What the Research Says About Quality and Productivity

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Research Factors

Quality

Productivity

TDD Research Resources

Small, inexperienced teams to large, experienced teams

"How Effective is Test-Driven Development?" chapter in O'Reilly's "Making Software"

Microsoft & IBM study

Pluralsight guide "Test-Driven Development (TDD) Research"

Key Research Takeaways
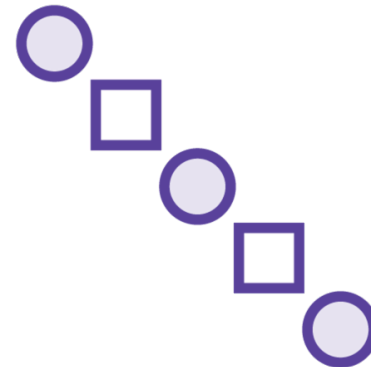
TDD increases quality

Code and test quality

TDD impacts productivity

Decreases in short-term
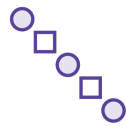Increases in long-term

Internal quality

External quality
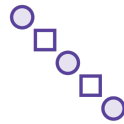
Research Measures

Internal quality

External quality

Internal quality

External quality

Internal quality

External quality

Test quality

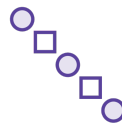Internal quality

External quality

Test quality

Productivity
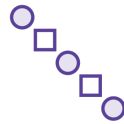
Internal quality

External quality

Test quality

Productivity

Settings

Controlled experiment

Pilot study

Semi-industry

Industry

Controlled experiment

Pilot study

Semi-industry

Industry

Controlled experiment

Pilot study

Semi-industry

Industry

Controlled experiment

Pilot study

Semi-industry

Industry
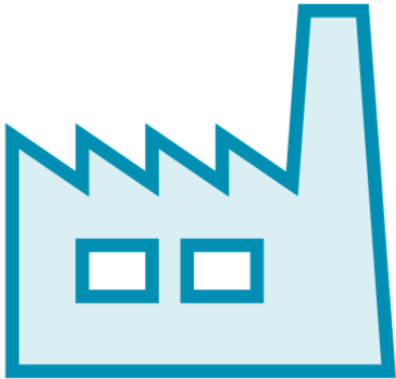
Controlled experiment

Pilot study

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Industry

Internal quality

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Controlled experiment

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Semi-industry

Industry

Research Results

	Controlled experiment	Pilot study	Semi-industry	Industry
Internal quality				
External quality				
Test quality				
Productivity				

Internal Quality

Research Results

	Controlled experiment	Pilot study	Semi-industry	Industry
Internal quality	⊖	⊖	⊖	✓
External quality				
Test quality				
Productivity				

External Quality

Research Results

	Controlled experiment	Pilot study	Semi-industry	Industry
Internal quality	⊖	⊖	⊖	✓
External quality	⊖	✓	✓	✓
Test quality				
Productivity				

Test Quality

Research Results

	Controlled experiment	Pilot study	Semi-industry	Industry
Internal quality	⊖	⊖	⊖	✓
External quality	⊖	✓	✓	✓
Test quality	✓	✓	✓	⊖
Productivity				

Productivity

Research Results

	Controlled experiment	Pilot study	Semi-industry	Industry
Internal quality	⊖	⊖	⊖	✓
External quality	⊖	✓	✓	✓
Test quality	✓	✓	✓	⊖
Productivity				

Research Results

	Controlled experiment	Pilot study	Semi-industry	Industry
Internal quality	⊖	⊖	⊖	✓
External quality	⊖	✓	✓	✓
Test quality	✓	✓	✓	⊖
Productivity				

Research Results

	Controlled experiment	Pilot study	Semi-industry	Industry
Internal quality	—	—	—	✓
External quality	—	✓	✓	✓
Test quality	✓	✓	✓	—
Productivity	✓	—	✗	✗

Research Results

	Controlled experiment	Pilot study	Semi-industry	Industry
Internal quality	⊖	⊖	⊖	✓
External quality	⊖	✓	✓	✓
Test quality	✓	✓	✓	⊖
Productivity	✓	⊖	✗	✗ short term / ✓ long term