of Control Over Learning

Research has shown that individuals who perceive control

- achieve more and experience better psychological outcomes
- students who feel a deepened sense of control over their learning may show increased persistence in the face of academic challenges.



- The mastery requirement **focuses students on learning small, manageable amounts of material at one time**; and **consecutively mastering each content module strengthens the link between effort and positive outcome**, building a sense of control over learning.
- The self-paced format of U-Pace **allows students to determine when, and at what rate (within a semester), they engage the material.**
- Amplified assistance messages **facilitate students' perceived control over learning by communicating an unwavering belief in students' ability to succeed** even if unsuccessful at the moment.

U-Pace's Components Combine to Produce Greater Student Learning

RCT in Psychology (n=960)

Two Instructors each taught all 4 instructional conditions:

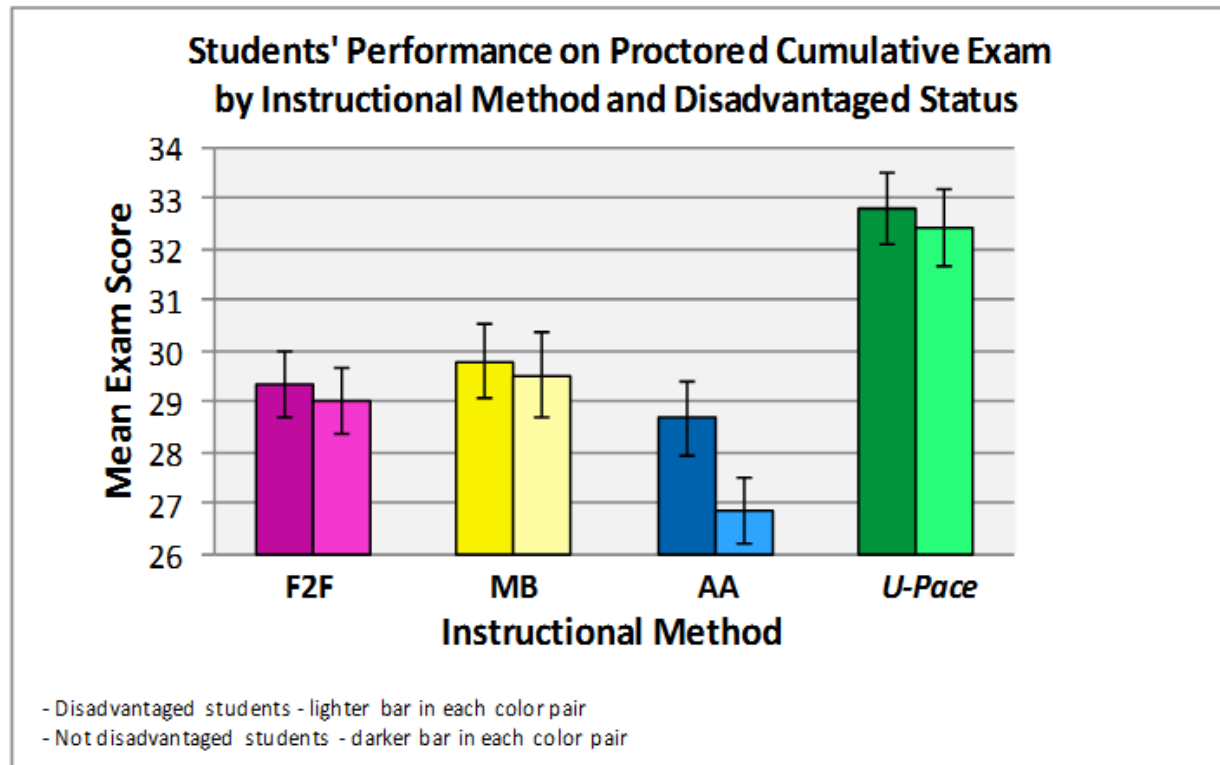
U-Pace instruction – integrates Amplified Assistance + Mastery-based learning online

Amplified Assistance component only (AA)

Mastery-based Learning component only (MB)

Conventional instruction (F2F)

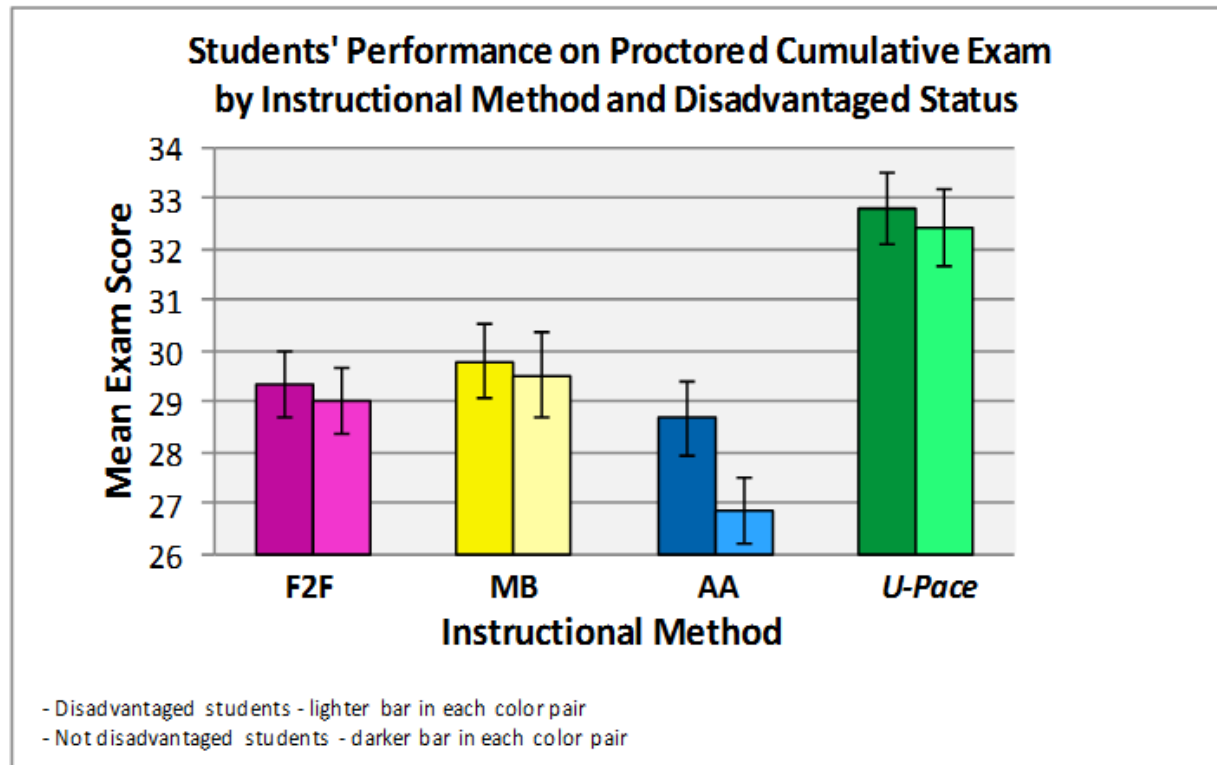
- ✓ Instructors were trained in each instructional approach and followed an implementation manual
- ✓ Fidelity to instructional condition was carefully monitored throughout the semester
- ✓ Course content and textbook were held constant



Methods for Assessment of Learning

Student Learning: Assessed at the conclusion of the course using cumulative, multiple-choice exam measuring deep understanding of core concepts.

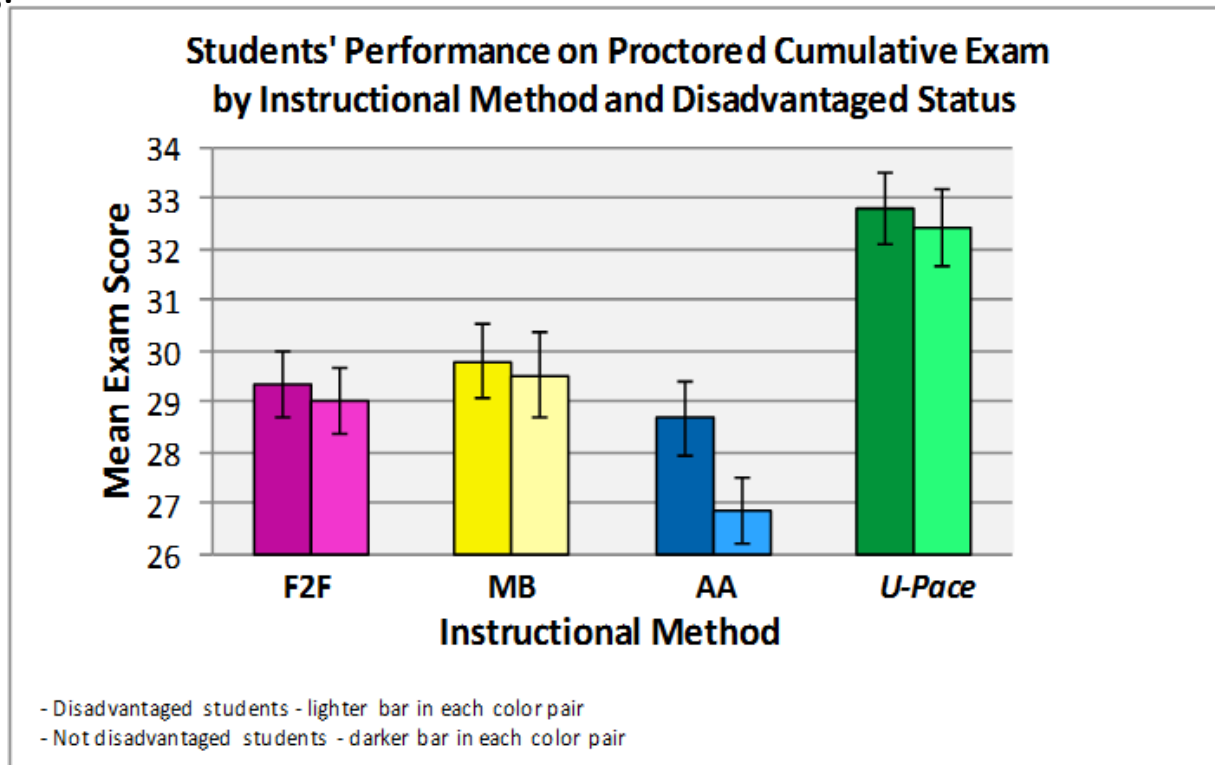
- ✓ Exams, constructed with Bloom's Revised Taxonomy, required students to apply or integrate concepts rather than recall facts.
- ✓ Randomly selected students (> 50% from each condition) took the cumulative exam in a proctored classroom and were motivated to perform their best.
- ✓ Students' scores on the cumulative exam did not count toward their final course grades.



U-Pace Produced Greater Learning

(Other Instructional Conditions did not differ from One Another)

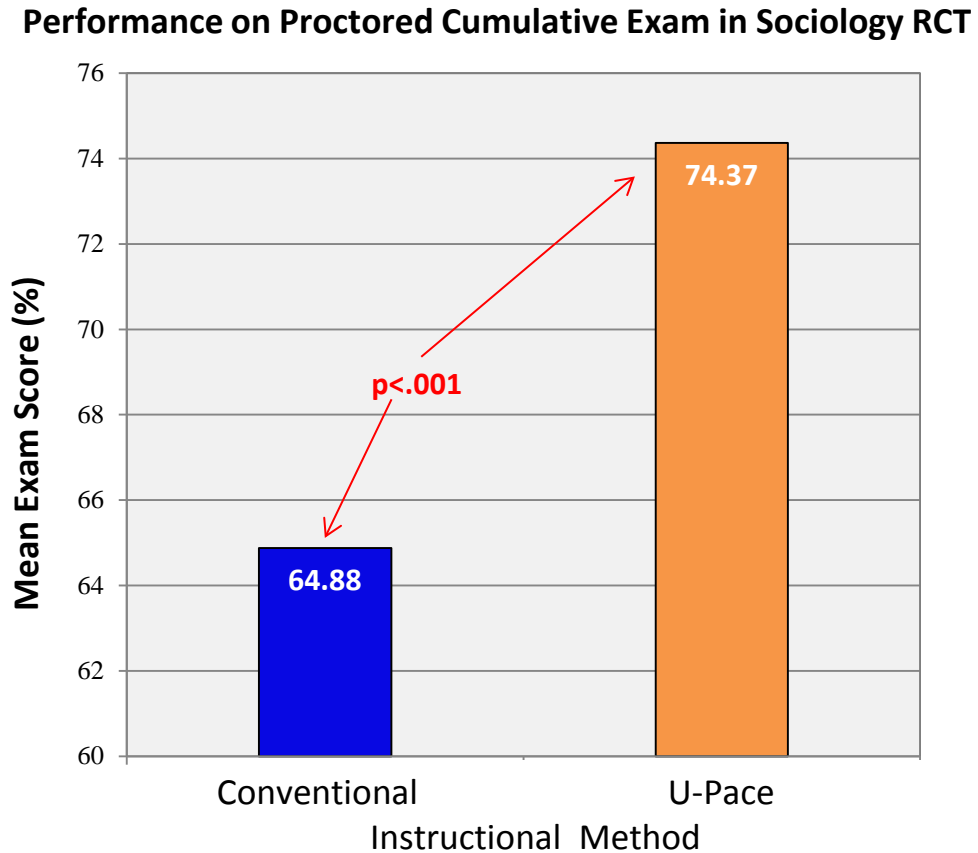
- **U-Pace students scored approximately 6 percentage points higher** on the proctored cumulative exam than students in Amplified Assistance only, Mastery-based Learning only, or conventional instruction.
- There were no differences between U-Pace students and students in Amplified Assistance only, Mastery-based Learning only, or conventional instruction that could explain the greater learning.
- U-Pace disadvantaged students (**lighter green bar**) significantly outperformed the not disadvantaged students from the other instructional conditions.
- Disadvantaged students:
 - eligible for Pell grants or racial/ethnic minority students showing gaps in graduation
 - stratified during random assignment



U-Pace's Greater Learning Replicated in a Second Discipline (Sociology)

Similar to the findings in the psychology RCT, **the U-Pace sociology students significantly outperformed the conventionally taught sociology students by approximately 10 percentage points** on a cumulative exam measuring deep understanding of core concepts.

- ✓ The exam was constructed with Bloom's Revised Taxonomy and required students to apply or integrate concepts rather than recall facts.
- ✓ Randomly selected students (> 50% from each condition) took the cumulative exam in a proctored classroom and were motivated to perform their best.

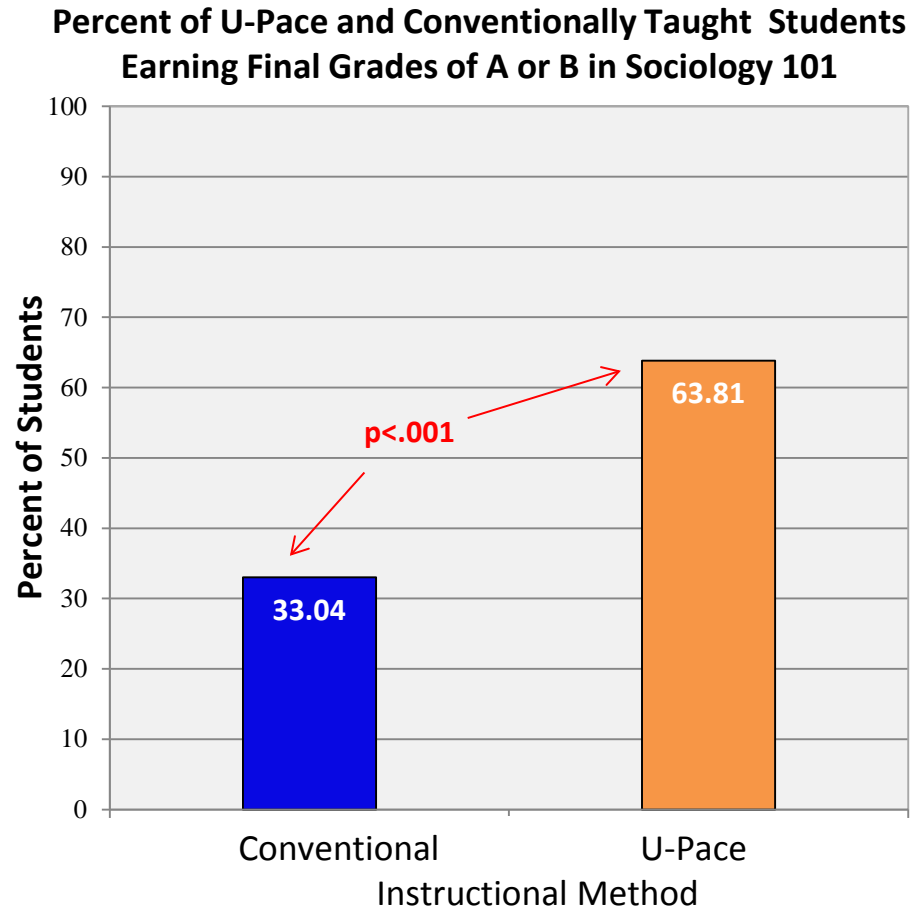


U-Pace's Greater Academic Success Replicated in a Second Discipline (Sociology, n=480)

Similar to the findings in the psychology RCT, **a significantly greater percentage of U-Pace sociology students earned a final course grade of A or B** compared to the conventionally taught sociology students.

- ✓ Two instructors each taught both instructional conditions.
- ✓ Instructors were trained in each instructional approach, followed an implementation manual, and fidelity was carefully monitored.
- ✓ All grades were objectively determined.
- ✓ Course content and textbook were held constant.

There were no differences between the U-Pace and conventionally taught students that could explain the greater academic success produced by U-Pace instruction.



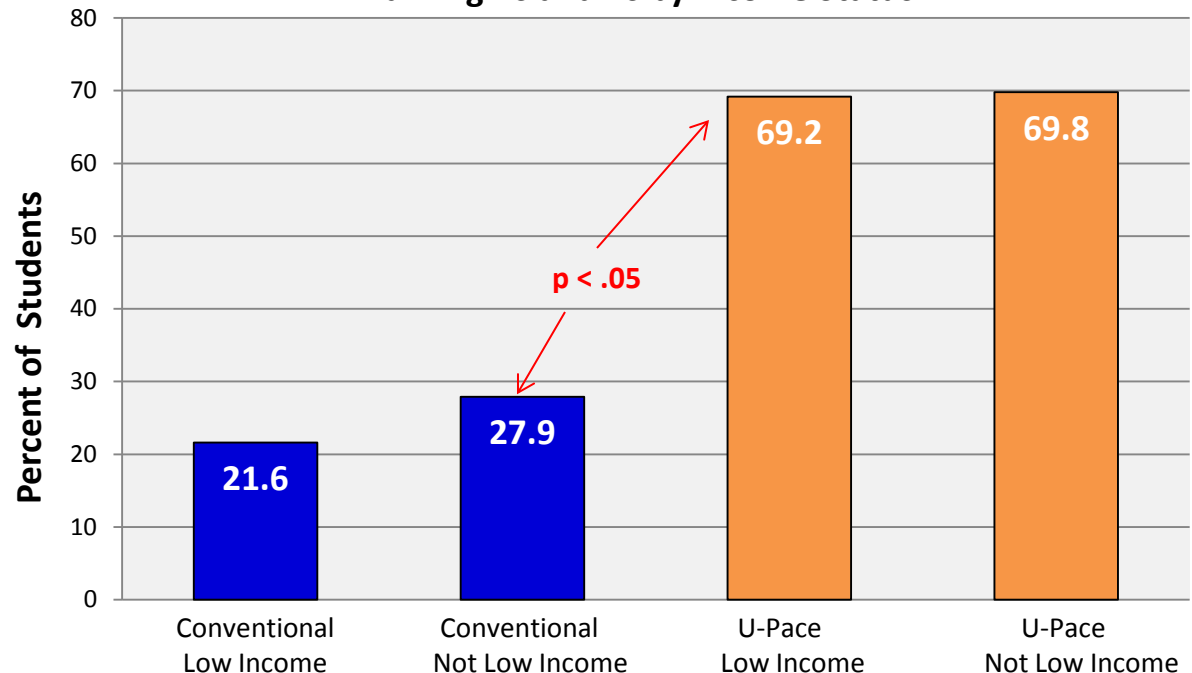
U-Pace's Greater Academic Success Replicated at Adopting University

Both U-Pace low-income and not low-income students did significantly better than the conventionally taught not low-income students at the adopting university.

- ✓ Low income defined as eligible for Pell grants.
- ✓ All grades were objectively determined.
- ✓ The instructor was trained in each instructional approach, and followed an implementation manual.
- ✓ Fidelity to instructional condition was carefully monitored throughout the semester.

No differences were found between groups that could explain the greater academic success produced by U-Pace instruction.

Percent of U-Pace and Conventionally Taught Psych 101 Students Earning As and Bs by Income Status



Conclusions

- U-Pace instruction **consistently produced greater academic success and greater learning** than conventional instruction.
- Preliminary evidence from adopting universities **supports the scalability of U-Pace instruction.**
 - U-Pace instruction can be implemented in virtually all institutions.
 - U-Pace requires only a learning management system to monitor student behavior (number of quiz attempts and scores).
- The **replication** of student outcomes **across disciplines and universities, and the convergence of findings**
 - institutional records indicating greater academic success for all students, and performance measures demonstrating greater learning—**strongly suggests that U-Pace instruction holds promise for higher education.**

Research Support



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The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.