

Learning Catalytics (LC) based exams

Facts:

- Running LC does not provide any way to observe what students do with their computer
- Computer is essentially connected to internet
- LC is very convenient, but does not allow for parameterized questions
- LC can handle mathematical input very well, but fraud sensitive
- LC offers features which are less fraud sensitive. These are:
 - Multiple Choice questions with many options which are randomized. Questions may contain figures, text and equations. (automatically graded)
 - Questions which ask for a direction in a figure (automatically graded)
 - Questions which ask for a region in a figure (automatically graded)
 - Upload of graphics (JPG, PNG and GIF). (NOT automatically graded)
 - One instructor can run many sessions in parallel

Format for running exams with LC:

- Exam is open book/open world
- Students have to agree with code of conduct, is first question of each block
- Students should provide a scan of their campus card a priori and have to provide a scan during the exam (every block)
- Exam takes place in 4 parallel groups. Given that we face in the order of 100 students this implies 25 per group. Thus, still observable via one screen.
- Session ID is communicated via webex/skype session
- Each group can work for 45min on a specific subset of questions, which is changed every 45 minutes
- Everybody is observed by camera and mic using their own computer. Face should be well visible and image quality should be good. We make regular screenshots. For this, students have to provide their email address. 4 webex/skype calls will be set up. Students can turn of the sound of their computer
- Next to an answer via the LC system, students upload for every question a scan of their **hand-written** derivation and/or a motivation. This is also done via the LC system and during the exam. The uploads will be reviewed and can be used to lower the grading
- Use of many less fraud-sensitive questions and/or questions which require a proper derivation/motivation
- If there is a problem during the exam, students can send an email message

Requirements for students

- Should be able to provide good quality scans of their notes in a swift manner
- Should use a computer with camera and mic, providing sufficient sound and image quality
- Should have proper internet connection
- Should buy LC account