

# Use of video as an assessment technique in undergraduate laboratories

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## Background:

Laboratory sessions provide students with a range of skills and assessment and feedback is critical in ensuring that students are learning effectively. This project investigates how video can be used to improve feedback and assessment of student practical (manipulative) skills.

## Methodology:

Four students were filmed whilst completing a titration. They completed a background questionnaire beforehand, and a post-video questionnaire about the experience. An assessor watched the video and used a marking rubric to assess the student performance. The assessor was also observed throughout the assessment activity, and asked to talk through their thought processes. Finally the completed an open-ended questionnaire about how they found video as an assessment technique.

## Student Perspective - Findings:

There was no perceived change in behaviour reported. Students felt video provided better feedback on manipulative skills and preferred this as an assessment method. Mixed responses towards whether the students would like the opportunity to explain their work afterwards. Mixed changes in the student's confidence levels.

## Video used for assessment – assessor feedback:

All the techniques associated with making a standard solution could be assessed well using video assessment. Challenges were faced when observing filling a pipette to the meniscus because the camera couldn't observe to this detail. All the burette filling skills could be assessed well. The skills of the actual titration could generally be assessed well however it was challenging to observe the dropwise addition.

## Conclusions:

The students responded well to video assessment. The assessor reported that soft skills as well as hard skills could be assessed, which would be advantageous. Issues with the time it takes to watch the videos.

## Research Question:

Can video be used to assist in the more detailed assessment and feedback of a student's manipulative hard skills during an undergraduate laboratory titration experiment?



## Assessor Perspective - Findings:

The assessor's observations had three main themes:

- The way the student and the demonstrator use their time in the laboratory.
- The time it takes for the assessor to watch the video back.
- How a range of both hard and soft skills can be assessed using video, as well as observations of a student's behaviour.

## Limitations:

This study was a proof of concept study therefore was only a small sample size, which could have limited the validity of conclusions formed. Another limitation is the risk that the presence of the cameras will change the student's behaviour.

## Future Work:

Time efficiency improvements by watching on double speed, filming multiple students in one video or students could assess one another's videos as a form of peer assessment. As well as further research into the range of skills assessed, potential for hard and soft skill assessment.

**Notes:** This study was carried out for a 4<sup>th</sup> year MChem research project in 2019-2020.