

PBL

Problem-based learning



Filipe Vasconcelos¹

¹ESME Sudria, Lille, filipe.vasconcelo@esme.fr

- ❑ A specific problem situation designed for the occasion is proposed
- ❑ Actively solving this problem naturally leads students to acquire the fundamental notions of the program (Targeted learning outcomes)



Group work

- Groups of 4 students :
- Each student has a well-defined role
- Groups are formed by teachers



- ❑ A *forth* session, in the classroom, with the teacher.
- ❑ Two course/practical-work sessions to fine-tune the concepts covered during the PBL.
- ❑ A *back* session, in the classroom, with the teacher.



First round : *forth* session

- Delivery of the notebook containing the problem situation
- 3 « phases » :
 - Phase 1 : Understand the assignment
 - Phase 2 : State group and individual knowledge
 - Phase 3 : Formulate ideas and define an action plan (learning !)

Each group has a board on which to write and structure its ideas.



Second temps : travail personnel

- Phase 4 : Implement the action plan !
- Research
- Watch shared resources
- Prepare questions
- Prepare the deliverable



Third round : *back* session

- Phase 5 : Consolidate the results (summary of work carried out by each member, presentation of personal research findings, etc.)
- Phase 6 : Build a solution (define a deliverable*)
- Phase 7 : Summarize what has been learned



Advanced Algorithms 1

- Stack and Queues
- Sort (insert/select)
- Sort 2 (merge/count)
- Hash table



24 hours module

- APP 1 (4 times 1h30)
 - forth* Session (1h30)
 - 2 sessions Course/Practical work (1h30)
 - back* Session (1h30)
- APP 2 (4 times 1h30)
 - forth* Session (1h30)
 - 2 sessions Course/Practical work (1h30)
 - back* Session (1h30)
- APP 3 (4 fois 1h30)
 - forth* Session (1h30)
 - 2 sessions Course/Practical work (1h30)
 - back* Session (1h30)
- APP 4 (4 times 1h30)
 - forth* Session (1h30)
 - 2 sessions Course/Practical work (1h30)
 - back* Session (1h30)



4 Grades :

- APP (20%)
- Quiz (15%)
- 1 Midterm (25 %)
- 1 exam (40%)





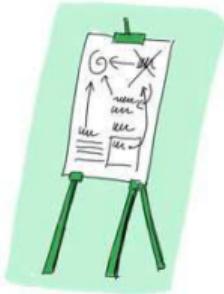
Helmsman

- Keep an eye on the progress of the work.**
- Make sure that the team follows the steps.**
- Prevent the team from getting sidetracked, wasting time, or exploring dead-ends.**



Time keeper

- Ensure that time is used efficiently
- Draw attention to the risk of falling behind schedule.



Scribe

- On the shared workspace (e.g. flip chart), note down important ideas and open questions, that emerge during discussions
- Contribute to the discussions but don't impose your own ideas.
- Manage the flip chart sheets so that useful information is visible to all team members.



Secretary

- Produce a summary of the key points arising from the discussions: those to be retained for further work.
- Record all the information needed for the continuation of the work: decisions taken, deadlines set, upcoming meetings, group and/or individual work plans, etc.
- Distribute your productions and any other documents to all team members.
- Don't forget to take part in the discussions!



Speech circulator

- Make sure that every team member to have their say.
- Encourage members in the background to speak up; don't forget the scribe or secretary!
- Prevent a member of the team to take the floor to the detriment of others.



Spokesperson

- Present the status or results of your team's work of your team's work,
- Don't express a preference for your own point of view.
- Use all the means necessary for effective communication.



Stitch maker

- Periodically review progress: How far has the team got? What has been done? What remains to be done? What do we know and what don't we know?
- Help the scribe to note these elements on the workspace.



Activator

- Encourage each team member to make an active contribution to the work
- Don't forget the scribe and the secretary!
- If tasks need to be shared, ensure that each member contributes fairly.

Learn to learn ! Meta-learning

Take the time at the end of the feedback session to discuss the group's and the individual's learning difficulties.