

An Examination of Methodological Approaches in Applied Technology Classrooms: A Reflective Perspective from Vocational and Training Educators

Introduction

Applied Technology Classrooms (ATCs) offer innovative, hands-on environments for Vocational Education and Training (VET). By integrating tools like 3D printing, virtual reality, and laser cutting, they help students develop real-world skills.

This study explores how ATCs transform teaching methods and enhance digital competence among educators, preparing both teachers and students for a tech-driven labor market.

Methods

Qualitative study using deductive thematic analysis.

Participants:

- 25 educators and digital mentors
- 6 public VET institutions in Catalonia (Barcelona, Tarragona, Lleida)
- 2 classroom observations

Data collection tools

- Semi-structured interviews
- Focus groups
- Classroom observation

Tech tools

- Turboscribe.ai (transcriptions)
- ATLAS.ti v24.1.1 (discourse analysis)

Results

Monitoring



- Urgent need for teacher training in emerging technologies
- Technology use must align with educational goals
- Key tools: VR, AI, 3D printing
- Teachers' digital competence is essential for effective use

"Designing a class with new technologies requires mastery"

Assessment

- Projects: VR games, podcast, simulations, inter-school challenges
- Boost motivation, creativity and teamwork
- Participation in innovative activities and competitions
- Enhances students' social and personal skills



"It's a different space-you learn by doing"

Working plan



- Project-based methodology tied to real-world task
- Strong connection to the labor market
- Promotes autonomy and professional readiness
- Encourages interdisciplinary collaboration and skill development

"They're not starting from scratch-they've used real technologies valued by companies"

Conclusions

ATCs significantly reshape VET educational spaces through collaborative setups, project-based activities and integration of emerging technologies



A gap remains between technological advancement in the job market and traditional education practices



ATCs have the potential to revolutionize VET by enhancing practical skills and digital fluency

Well-trained educators are the cornerstone of successful ATC implementation. There is a need for continuous investment and industry partnerships to keep education

