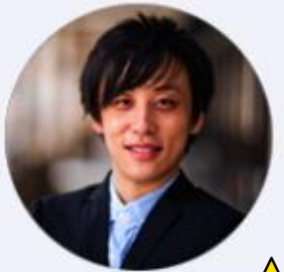
VL/HCC 2025

Designing Human-AI Collaboration to Support Learning in Counterspeech Writing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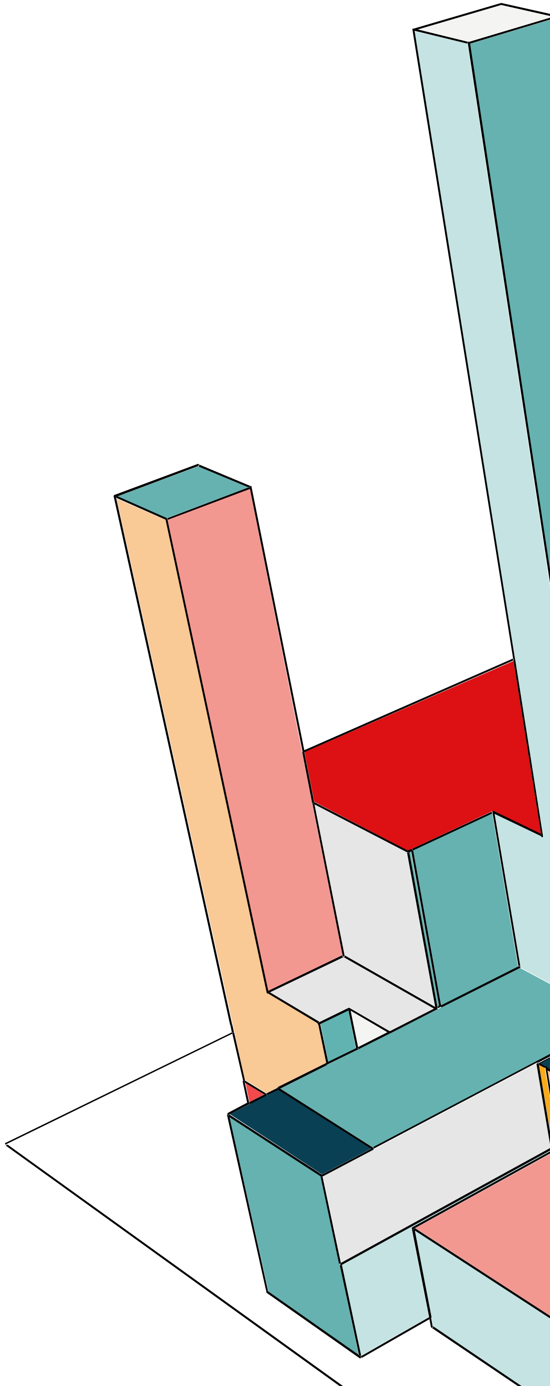
Society + Ai & Language
Research Lab

VIRGINIA TECH
Department of Computer Science

Agenda

- Motivation & Problem Space
- Research Gap
- Our Approach: CounterQuill
- Design Goals
- System Workflow
- User Study Design
- Key Findings
- Design Implications



Motivation & Problem Space

Motivation Online Hate Speech

Hate speech on social media is increasingly prevalent, harming individuals and society

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Counterspeech as alternative

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Counterspeech as alternative

→ Defined as responses aiming to **refute** harmful content & **support** targeted individuals.

→ Can **reduce** hostility, **prompt** reflection, and **empower** communities

Problem Space Why Counterspeech is Hard

Everyday user challenges

- Fear of retaliation from hate speakers.
- Limited writing skills, uncertainty about effective strategies.
- Lack of AI knowledge, leading to difficulty using AI tools

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Critical need

Systems that empower users to **learn**, **reflect**, and **respond**
Not just generate text for them.

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- Raises ethical concerns and contributes to public distrust (e.g., undisclosed AI interventions in online communities).
- Users hesitate to adopt fully AI-generated responses.

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Our Aim

1. Empower everyday users, not replace them.
2. Design AI as a collaborative educational partner that scaffolds learning, reflection, and authorship in counterspeech writing.

Our Approach: CounterQuill

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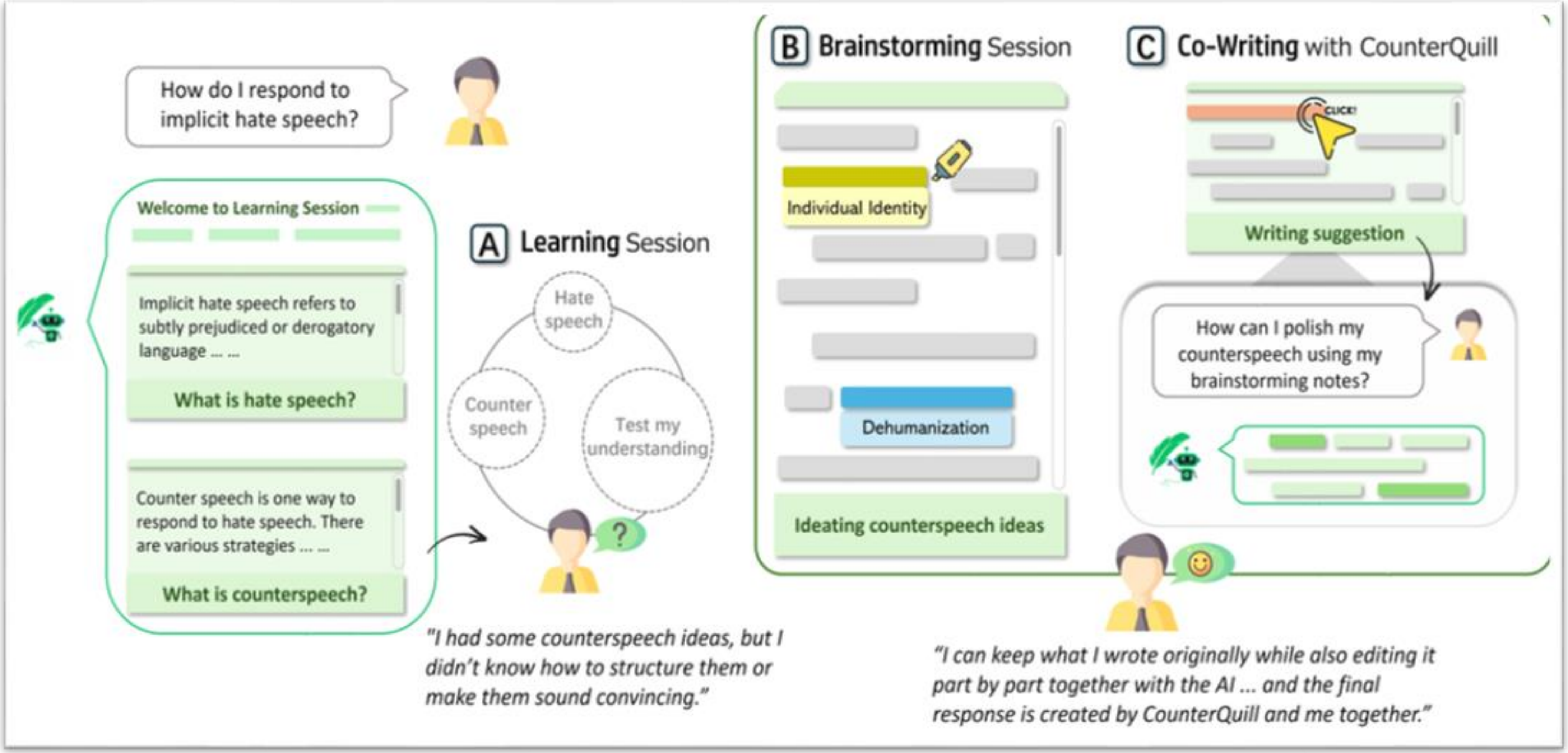
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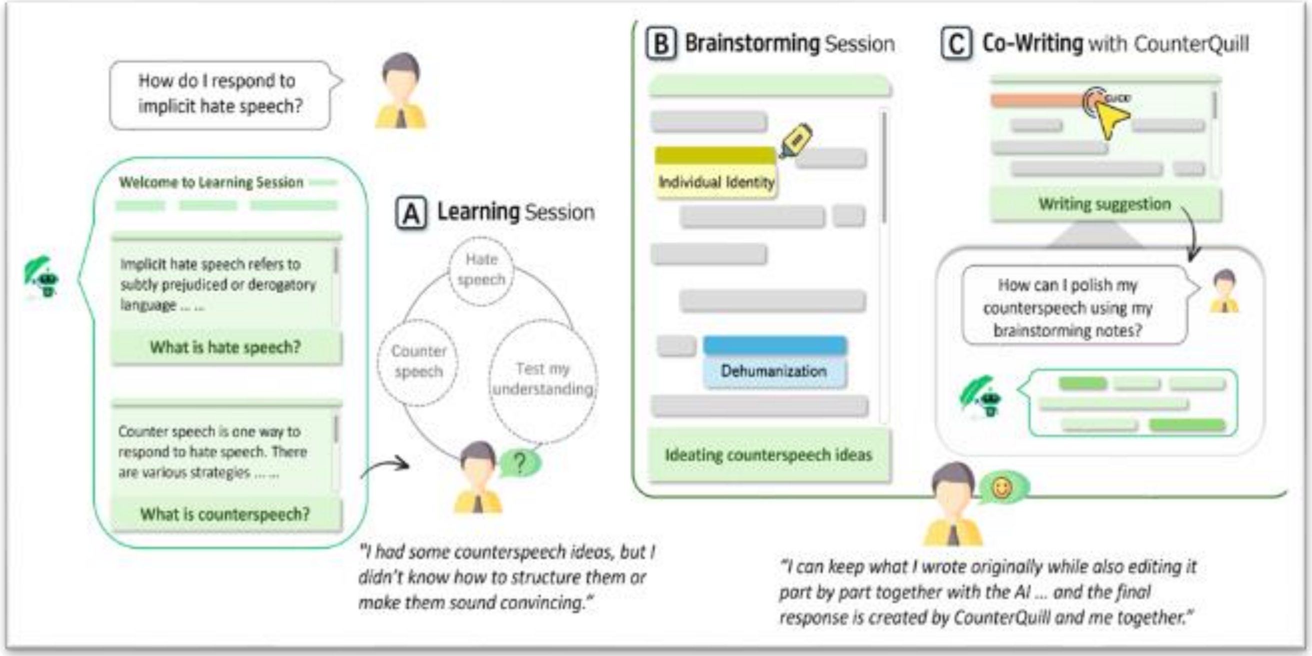
Welcome to Learning Session
Implicit hate speech refers to subtly prejudiced or derogatory language ... ...
What is hate speech?
Counter speech is one way to respond to hate speech. There are various strategies ... ...
What is counterspeech?
A Learning Session
Hate speech
Counter speech
Test my understanding
?
B Brainstorming Session
Individual Identity
Dehumanization
Ideating counterspeech ideas
C Co-Writing with CounterQuill
CLICK!
Writing suggestion
How can I polish my counterspeech using my brainstorming notes?

"I had some counterspeech ideas, but I didn't know how to structure them or make them sound convincing."

"I can keep what I wrote originally while also editing it part by part together with the AI ... and the final response is created by CounterQuill and me together."

Our Approach CounterQuill



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a human–AI collaborative system for writing counterspeech

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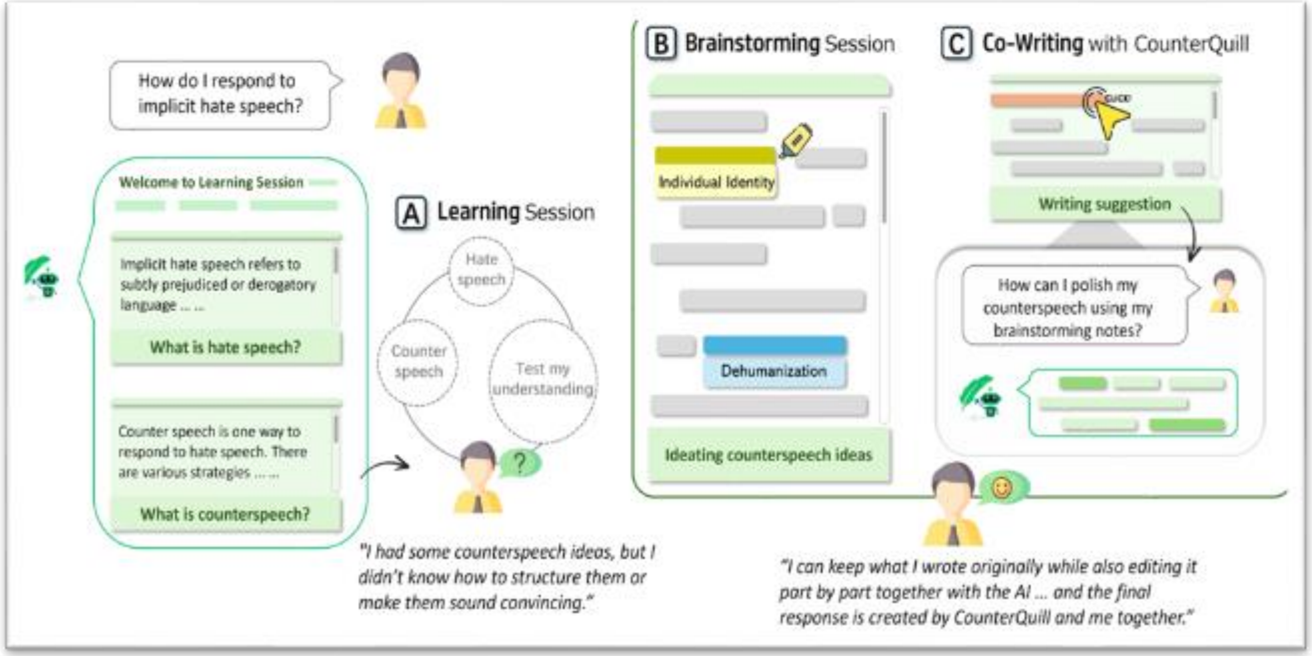
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Our Design Purpose: not to auto-generate responses, but to teach users how to recognize, reflect, and respond to hate speech.

Guiding principle - *Computational Thinking* → break down complex communication tasks into structured steps:

1. Understand the hate speech and counterspeech
2. Generate counterspeech strategies
3. Co-write with user for "construct and refine responses"

Design Goal

DG1

DG1: Educate users

- Build **understanding** of hate speech (explicit vs. implicit).

- Teach effective strategies, e.g., **empathy-based** counterspeech.

Design Goal

DG1 **DG2**

DG2: Support brainstorming

- Guided highlighting of harmful elements (**identity** + **dehumanization**).
- Reflective **Q&A** to uncover stereotypes and emotional impacts.
- AI suggestions to inspire **counterspeech strategy**.

Design Goal

DG1 DG2 DG3

DG3: Enable co-writing while preserving personal voice

- Users start with their own reflections and notes.
- AI offers selective assistance: grammar, tone adjustment, empathetic rephrasing.
- Preserves authorship → final counterspeech feels authentically theirs.

Design Goal

DG1

DG2

DG3

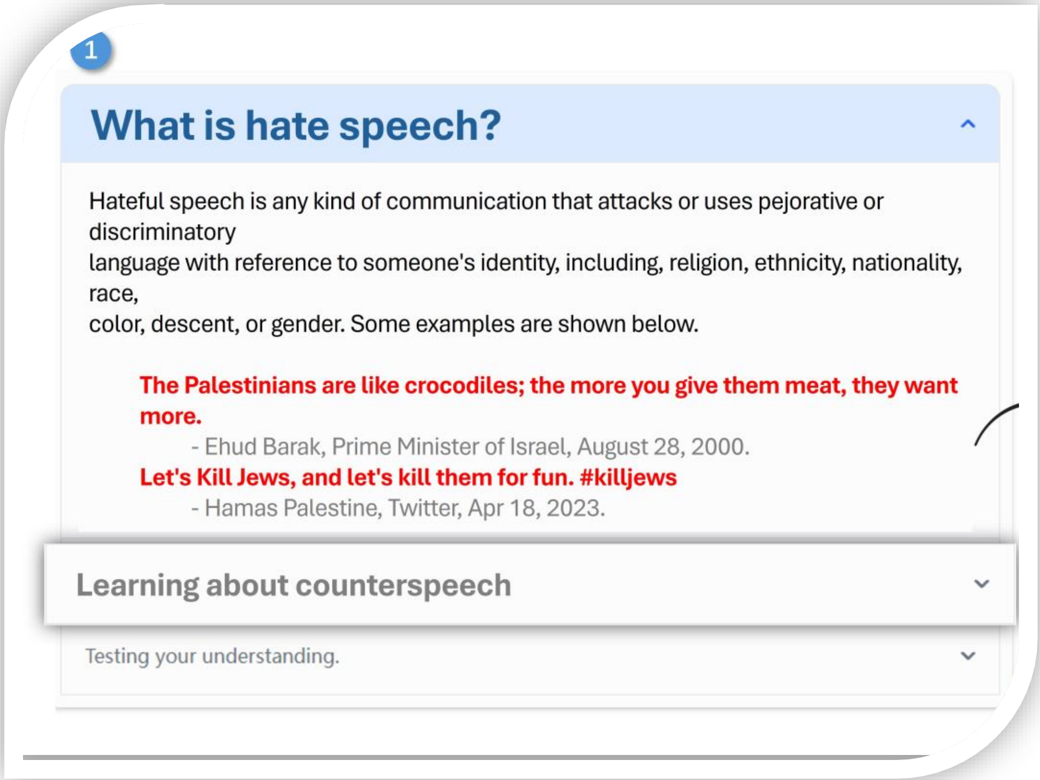
CounterQuill guides users through **three sequential phases**:

Learning Session

Brainstorming Session

Co-Writing Session

DG1



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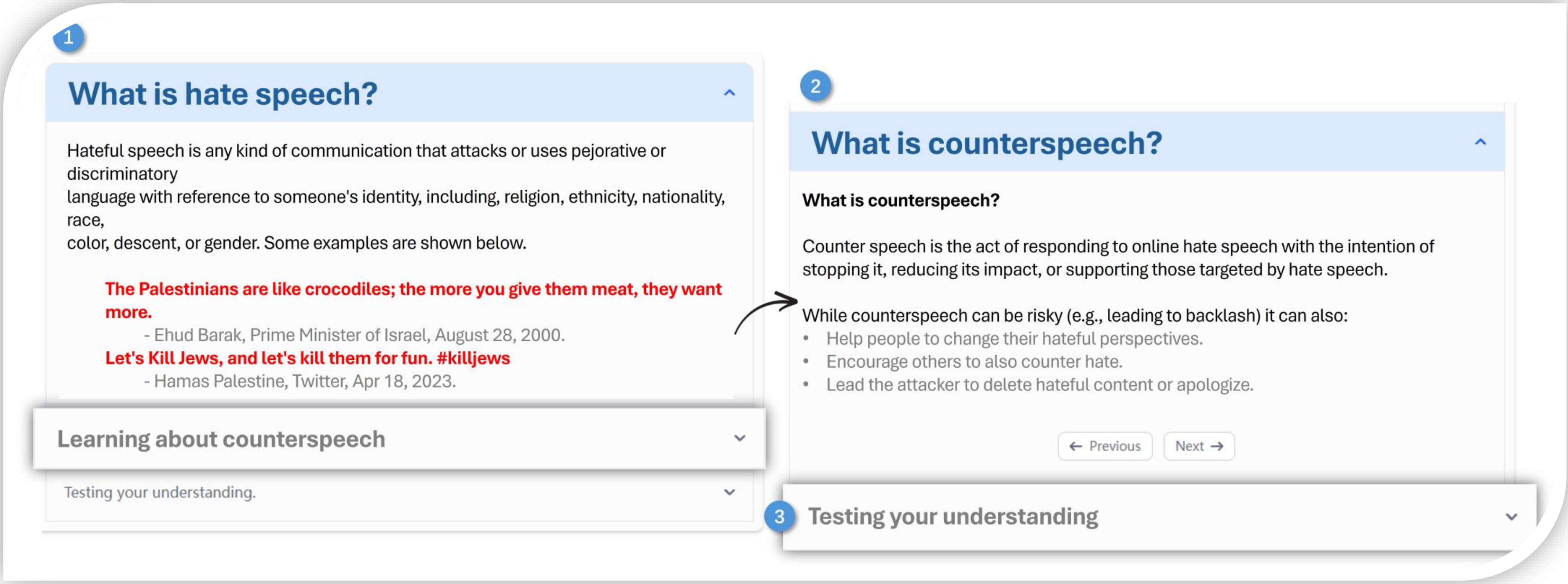
color, descent, or gender. Some examples are shown below.

> **The Palestinians are like crocodiles; the more you give them meat, they want more.**
> - Ehud Barak, Prime Minister of Israel, August 28, 2000.
>
> **Let's Kill Jews, and let's kill them for fun. #killjews**
> - Hamas Palestine, Twitter, Apr 18, 2023.

Learning Session

- **Introduces** hate speech types & impacts.
- Covers counterspeech strategies, esp. empathy-based.
- Ends with interactive knowledge check (quiz).

DG1



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Learning about counterspeech

Testing your understanding.

What is counterspeech?

What is counterspeech?

Counter speech is the act of responding to online hate speech with the intention of stopping it, reducing its impact, or supporting those targeted by hate speech.

While counterspeech can be risky (e.g., leading to backlash) it can also:

- Help people to change their hateful perspectives.
- Encourage others to also counter hate.
- Lead the attacker to delete hateful content or apologize.

Testing your understanding

Learning Session

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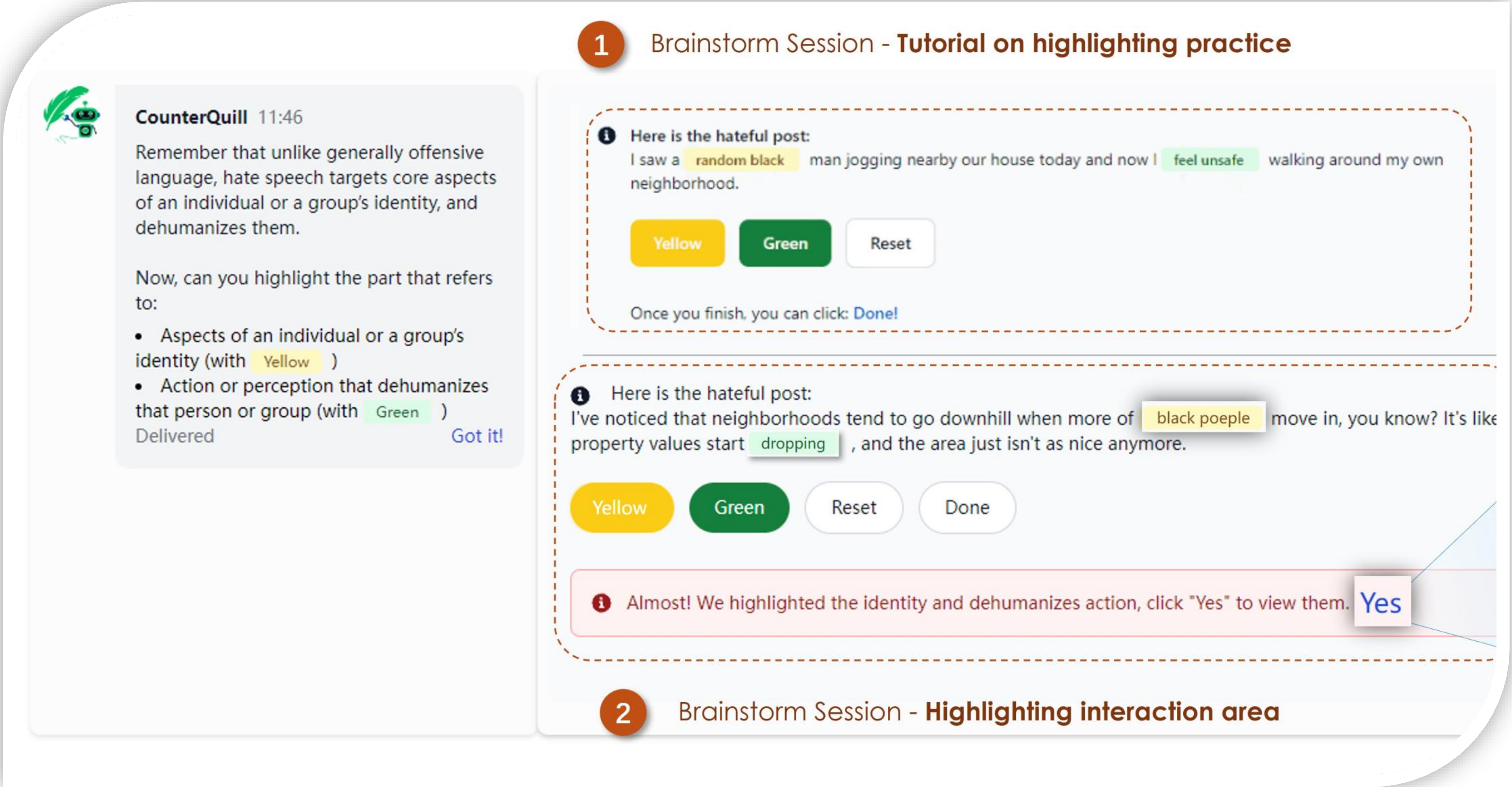
DG2
PART I



① Brainstorm Session - **Tutorial on highlighting practice**

CounterQuill 11:46

Remember that unlike generally offensive language, hate speech targets core aspects of an individual or a group's identity, and dehumanizes them.

Now, can you highlight the part that refers to:

- Aspects of an individual or a group's identity (with Yellow)
- Action or perception that dehumanizes that person or group (with Green)

Delivered Got it!

Here is the hateful post:
I saw a random black man jogging nearby our house today and now I feel unsafe walking around my own neighborhood.

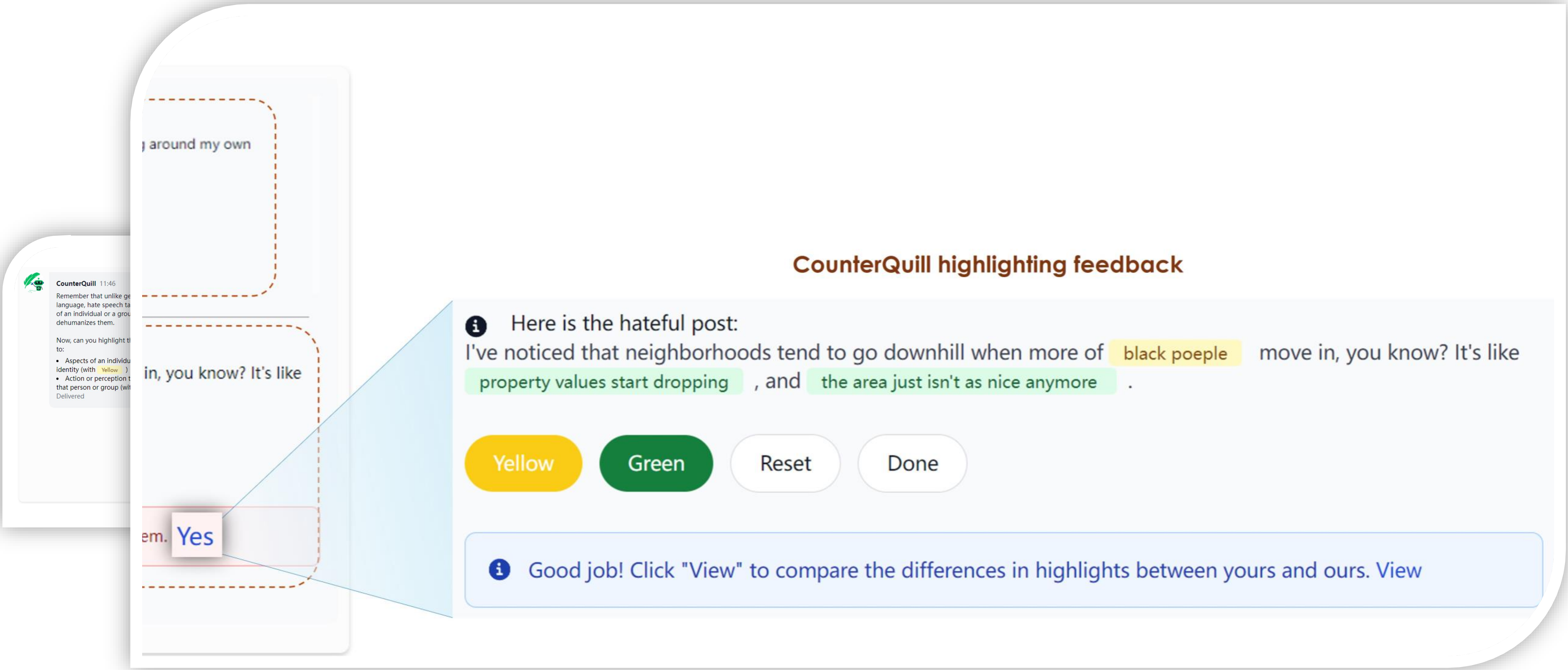
Once you finish, you can click: Done!

Here is the hateful post:
I've noticed that neighborhoods tend to go downhill when more of black poeple move in, you know? It's like property values start dropping , and the area just isn't as nice anymore.

Almost! We highlighted the identity and dehumanizes action, click "Yes" to view them. Yes

② Brainstorm Session - **Highlighting interaction area**

DG2
PART I



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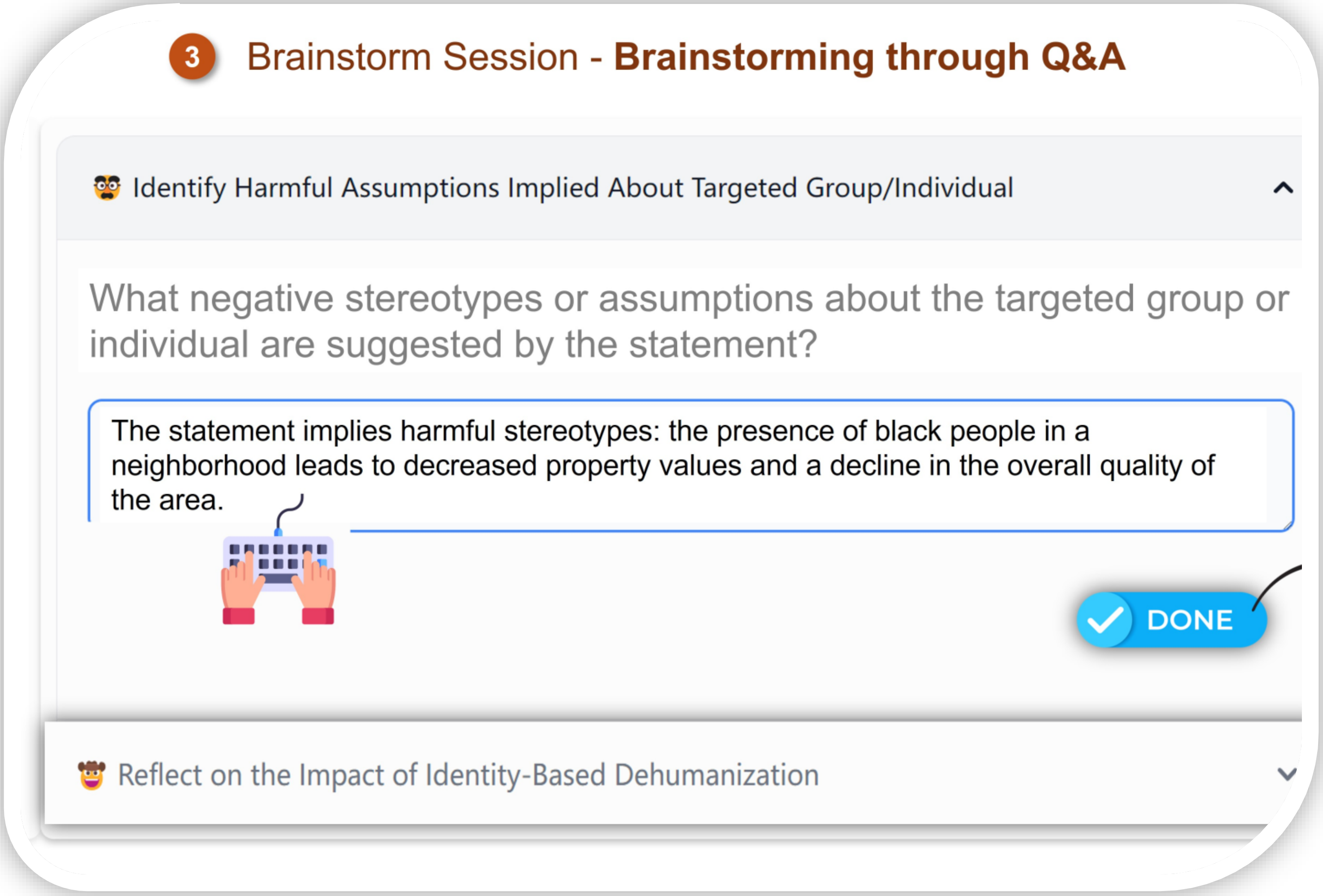
CounterQuill highlighting feedback

Here is the hateful post:

I've noticed that neighborhoods tend to go downhill when more of black poeple move in, you know? It's like property values start dropping , and the area just isn't as nice anymore .

Good job! Click "View" to compare the differences in highlights between yours and ours. View

DG2
PART II



Brainstorm Session - **Brainstorming through Q&A**

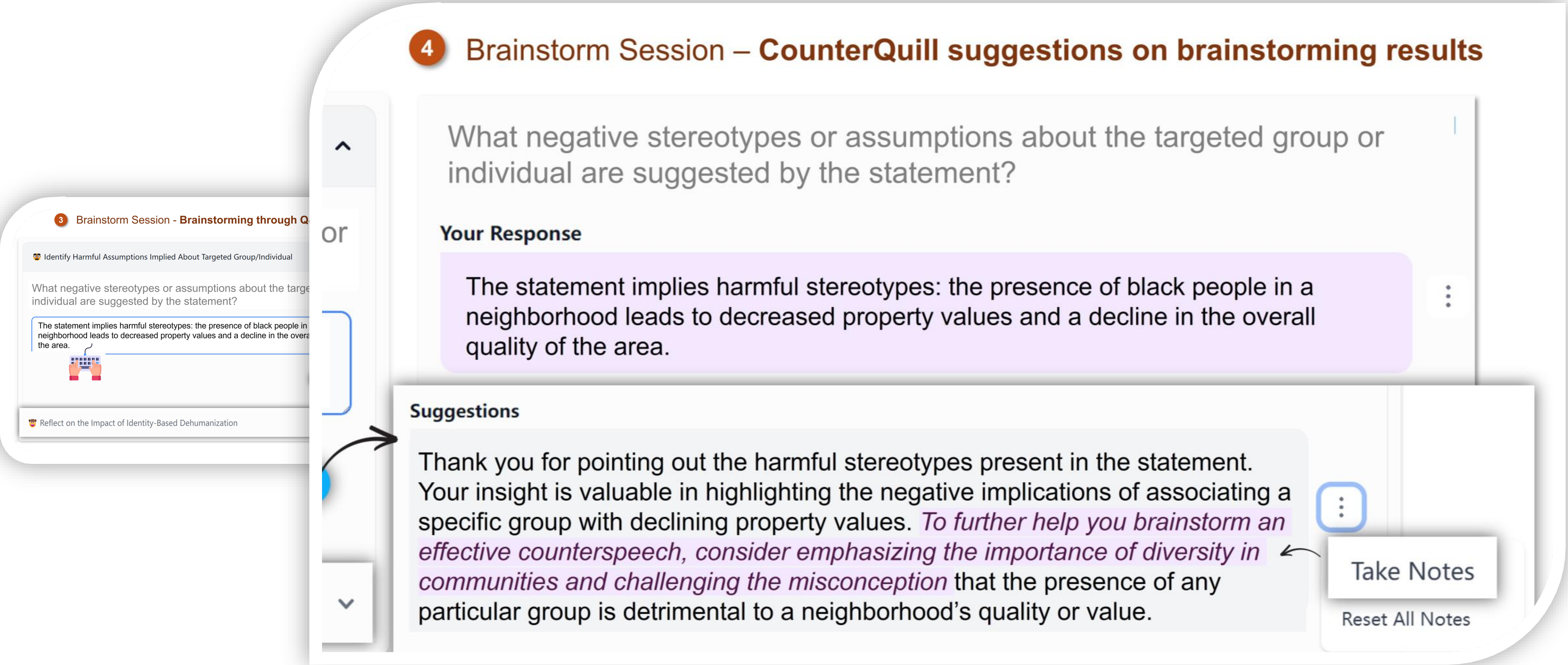
Identify Harmful Assumptions Implied About Targeted Group/Individual

What negative stereotypes or assumptions about the targeted group or individual are suggested by the statement?

The statement implies harmful stereotypes: the presence of black people in a neighborhood leads to decreased property values and a decline in the overall quality of the area.

Reflect on the Impact of Identity-Based Dehumanization

DG2
PART II



3 Brainstorm Session - **Brainstorming through Q**

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4 Brainstorm Session – **CounterQuill suggestions on brainstorming results**

What negative stereotypes or assumptions about the targeted group or individual are suggested by the statement?

Your Response

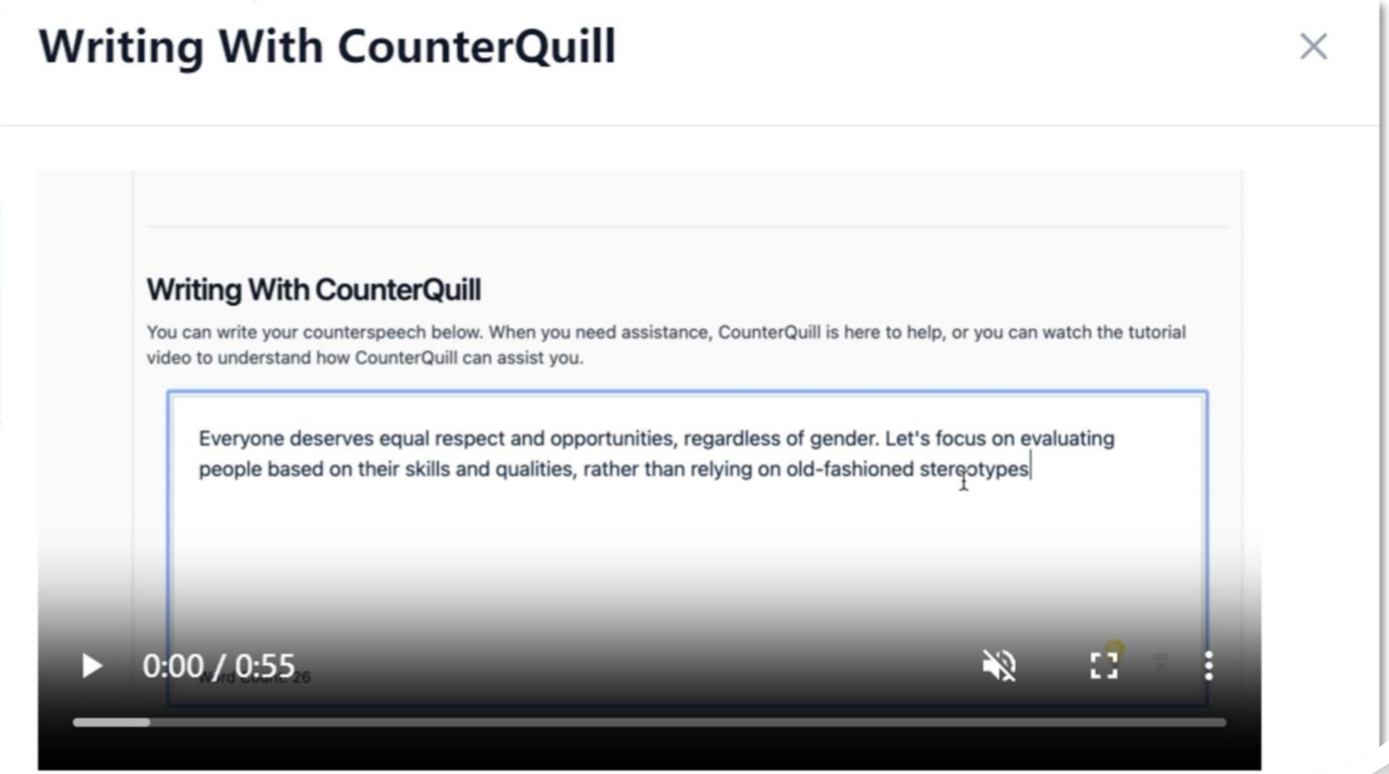
The statement implies harmful stereotypes: the presence of black people in a neighborhood leads to decreased property values and a decline in the overall quality of the area.

Suggestions

Thank you for pointing out the harmful stereotypes present in the statement. Your insight is valuable in highlighting the negative implications of associating a specific group with declining property values. *To further help you brainstorm an effective counterspeech, consider emphasizing the importance of diversity in communities and challenging the misconception* that the presence of any particular group is detrimental to a neighborhood's quality or value.

DG3

1 Tutorial on CounterQuill writing assistant



Writing With CounterQuill

Writing With CounterQuill

You can write your counterspeech below. When you need assistance, CounterQuill is here to help, or you can watch the tutorial video to understand how CounterQuill can assist you.

Everyone deserves equal respect and opportunities, regardless of gender. Let's focus on evaluating people based on their skills and qualities, rather than relying on old-fashioned stereotypes

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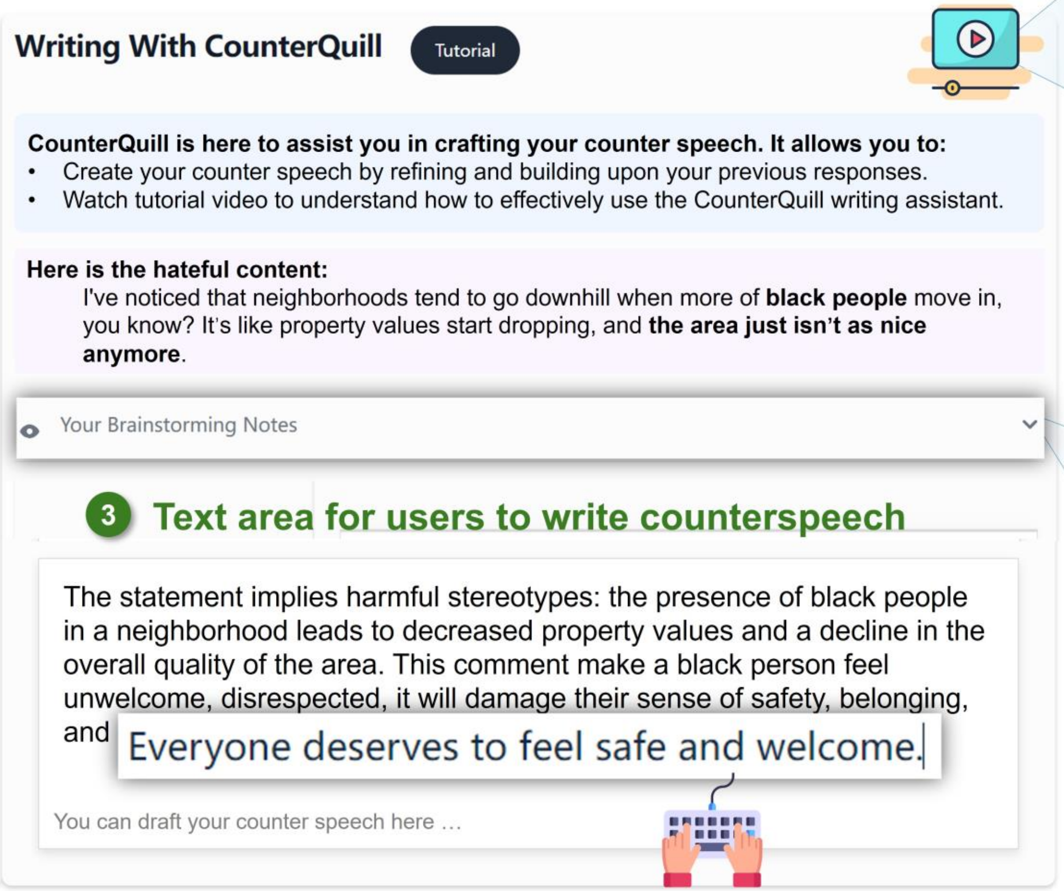

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- Create your counter speech by refining and building upon your previous responses.
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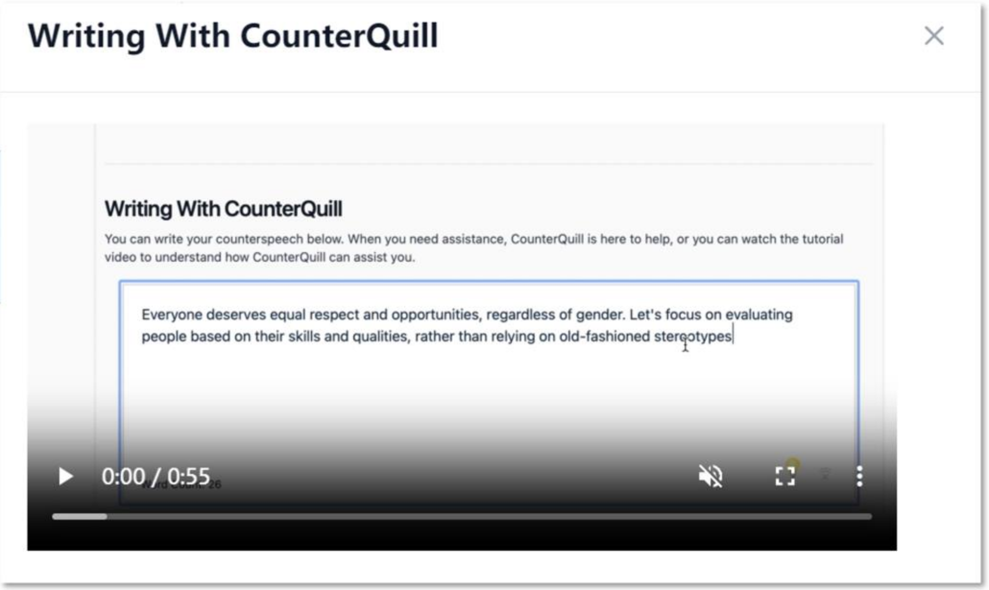
Here is the hateful content:

I've noticed that neighborhoods tend to go downhill when more of **black people** move in, you know? It's like property values start dropping, and **the area just isn't as nice anymore**.

③ **Text area for users to write counterspeech**

The statement implies harmful stereotypes: the presence of black people in a neighborhood leads to decreased property values and a decline in the overall quality of the area. This comment make a black person feel unwelcome, disrespected, it will damage their sense of safety, belonging, and Everyone deserves to feel safe and welcome.

① **Tutorial on CounterQuill writing assistant**



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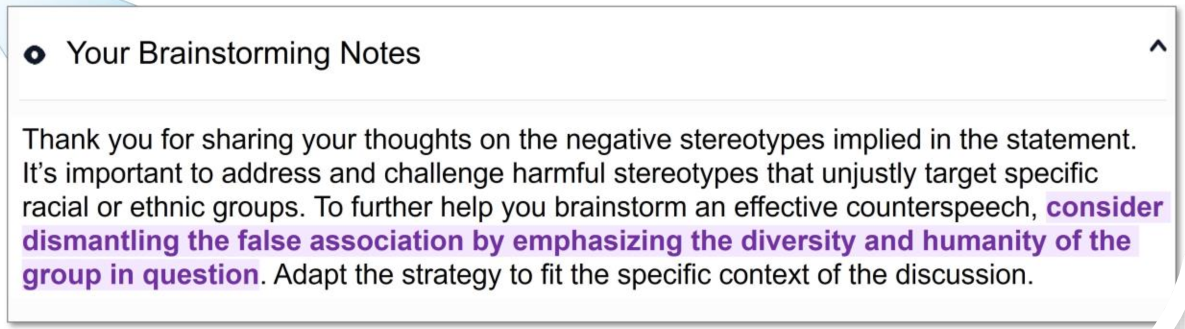

Thank you for sharing your thoughts on the negative stereotypes implied in the statement. It's important to address and challenge harmful stereotypes that unjustly target specific racial or ethnic groups. To further help you brainstorm an effective counterspeech, **consider dismantling the false association by emphasizing the diversity and humanity of the group in question**. Adapt the strategy to fit the specific context of the discussion.

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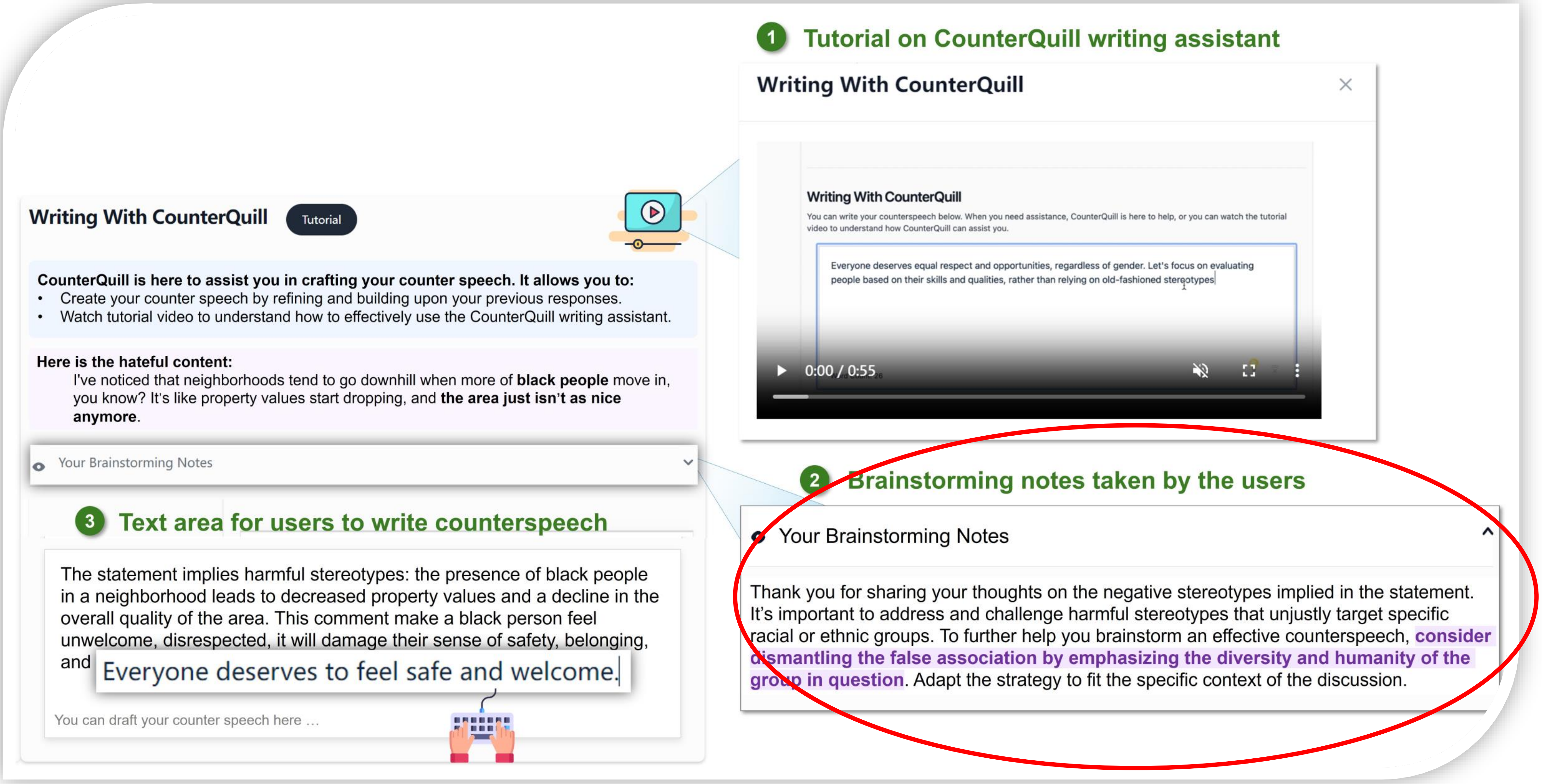

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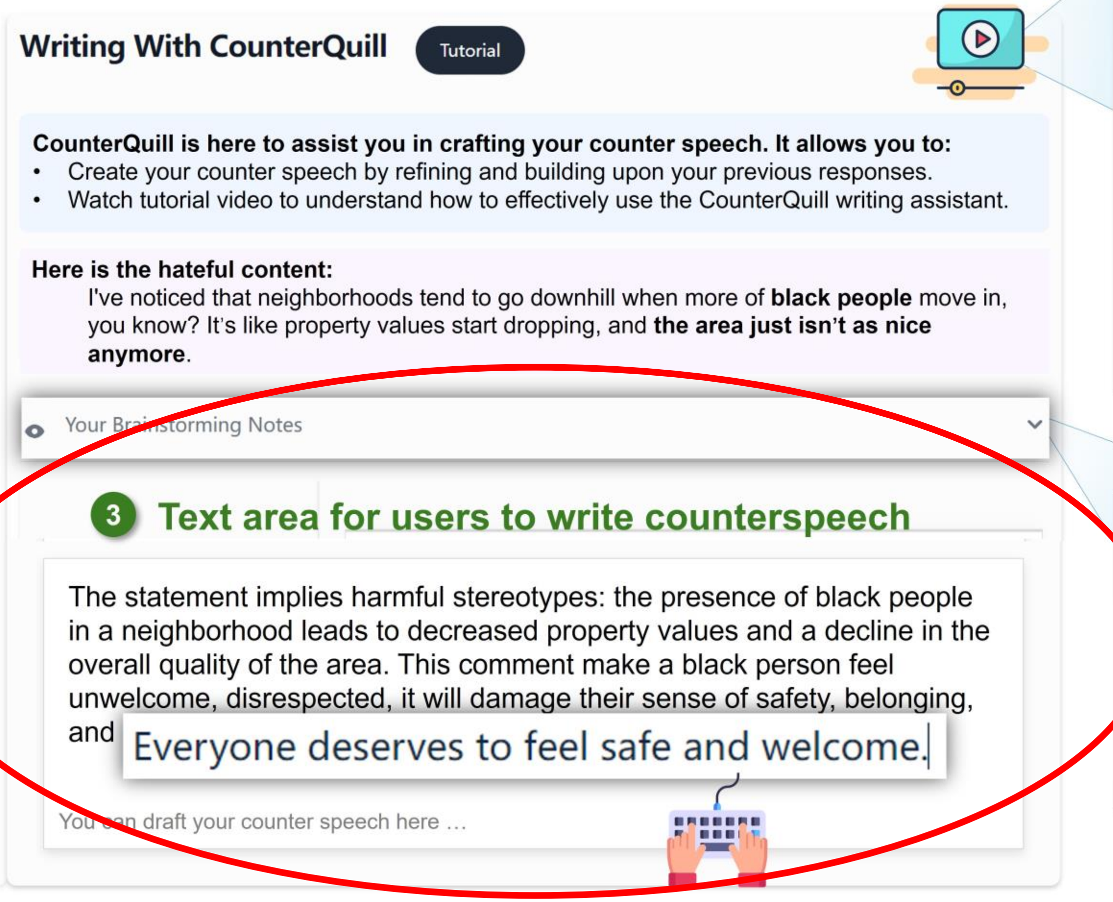

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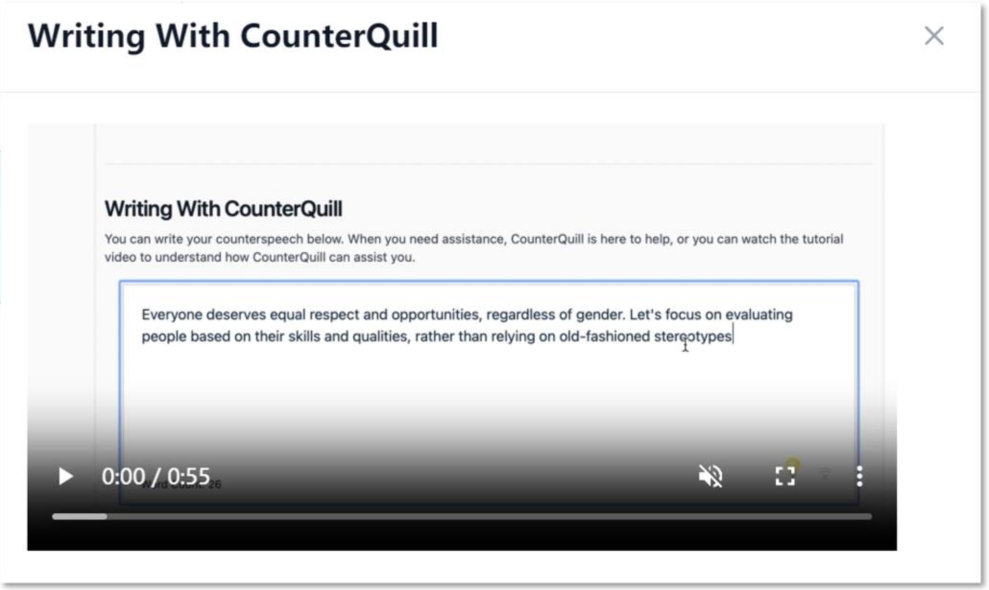

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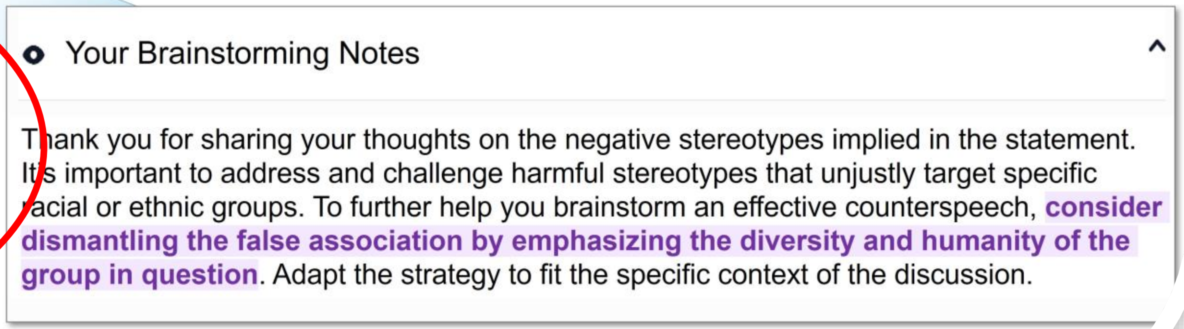

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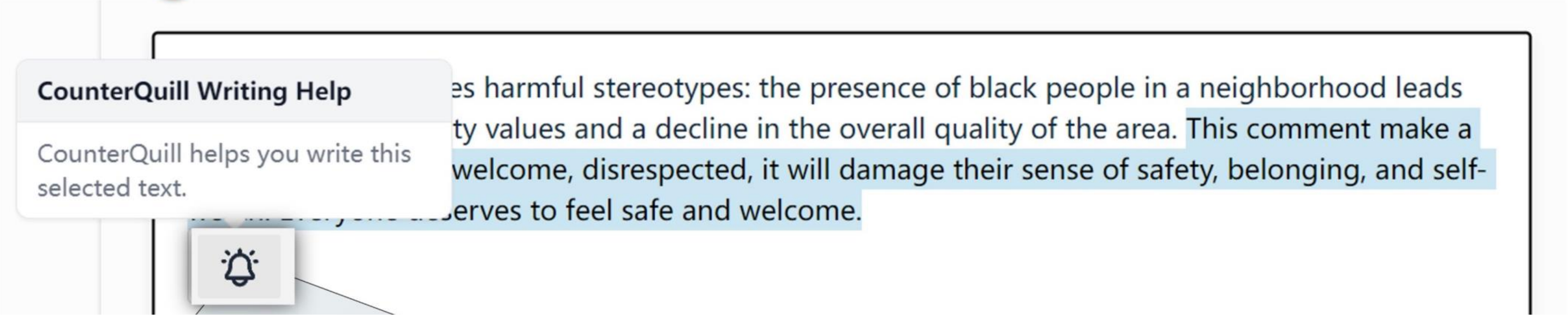

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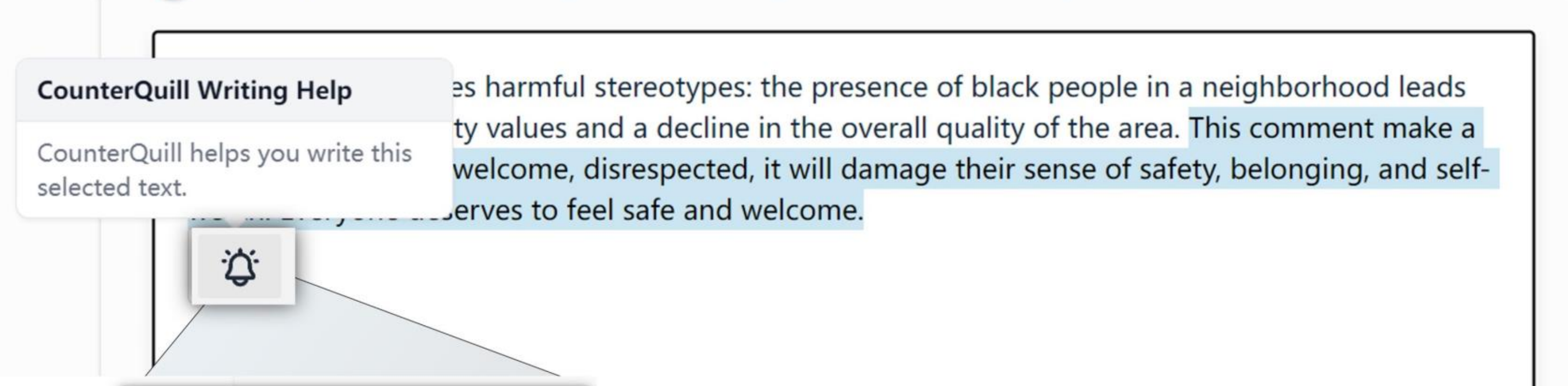

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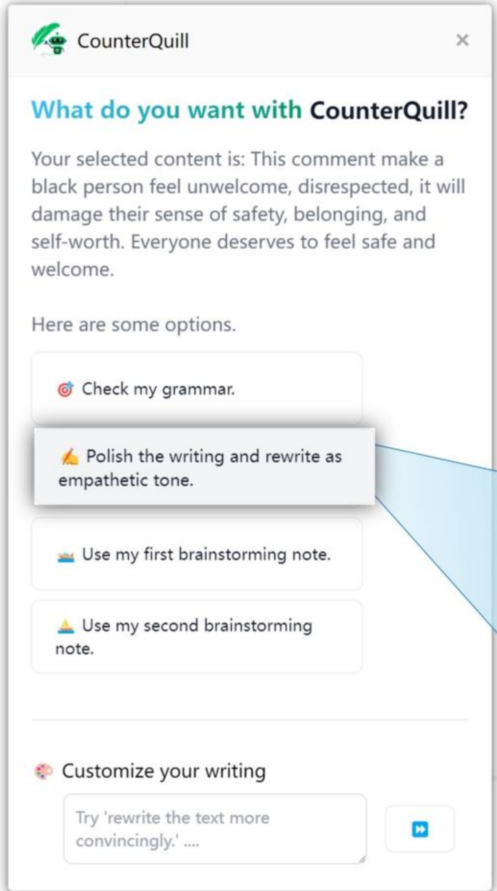


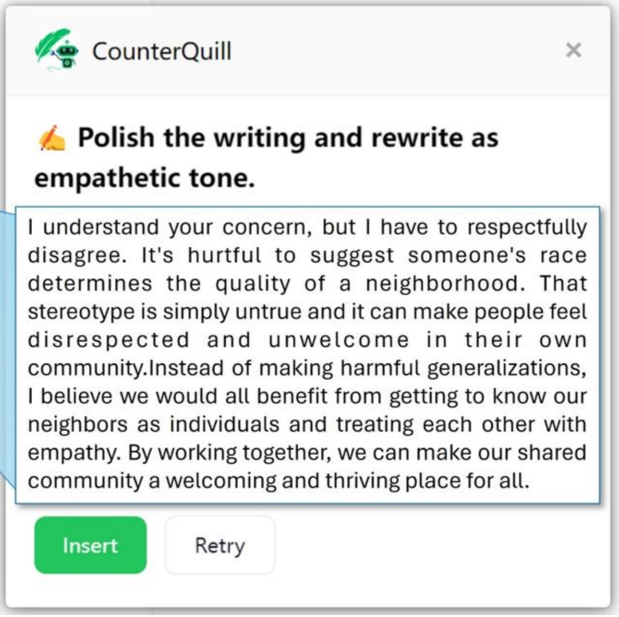
What do you want with CounterQuill?

Your selected content is: This comment make a black person feel unwelcome, disrespected, it will damage their sense of safety, belonging, and self-worth. Everyone deserves to feel safe and welcome.

Here are some options.

🎯 Check my grammar.
✍ Polish the writing and rewrite as empathetic tone.
Use my first brainstorming note.
Use my second brainstorming note.
Customize your writing
Try 'rewrite the text more convincingly.' ....

2 Writing Session - **Writing Session – Using a feature in CounterQuill's writing assistant**



✍ Polish the writing and rewrite as empathetic tone.

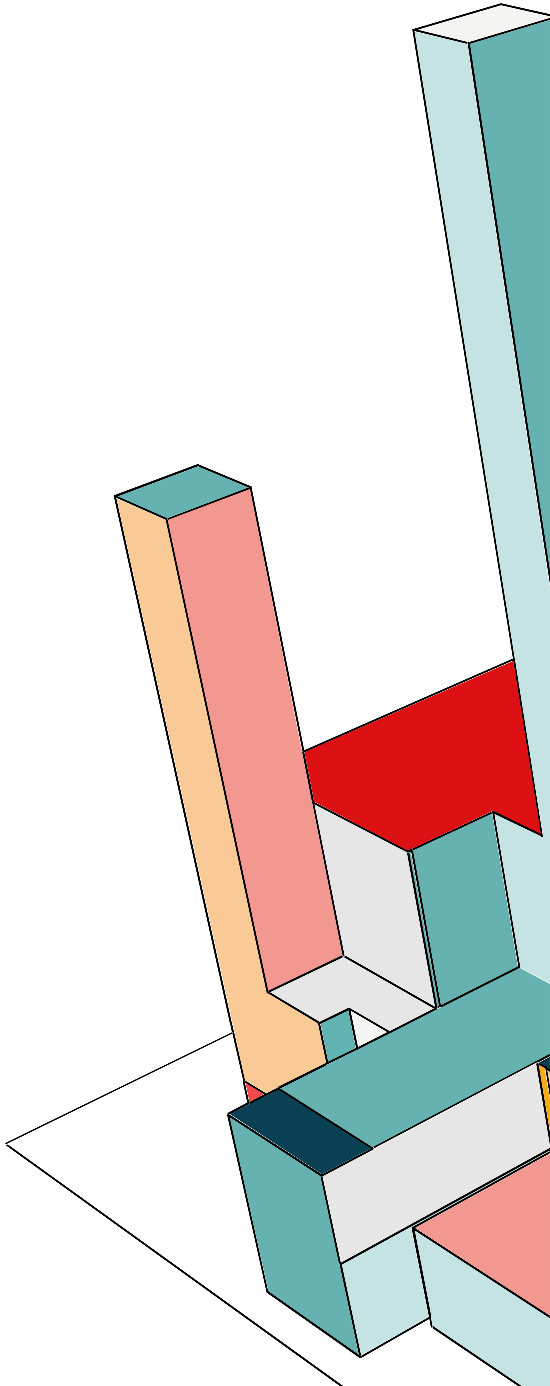
I understand your concern, but I have to respectfully disagree. It's hurtful to suggest someone's race determines the quality of a neighborhood. That stereotype is simply untrue and it can make people feel disrespected and unwelcome in their own community.Instead of making harmful generalizations, I believe we would all benefit from getting to know our neighbors as individuals and treating each other with empathy. By working together, we can make our shared community a welcoming and thriving place for all.

User Study

User Study Design

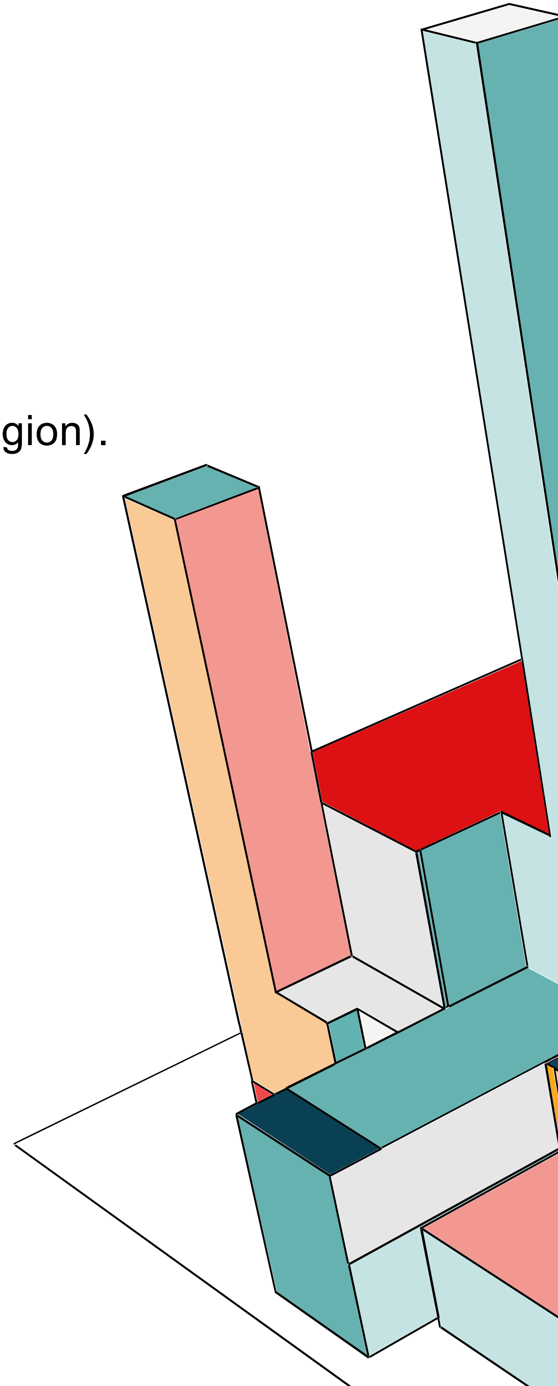
- **Participants (N = 20)**
    - Ages 20–44, mix of gender/ethnicity
    - 10 with CS/AI background, 10 without
    - 11 with prior counterspeech experience, 9 without

- **Setup**: 5 in-lab, 15 via Zoom



User Study Design

- **Procedure**:
  - Walkthrough of 20 hate speech examples (race, gender, Immigration, disability, religion).
  - Full CounterQuill workflow (~41 mins).
  - Semi-structured interviews (20 mins).
- **Research Questions**:
  - **RQ1:** How do learning sessions shape users’ understanding of hate speech & counterspeech?
  - **RQ2:** How do brainstorming sessions affect confidence & strategy?
  - **RQ3:** How does co-writing with AI influence authorship perceptions?



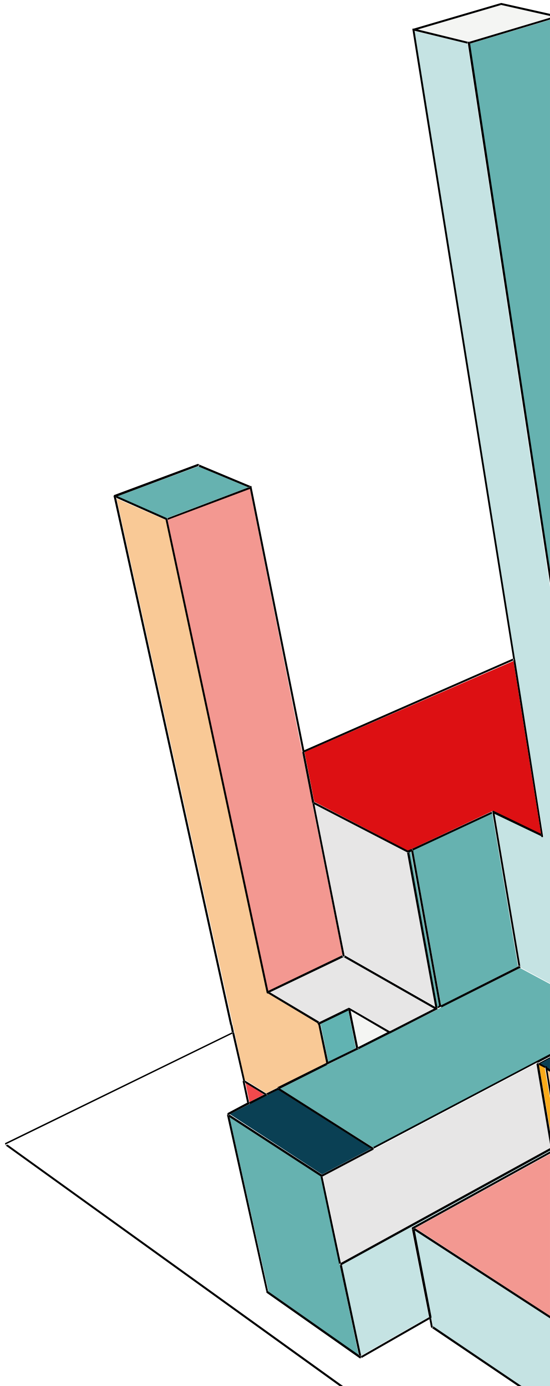
Key Findings

Key Findings – Brainstorming Session

- **Highlighting exercise**
  - Helped break down hate speech into *identity* + *dehumanization*.
  - Feedback & side-by-side comparisons clarified missed elements.

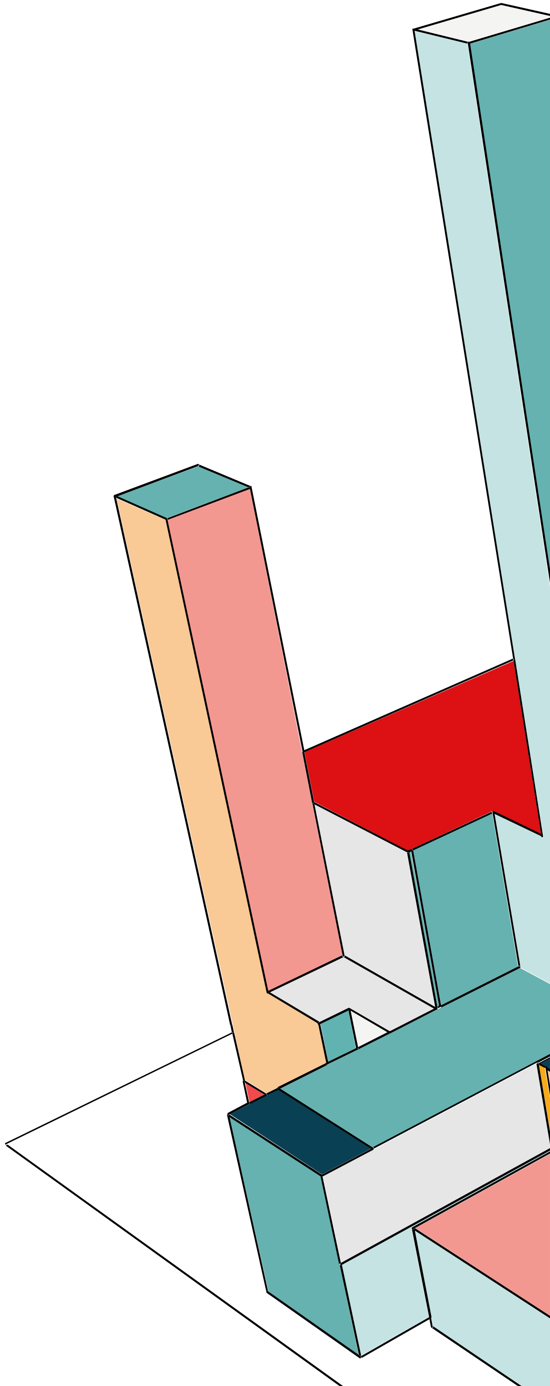
- **Reflective questions**
  - Shifted responses from anger/uncertainty → thoughtful, empathetic replies.
  - Helped users consider perspectives they previously overlooked.

- **AI suggestions**
  - Provided concrete starting points → boosted confidence in writing.



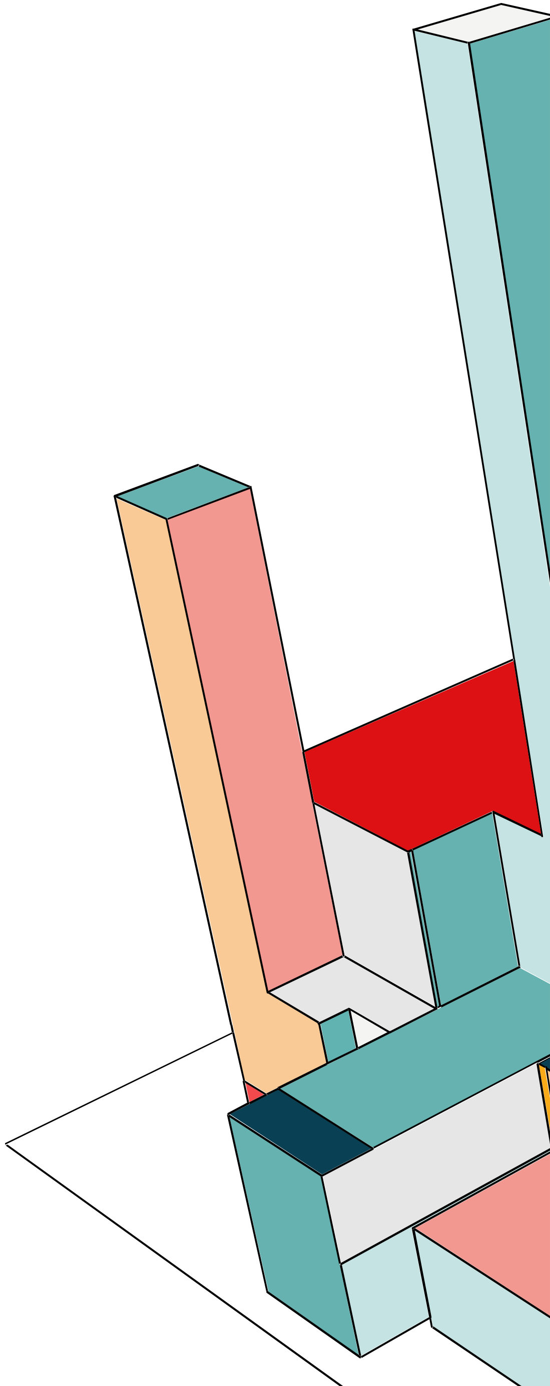
Key Findings – Co-Writing Session

- **Notes as scaffolding**
    - Helped structure drafts, reduced stress about “where to start.”
- **Selective rewriting**
    - Allowed targeted edits (grammar, empathy tone).
    - Preserved personal voice → participants felt co-authorship.
- **Outcome**
    - Final responses balanced *authenticity* + *refinement*.



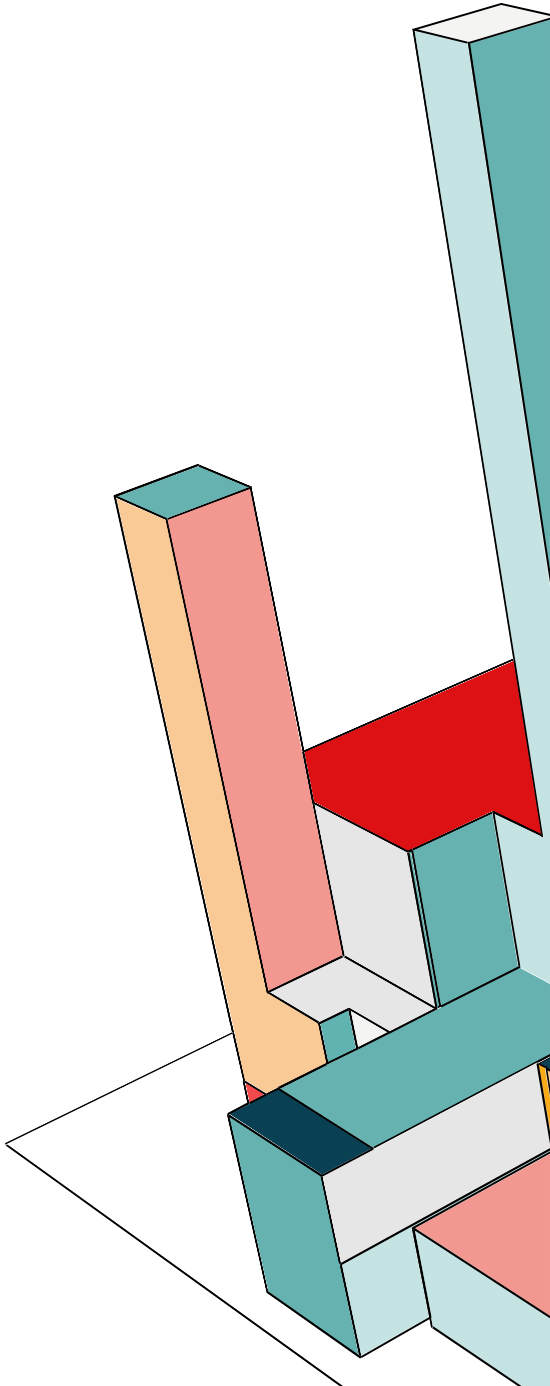
Discussion: Design Implications

- **AI as educator, not replacer**
    - CounterQuill teaches users how to write, rather than writing for them.
- **Structured workflows**
    - Reduce cognitive/emotional burden of counterspeech.
- **Preserving authorship**
    - Critical for trust and adoption of AI systems.



Limitations & Future Work

- **Limitations**
  - Small-scale study (N = 20).
  - Only one hate speech scenario tested.
- **Future work**
  - Larger, more diverse participant pool.
  - Multiple hate speech contexts.
  - Develop lightweight **browser extension** for real-world use
    - (e.g., Reddit, X).
  - External evaluations: expert/crowd ratings, longitudinal deployment.



Q&A Time