Using XIPU AI to Teach Content Analysis in an Undergraduate Methods Module

Learning Mall

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1. Background

The module INS202 aims to provide undergraduate students with an introduction to research methods in international relations, focusing on low-threshold methods for data collection and analysis. Content analysis is a practical method for this purpose. While advanced techniques exist, simple approaches are often sufficient for undergraduates to identify key communication patterns in political science and international relations research. Materials ranging from media reports to government documents are readily accessible online and in library databases, analyzable through straightforward coding practices, providing low-threshold data collection methods for final-year projects.

Given content analysis centers on text, it presents an excellent opportunity to integrate Large Language Models. The core of content analysis involves quantifying qualitative data through coding—assigning numerical codes to text

based on specific rules, with coded data then analyzed via descriptive statistics. In short, it identifies and statistically reveals usage patterns of words, themes, and topics in communications to answer research questions.

Against this backdrop, I introduced XIPU AI into content analysis teaching with two main goals: First, a quick classroom survey revealed most students had never used XIPU AI despite widespread discussion. I wanted to provide hands-on experience using AI for research assistance. Second, XIPU AI serves not just as a tool but a teaching instrument that demonstrates researchers' decision-making during data coding and reflects inherent limitations of AI-dependent analysis, such as practical obstacles and reliability issues.

2. Solutions

We designed a three-step teaching process:

Step 1: Manual Coding of Media Reports

During COVID-19, WHO communications became politically contentious. Students analyzed WHO media coverage to reveal patterns and potential biases, focusing on how Chinese English-language media portrayed politicians' actions. They were provided detailed coding manuals and schedules, coding newspaper articles along

two dimensions: "Actors" and "Actions." For "Actors," students were encouraged to develop and expand categories based on text content due to uncertainty. For "Actions," fixed categories were provided: (1) positive, (2) negative, (3) neutral, or (4) no action identified. Students collaborated in groups, sharing manuals and schedules via XJTLU Box (XJTLU's cloud storage platform).

Step 2: Introducing AI as a Coding Assistant

While powerful programs and libraries exist for content analysis, their complexity often intimidates undergraduates. XIPU AI's natural language input offers a more accessible option. Students were introduced to XIPU AI and asked to complete a simple prompt requiring AI to apply the two main coding dimensions to newspaper articles. They then compared their manual coding with AI-generated codes and compared AI outputs across groups. This exercise revealed the decision-making inherent in text coding, including establishing precise rules for category creation and application.

Students discovered that XIPU AI, like human coders, requires ongoing supervision and training (through more detailed prompts) to produce reliable results. Different users receive different outputs from XIPU AI even with identical or similar prompts.

Step 3: More Advanced Prompts

More sophisticated prompts enabled students to use AI for constructing and maintaining coding manuals and schedules. Achieving desired output required progressively asking XIPU AI to refine its responses, eventually generating human-customized schedules. However, we found that even with advanced prompts, XIPU AI doesn’t always identify all actors or correctly evaluate actions, requiring frequent reminders of coding manual rules.

3. Outcomes and Benefits

Pedagogical Advantages:

Integrating XIPU AI into INS202 offered multiple benefits. It provided an intuitive, user-friendly text analysis tool for inexperienced undergraduates—more accessible than complex software and programming libraries. It also served as a teaching tool to deepen awareness of common methodological issues.

Student Cognitive Development:

Interacting with AI for coding helped students grasp critical decisions required in text coding, such as category establishment and inter-coder reliability. They discovered that XIPU AI, like human coders, needs supervision and training via more detailed prompts for reliable results.

Critical Thinking Cultivation:

The exercise revealed that inter-coder reliability matters: just as human coders may apply rules differently, XIPU AI produces different outputs from identical/similar prompts (e.g., initially overlooking actors, requiring correction). Students deeply understood the importance of balanced, judicious AI use in research methods.

Skill Development:

Through the three-step process, students gained hands-on AI-assisted research experience and learned to improve AI output quality and reliability through detailed prompt writing. This experience fostered critical evaluation skills for AI tools in research.

4. Replicability and Promotion Value

Low-Threshold Accessibility: Since content analysis centers on text, LLMs offer excellent integration opportunities. XIPU AI’s natural language input provides a convenient, practical alternative to complex programs/libraries, making it more approachable for undergraduates.

Teaching Tool Value: XIPU AI serves not just as an assistant but as a teaching instrument that demonstrates researchers' coding decision-making processes and reflects inherent AI analysis limitations. This "demystification" pedagogical design is crucial for research methods courses.

Critical Thinking Training Model: The "manual coding vs. AI-assisted coding" comparison experiment lets students experience AI limitations firsthand (e.g., inconsistency, need for supervision), cultivating algorithmic literacy and cautious usage. This model transfers to other research methods courses requiring critical technology evaluation.

Cross-Disciplinary Application Potential: Content analysis is central to political science, international relations, communication, sociology, and other social sciences. This three-step teaching design migrates across these disciplines, helping students master appropriate AI-assisted content analysis methods.

Scalable Implementation: The teaching process utilized existing campus infrastructure like XJTLU Box for collaboration, offering a scalable implementation model for other universitie