

# Sense the Classroom

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# Sense the Classroom

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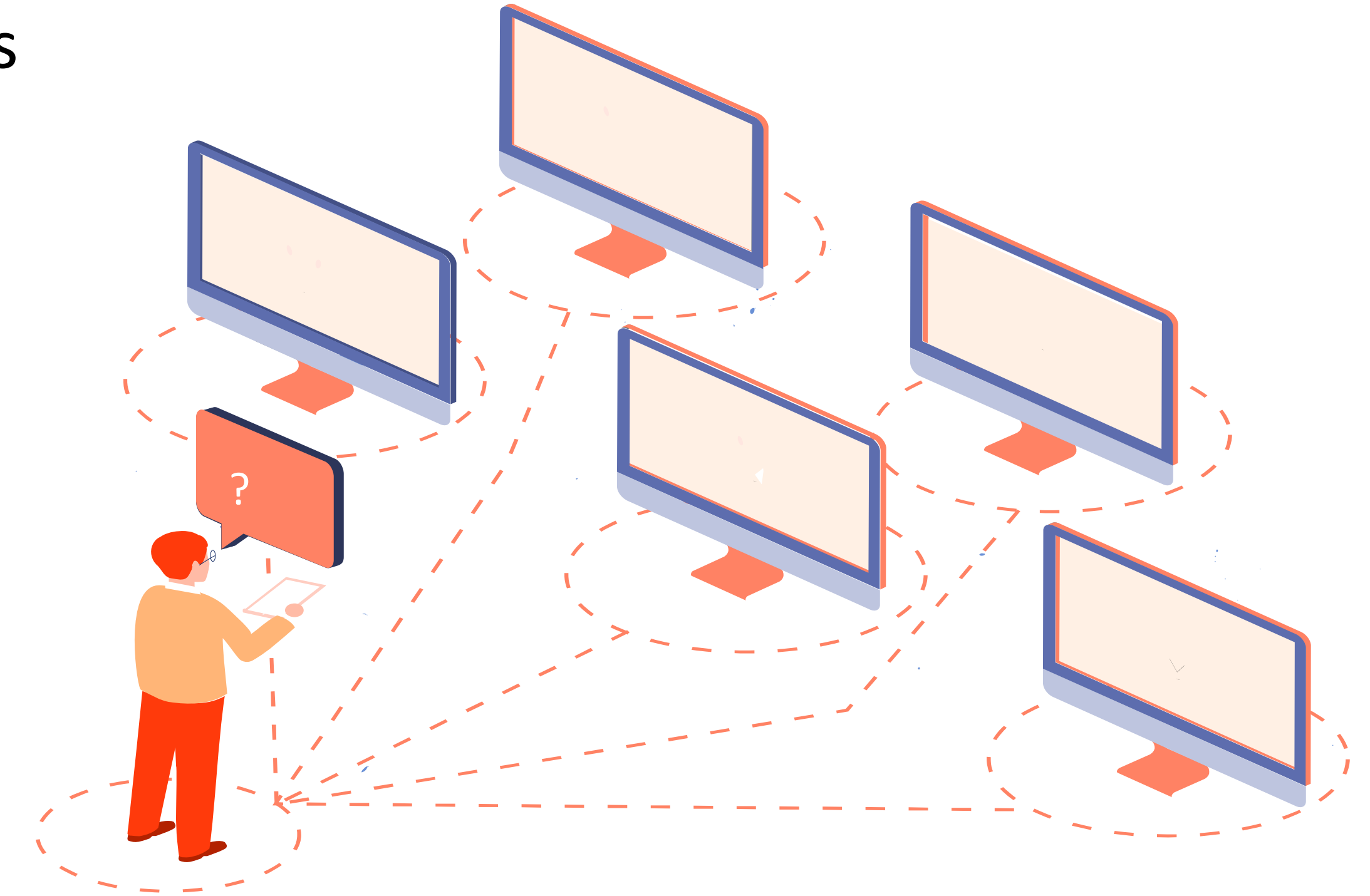
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Scan the Project plan here!

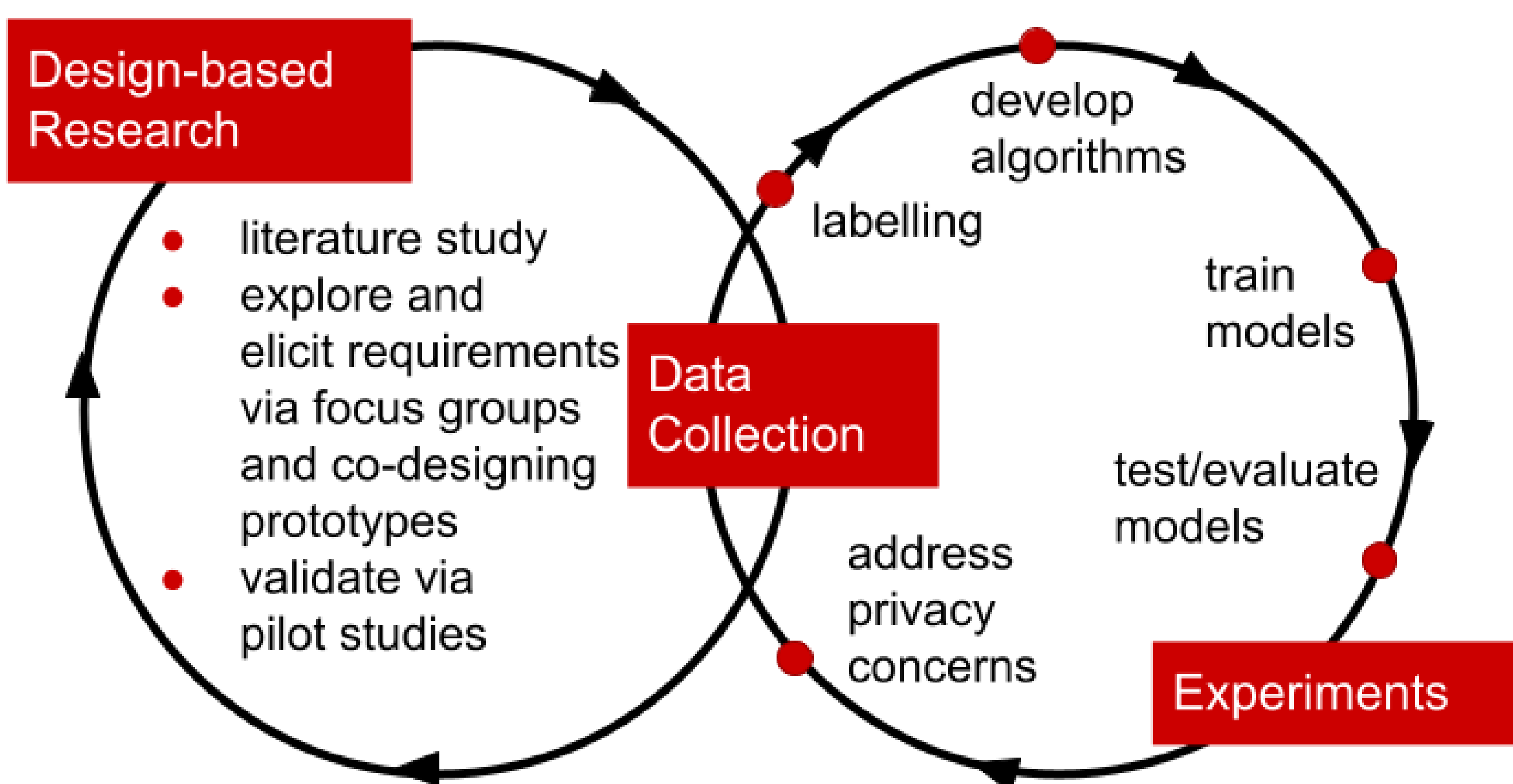
## 1. Introduction & Motivation

- In online classrooms teachers have a **lack of understanding** of how the students are doing, missing the opportunity to adjust their teaching on time and **improve the learning experience** [1].
- **Learning-centered affective states** are the psychological, physiological, and emotional states that relate to the learning experience of students.
- We propose to **develop** a system that detects students' relevant **learning-centered affective states** in a **privacy preserving manner** and **informs teachers accordingly** in an actionable way.



## 2. Methodology

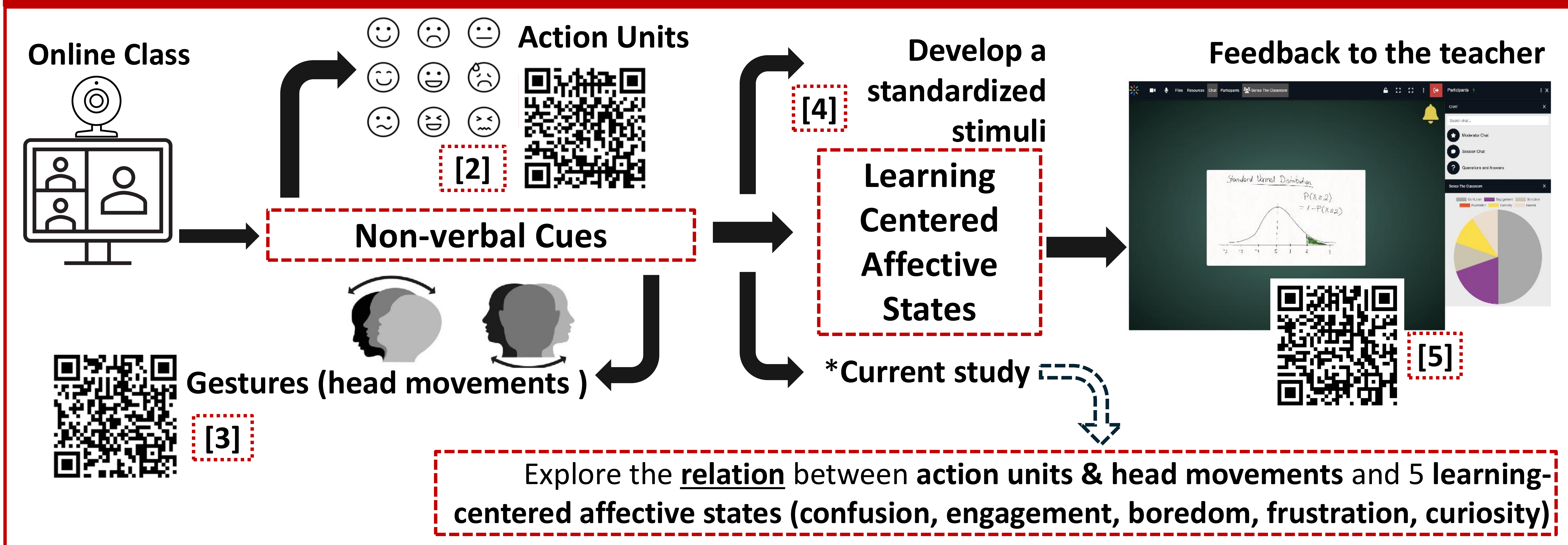
### 2.1 Research Approach



### 2.2 Research Questions

- (RQ1.) What are the **specific non-verbal feedback** needs of teachers and students in online lectures?
- (RQ2.) How can we **automatically detect non-verbal cues** and
- (RQ3.) **translate them to learning-centered affective states** in online, synchronous, education?
- (RQ4.) How can we **present this information to teachers** in real-time so that they can take actions to positively influence learning?
- (RQ5.) How can we design a system that is **ethically sound**, respects **privacy concerns**, and keeps **all collected data secure**?

## 3. Research Plan & Outcomes



## 4. Discussion

- The outcomes of the experiments will allow us to gain a deeper understanding on how **learning-centered affective states** are indicated by observable non-verbal cues, and how these states can be related to an effective learning experience.
- To protect the privacy of students we design core **privacy-preserving measures** to shape our research around them. The training data will be collected anonymously with no possibility to link to individuals.

## References

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- [3] Iren, D., Shingjergji, K., Böttger, F., Urlings, C., Osinga, J. M., Van De Goor, S., ... & Klemke, R. (2023, March). Augmented Reality and Affective Computing for Nonverbal Interaction Support of the Visually Impaired. In *2023 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)* (pp. 360-363). IEEE.
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