Measurement & Estimating: The Art and Science

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The Industry Expectation vs. The Reality

Industry **Expects:** Graduates with immediate competency in:	**The Reality:** A persistent criticism from industry "old hands":
✓Interpreting construction drawings ✓Accurate quantity measurement ✓Robust estimates & contract documents	○ Perceived shortfall in fundamental practical skills among new entrants. ○ This gap hinders productivity and affects professional credibility

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Research Objective & Focus

Central Question: What are the essential **tools, skills, and teaching strategies** needed to ensure students are effective and confident from day one?

Research Focus:

Mastering the "art and science" of measurement and estimating.

Specifically, the **2nd-year (NZQF Level 6)** Measurement and Estimating courses.

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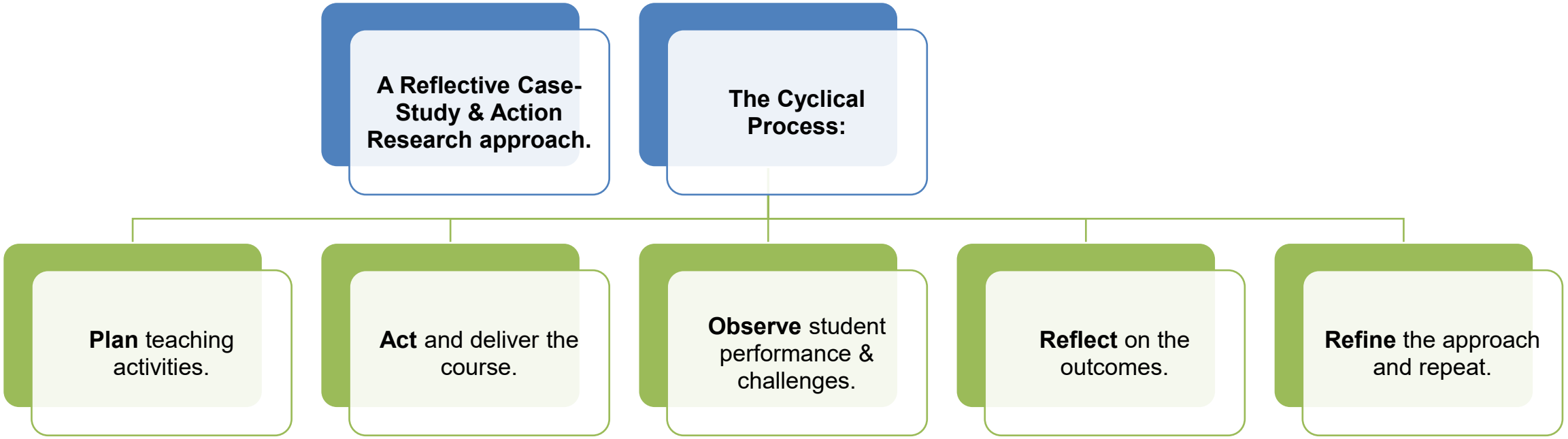
The Approach: Action Research Methodology



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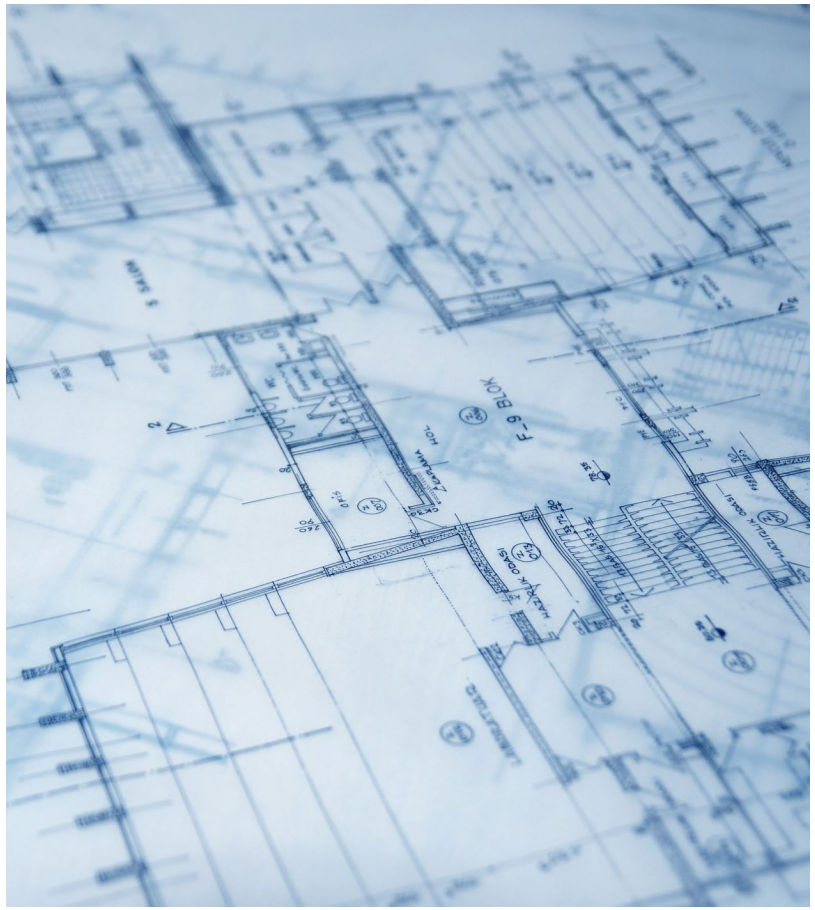
The Pedagogical Toolkit



- The curriculum was built on a foundation of practical, real-world resources:
  - **ANZSMM 2022 & NZIQS Guidance Notes** (Core Standard)
  - **Rawlinson's Sample SOQs** (Practical Examples)
  - **Detailed Building Measurement, 2nd Ed.** (Learning Resource)
  - **Excel Spreadsheets (pSoft)** (Measurement Tool)
  - **YouTube Videos** (Visualisation Aid)
  - **Real-World Project Drawings & Sketches** (Hands-On Application)

Key Findings: Student Challenges

Time Management: Underestimating the time needed to read and understand drawings.

Mixed Experience Levels: Experienced students grew impatient as more help was given to beginners.

Drawing Overload: Feeling overwhelmed by full sets of architectural and structural drawings.

Mathematics Skills: Not a major barrier; easily remedied.

Limitations of AI: Tools like ChatGPT and Copilot were **"largely useless"** for interpreting drawings and creating SOQs, often making critical errors.

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Key Findings: Facilitator Insights & Adjustments

Insight: This course demands more time and patience from facilitators.

Adjustments Made:

- **Teach Construction Principles First:** Before measuring, refresh the 'how' and 'why' of the construction process.
- **Emphasize Critical Thinking:** Move students from being mere "technicians" to understanding context and intent.
- **Tutorial Assistants (TAs):** Essential for providing personalised support with drawings.

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The Outcome: Cultivating "Regionally Appropriate" QS Professionals

- The integrated approach **significantly enhanced student proficiency**.
- Students became **critical thinkers**, not just quantity takers.
- Graduates are:
  - **Theoretically Sound**
  - **Proficient in ANZSMM 2022**
  - **"Regionally Appropriate"** – their skills are directly applicable to the NZ construction context.

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Conclusion & Significance

This research provides a **practical pedagogical model** for closing the theory-practice gap.

By immersing students in **authentic, standards-based tasks**, we prepare them to be **industry-ready from day one**.

This ensures a **more seamless transition** for junior QS professionals and **higher satisfaction** for employers.

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Reference

- Australian Institute of Quantity Surveyors & New Zealand Institute of Quantity Surveyors. (2022). *Australia and New Zealand standard method of measurement of building works 2022 edition:* AIQS.
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- Rawlinson Ltd. (2019). *Example schedule in ANZSMM 2018*. Rawlinson's Construction Cost Consultants.

Q&A / Thank You

Thank you for your attention

Questions?