Turning pedagogical scenarios into orchestration graphs

You have to transform verbal descriptions of instructional scenarios into Orchestration Graphs (OG). Since OGs are mathematical objects while verbal descriptions are informal, there may be missing parts, repetitions or contradictions in the verbal descriptions: ask questions to invent what is missing. Please check with S. Haklev or T. Hadzilacos at the end of each OG.

OG 1: Lecture with student participation

Many teachers use ‘personal response systems’ (‘clickers’) to increase learner participation in large lecture theatres (e.g. 200 students). Empirical studies revealed that this method significantly increases the students grade at exams. The first activities of OG1 describe this approach, while the next one aims at developing critical thinking skills.

1. The teacher gives a 5 min lecture; students listen.
2. The teacher asks a question that appears in his slides.
3. The students answer with a personal response system (a clicker or an app on their phone).
4. The teacher displays all answers, gives the right one and comments on the most frequent errors.
5. GOTO 2 UNTIL TIME = 30'
6. The teacher proposes an exercise with several possible correct answers.
7. The students have to do this exercise in teams of two and enter their solution in a google doc. They have 5 min.
8. The teacher discriminates correct and incorrect solutions, and then selects 3 correct solutions. This lasts 3 min.
9. The teacher asks the teams to compare the 3 selected solutions in 5 minutes and to vote for the best one in the Google Doc.
10. The teacher discusses the votes, asks students to justify their votes and explains the criteria for comparing solutions (5 min).
11. The teacher makes a short synthesis of the course (2 min).

OG 2: Peer Instruction Method

The method of Eric Mazur, called ‘peer instruction’, is similar to Scenario 1 but asks students first to answer individually the teacher question, then to discuss the answer with their neighbour. Experiments have shown this discussion increases learning outcomes more than an additional teacher explanation. In OG1, add Step 3b ➔ OG2

3b. Class neighbours compare their answers, discuss them and then vote again as a pair.

OG 3: Blended Instruction

Blended instruction refers to the integration of face-to-face activities and computer-based activities. In OG2, the learner answers with clickers during the first part and in a google doc for the second part. Imagine that the whole scenario is implemented on computers: discussions and lectures are live in a classroom, but answers are entered on laptops and processed by a workflow. One could then automatically generate for 3b pairs of learners who gave different answers, making the discussion richer. Similarly, one could automatically classify solutions, select the best ones, distribute them and collect votes in the second part of the scenario. Describe this scenario as OG3 including the operators associated to the graph edges.

OG 4: Online version of OG4

Let’s move finally to a fully online environment: reconsider OG3 as part of an international MOOC. This means that lectures are pre-recorded videos or Google Hangouts, that questions can be quizzes in a video or weekly assignments, that discussions can be done by a chat or in the forums, etc. ➔ Upload OG4 in Moodle as a PDF with the graph (can be scanned handwriting) with annotations that explain/justify.