Programming Fundamentals 2

Assignment 1 - PBL

Produced by: Mairead Meagher
Dr. Siobhán Drohan

Waterford Institute *of* Technology
INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

Department of Computing and Mathematics
http://www.wit.ie/

Topic List

- What is Problem-based Learning (PBL).
- PBL Process.
- Skills learned through PBL.
- Technology use in PBL.

Problem-based Learning (PBL)

…a teaching approach
where
specifically designed problems
drive the learning.

Problem-based Learning (PBL)

- We will give you a specially designed, ill-structured, complex, real-world problem to solve.

- To solve this problem:
  - use your existing knowledge
  - previous problem resolutions
  - consult any materials or resources you wish (however, you must reference all materials /sources used in your assignment).

How will we use PBL?

- PBL encourages self-directed learning i.e. you actively engage in the learning process by:
  - examining the problem you are presented with
  - researching theories / approaches
  - analysing possible solutions
  - designing a proposal
  - and producing a solution.

- Your lecturers FACILITATE your self-directed learning.

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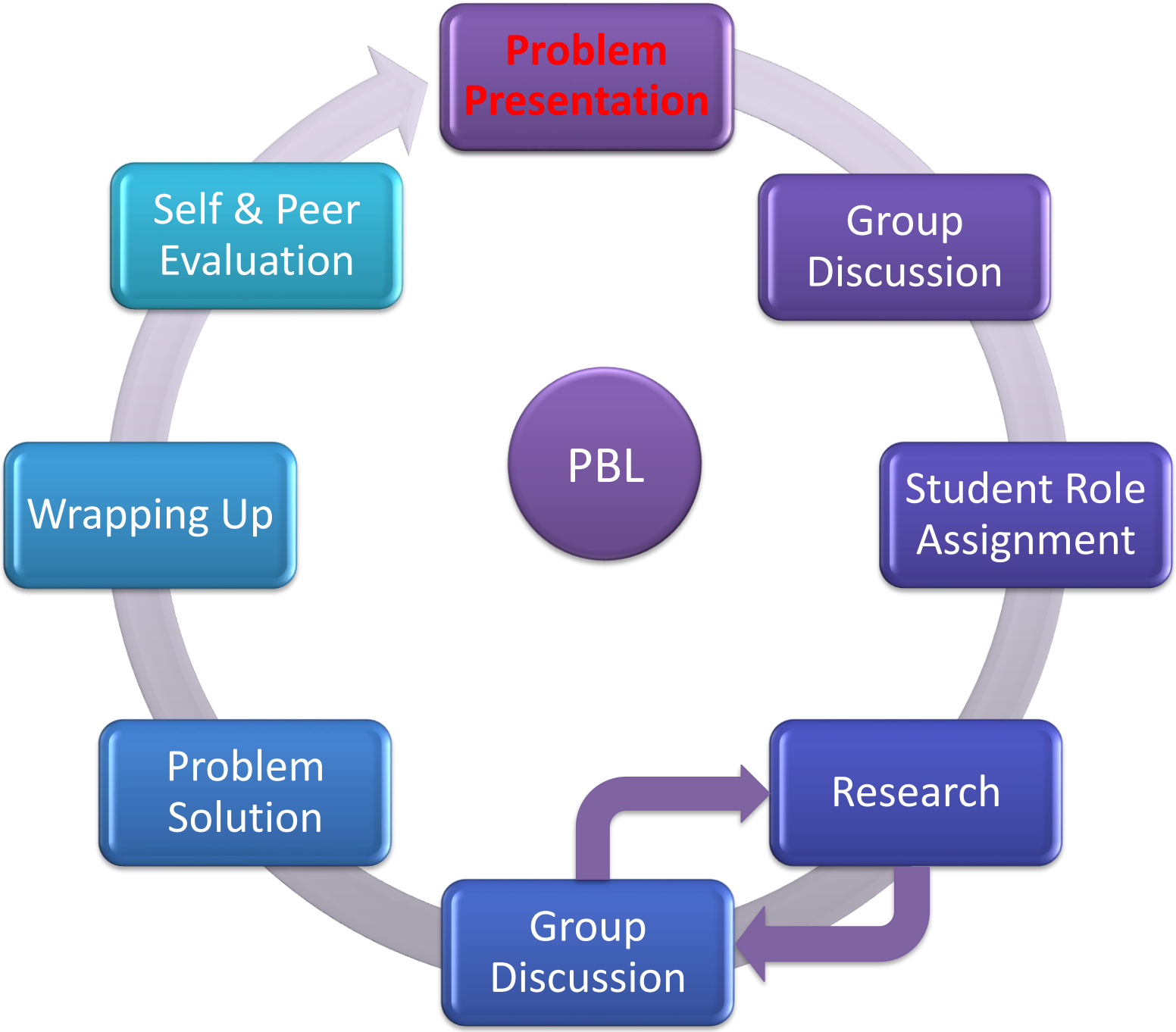
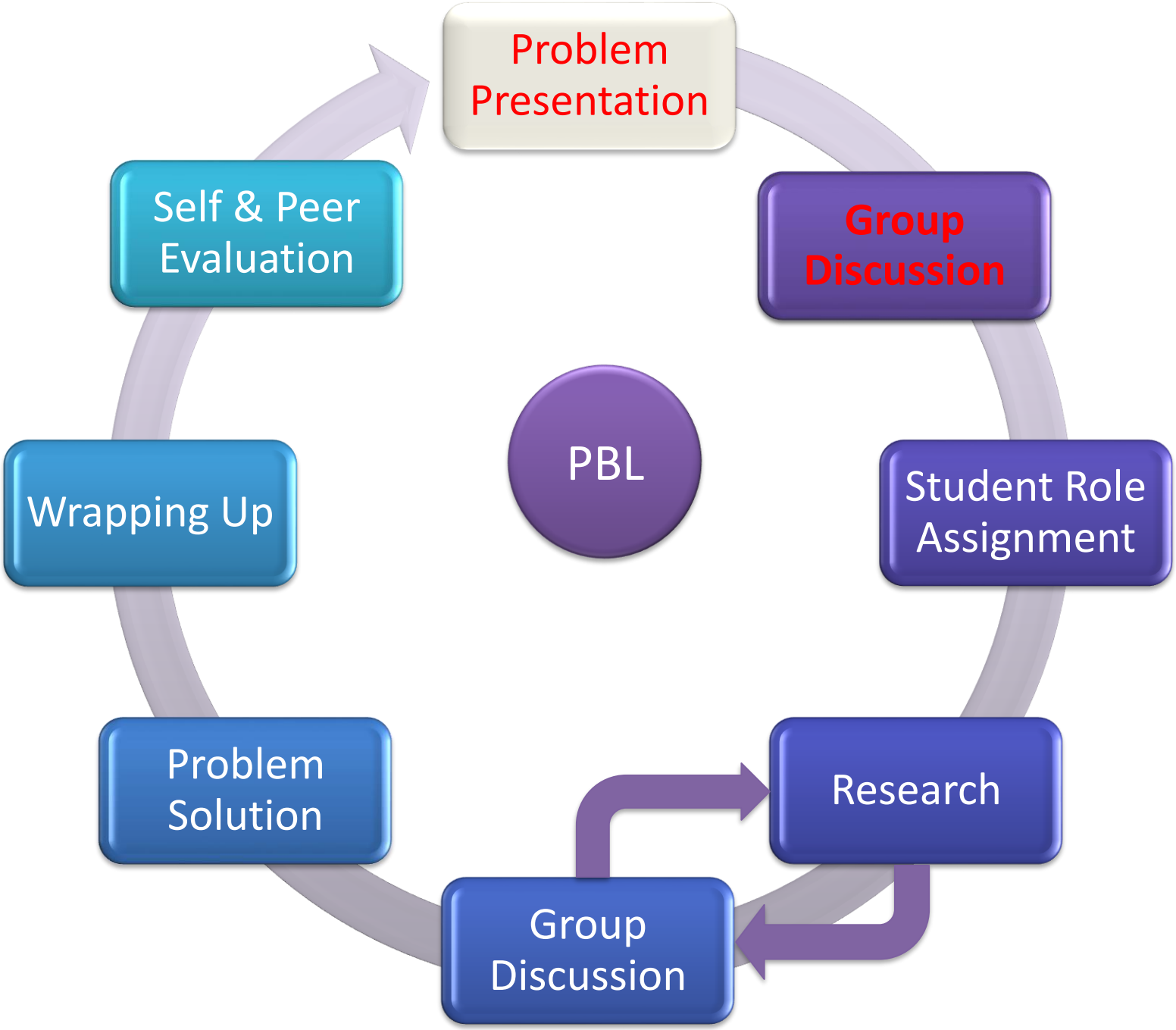

Problem Presentation
Group Discussion
Student Role Assignment
Research
Group Discussion
Problem Solution
Wrapping Up
Self & Peer Evaluation
PBL

Problem Presentation

Video/DVD	Object
Simulation	Hands-on activity
Music	Diagram
Computer Game	Scenario
Newspaper/Magazine Article	Photograph
Question	Poem
Cartoon	etc…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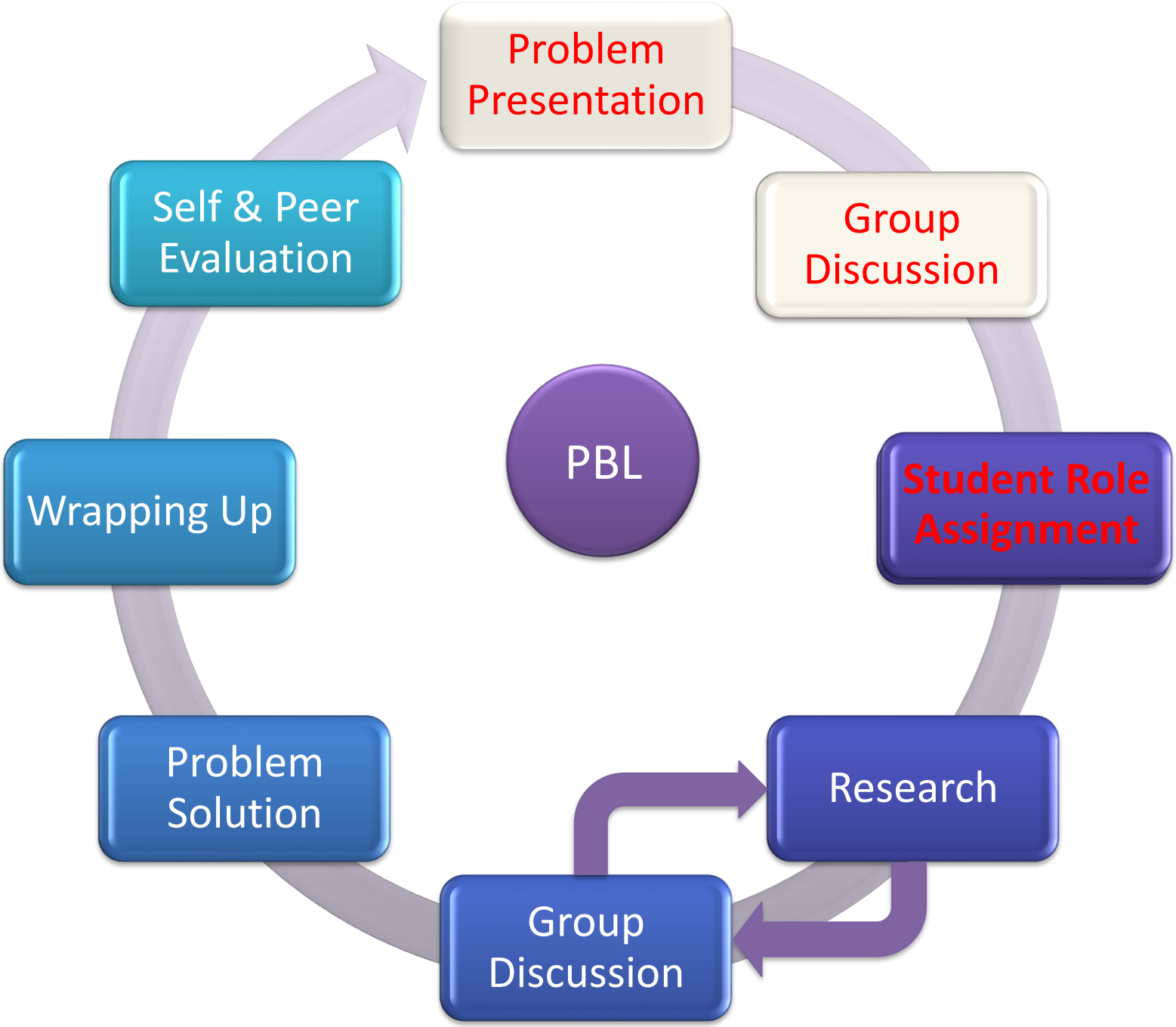
Group Discussion

For this assignment, you will be divided into groups of four/five. In these groups, you will brainstorm and:

- Identify your existing knowledge that might help solve the problem.
- Determine learning issues (what you don't know).
- Rank each learning issue in order of importance.
- Identify learning resources for researching learning issues.
- Each student must study the identified learning issues.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Each team member must pick a task:

- Manage the Schedule/Progress
- Manage Participation
- Meeting convener
- Strategy / Design management
- Code / Testing management

Student Role Assignment

Task List (5 members)

- **Manage the Schedule/Progress** - charged with keeping the group on schedule – group meetings and for the project as a whole. Helps ensure all team members are on the same page.
- **Manage Participation** - charged with ensuring full participation from all team members e.g. solicits feedback from all group members, helps to moderate individuals who may try to dominate the group discussion, etc.
- **Meeting convener** – schedules group meetings outside of class as necessary and organises the agenda for these meetings. Ensures that any changes discussed in regards strategy, design, coding, etc. are sent (in soft copy) to the team.
- **Strategy / Design management -** charged with recording groups strategies / game design and maintains the archives of these in a team-based cloud space. Keeps track of unresolved strategy / design issues.
- **Code / Testing management -** charged with assembling the draft (and versions) of the group's solution for the project and maintains the archives of these in a team-based cloud space. Keeps track of unresolved coding/testing issues. Submits the project.

Task List (4 members)

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Merge

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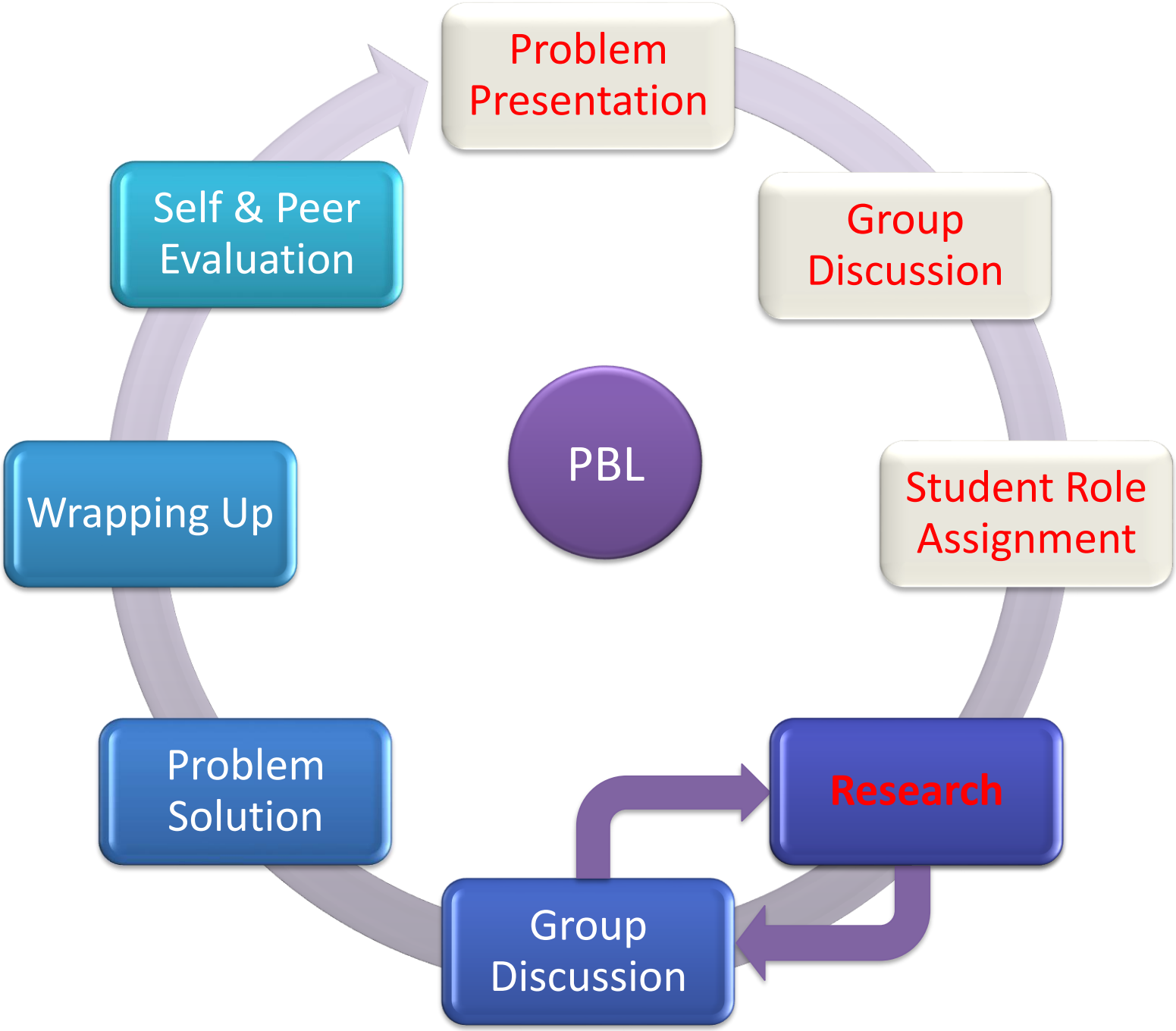
Notes on Roles...

- Regardless of your role in the group, you are all **EQUALLY** responsible for designing, coding and testing the system.

- You are all equally responsible for checking the accuracy and reliability of your project and submitted work.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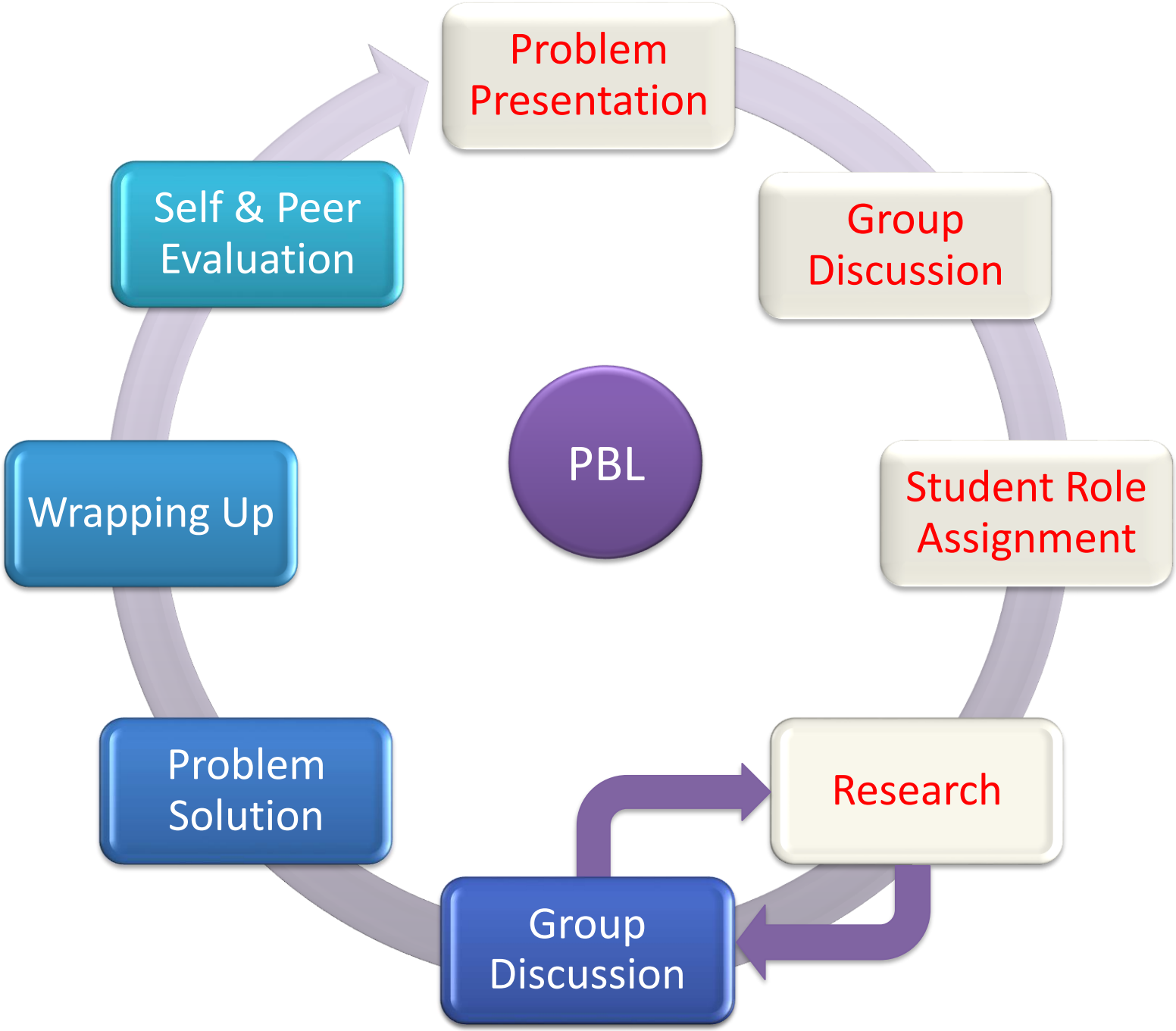
Where possible, your lab classes will be devoted to this assignment as PBL tutorials. Your lecturer will be present as a facilitator.

Outside of these tutorials, you will examine a variety of resources for information which can be used to solve the problem.

This research is done individually, through independent study.

Research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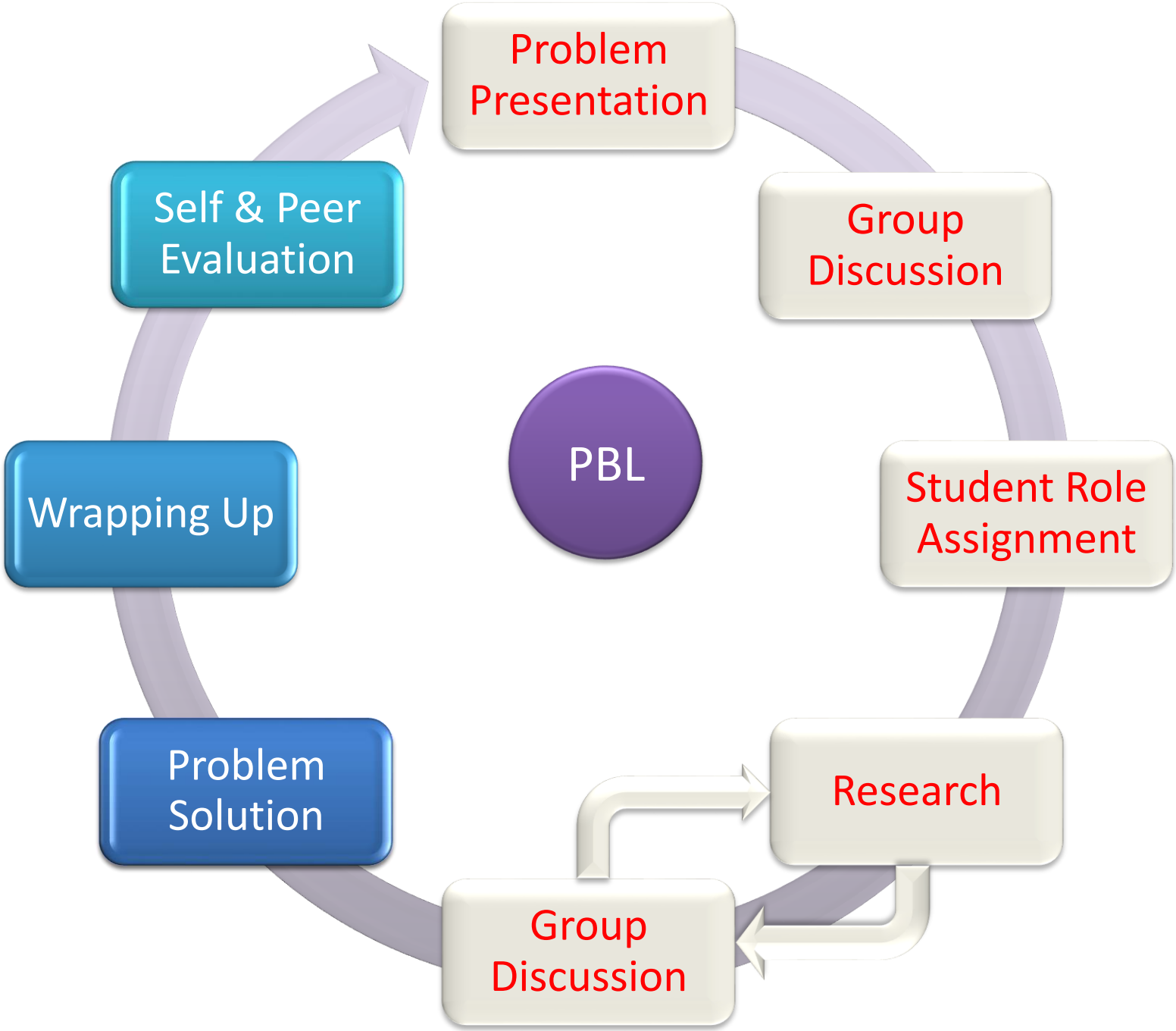
Group reconvenes, analyses and integrates gathered information with reference to the problem to be solved. You will have meetings in labs every week, but you will need to schedule extra meetings yourselves.

It is the responsibility of the individual, when the research is complete, to share the information with the rest of the group i.e. peer teaching.

Steps 4 (research) & 5 (group discussion) will be repeated a number of times for this assignment.

Group Discussion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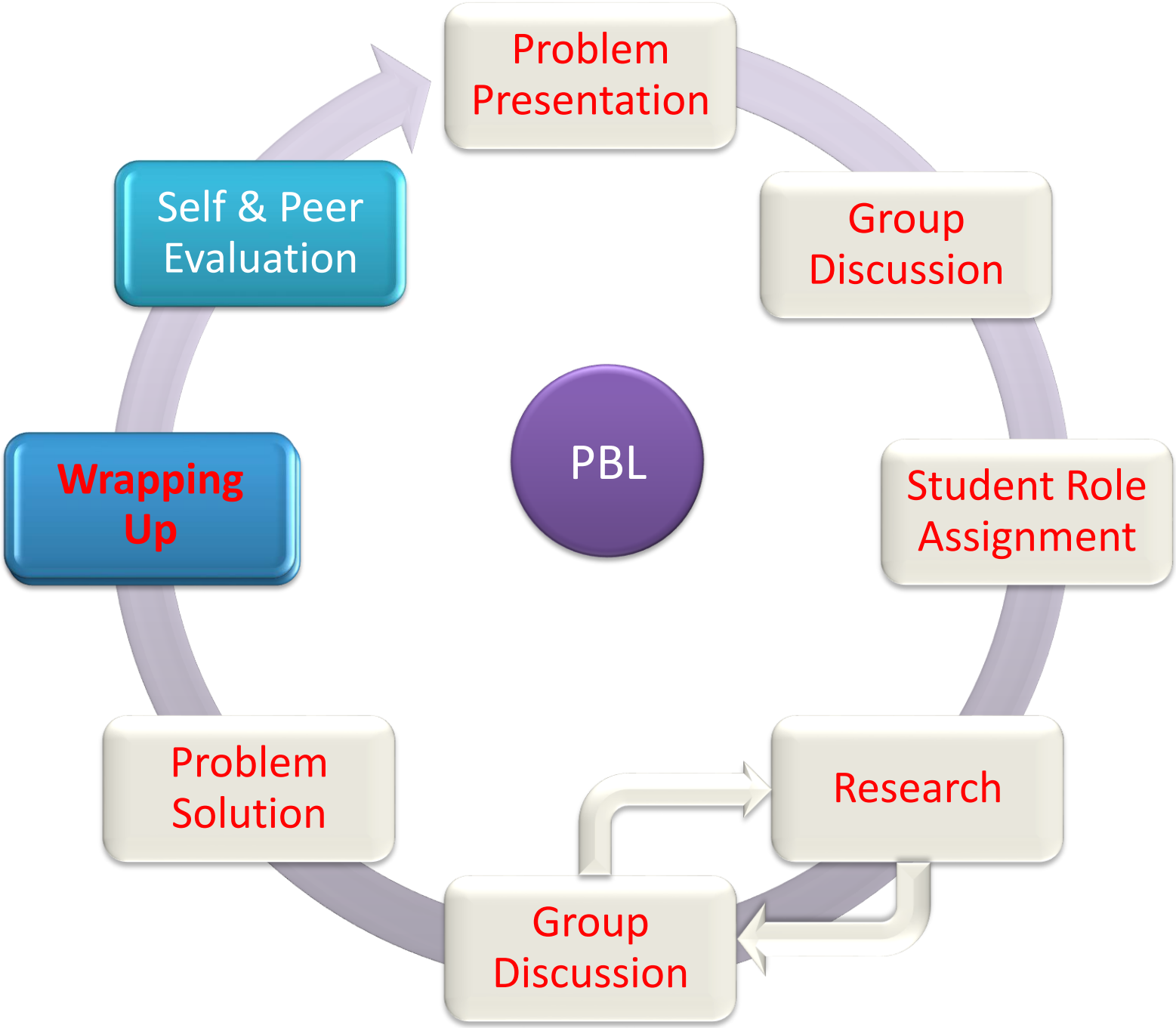
Submit the completed problem (in WINZIP format) to via the assignment dropbox in Moodle.

Problem Solution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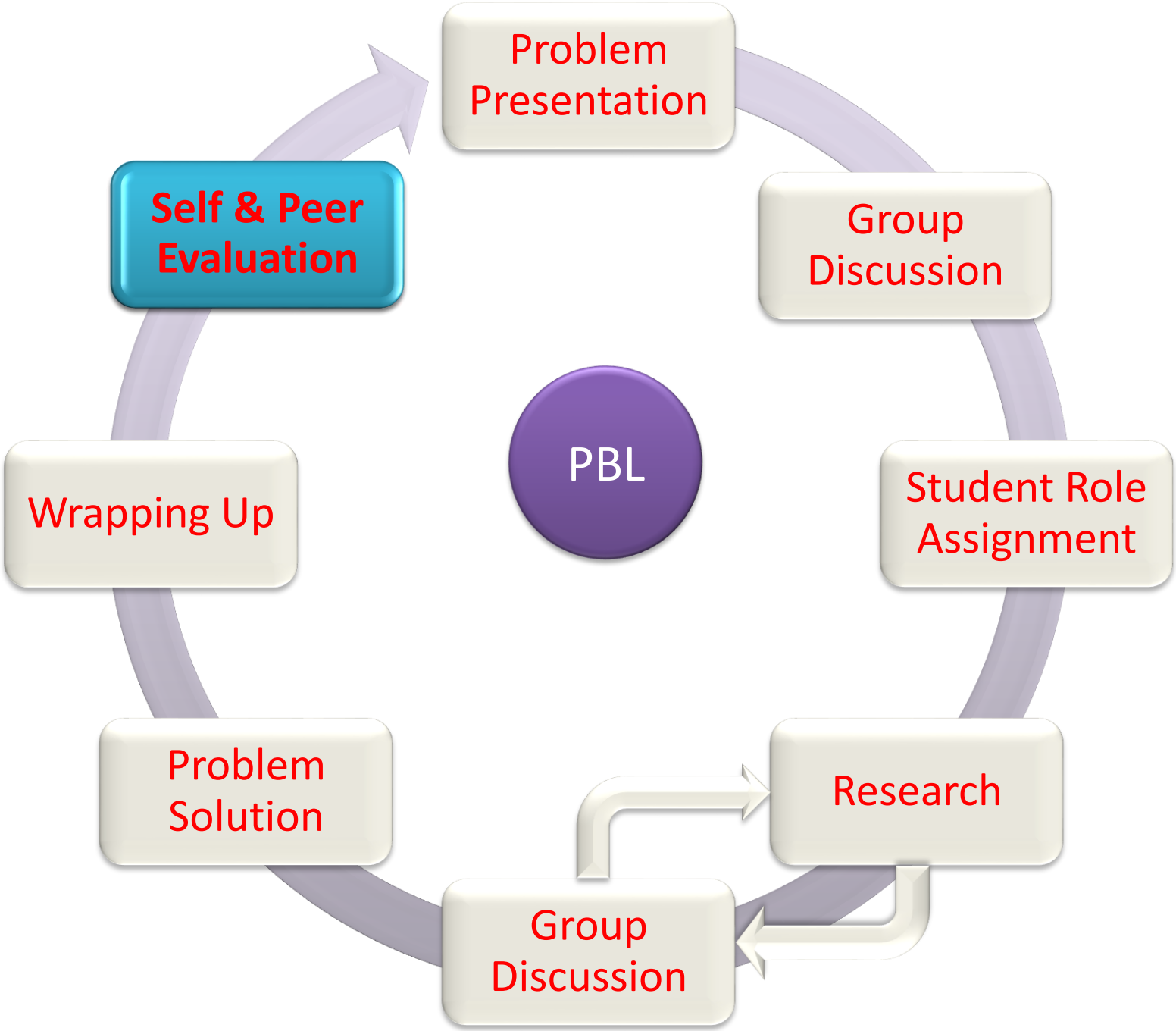
Wrapping Up

When the assignment is complete, your lecturers may choose to provide you with additional opportunities to apply, integrate, evaluate, analyse, and synthesise information.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Self & Peer Evaluation

You will engage in summative reflection on:

- Your own contributions and engagement with the PBL process (self-reflection).
- group member contributions and engagement with the PBL process (peer-evaluation).

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- Skills developed through PBL

  - Problem solving
  - Critical thinking
  - Analytical skills
  - Research Skills
  - Collaboration
  - Team work
  - Self motivation
  - Time management
  - Conflict management
  - Self directed learning

  Duch et al.(2001), Glasgow (1997)

- Strong emphasis on communication & collaboration

Students revealed that communication skills were vital to the success of the PBL group

(Uden & Beaumount, 2006, pg 236)

"Collaboration is an essential feature of PBL”

(Allen, Duch & Groh, 2001, pg 60)

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"The impact of PBL on student learning and student attitudes can be enhanced through appropriate use of technology"

(Watson, 2001, pg 117)

Use Google Apps, Dropbox, Git, Social Media etc,
to support
your communication and collaboration in this assignment!

Why?

- It will provide continuous, transparent and centralised threads of information for both facilitators and students.

- It allows for easy communication, collaboration and continuity of learning outside PBL tutorials.

- It facilitates automated self and peer assessment strategies.

Any Questions?

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