# INNOVATION PÉDAGOGIQUE

unine
Université de Neuchâtel

# AUGMENTING ACTIVE LEARNING WITH GENAI: ENHANCEMENT OR IMPAIRMENT?
## EVIDENCE FROM A DATA VISUALIZATION COURSE

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**The Field Study Setup**

Three Experimental Conditions

Student alone (22 students)

Student with AI (21 students)

AI spirit performing solo (26 instances)

**The Data Visualization Task**

CSV Data → Charity's Mission

Jupyter Notebook

**Metrics for Success**

Visual quality, storytelling, code by blind reviewers)

NASA TLX scale for perceived difficulty

**The Paradox of Ease vs. Excellence**

37% Reduction in Perceived Effort

Students+AI Mean=31.47    Students alone Mean=50.00

$d = 1.11$

AI Outperforms Students

Effect size $d > 1$

**The "Stagnation" Gap**

No significant difference in assignment scores

**The Illusion of Usefulness**

Higher Perceived Usefulness of GenAI

Tell me a joke.    What's the weather?    Tell me a joke.    What's the weather?

**Low Performer**
Struggled to express needs clearly, engaged in off-topic conversations

**Lower Assignment Scores**
($\beta = -3.23$, $p = .025$)

**High Performer**
Provided deep context, "sharp and clear" in instructions, iterated repeatedly

**Best Practices for AI Literacy**

Tutor    Ideator

**Avoid the Cognitive Laziness Trap**
Do not accept weak work; verify, interpret, reason independently

Creator    Reviewer

Prompt (Give specific context, state role, provide clear criteria)

The "Sharp" Prompt Method

Review

Improve

NotebookLM

Macko, V., Ouaazki, A., Bartłomiejczyk, N., Monteiro, B., Felber, P., & Holzer, A. (2025). Augmenting Active Learning with GenAI: Enhancement or Impairment? Evidence from a Data Visualization Course. In *European Conference on Technology Enhanced Learning* (pp. 275-290).