

# FACILITATOR

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## Job Description:

- **Make sure group starts quickly and remains focused during the entire activity.**
  - *Good tools/phrases to use:*
    - Assign tasks for collecting and distributing materials as needed.
    - Assign roles like calculator or significant figure checker.
    - “I think we have everything, are we ready to begin?”
  
- **Takes care of time management.**
  - *Good tools/phrases to use:*
    - Keep an eye on the clock.
    - Keep group moving forward.
    - Communicate with group on discussion deadlines.
    - “I think we need to focus on \_\_\_\_\_ now in order to complete this section of the activity *on time*.”
    - “We have \_\_\_\_\_ minutes before we need to be ready to discuss this section. Let’s get this done.”
  
- **Make sure all voices in the group are heard.**
  - *Good tools/phrases to use:*
    - Address group members by name.
    - Ensure *every* group member contributes.
    - Assign different members to read sections of activity on a rotating basis.
    - “(Name), what do you think about . . . ?”
    - “I would like to hear what you think, (name).”

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# PERIODIC TABLE OF THE ELEMENTS

<http://www.ktf-split.hr/periodni/en/>

PERIOD	GROUP																	
	1 IA	2 IIA		3 IIIB	4 IVB	5 VB	6 VIB	7 VIIB	8 VIII	9 VIIIB	10 VIII	11 IB	12 IIB	13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA
1	1 1.0079 <b>H</b>													2 4.0026 <b>He</b>				
2	3 6.941 <b>Li</b>	4 9.0122 <b>Be</b>											5 10.811 <b>B</b>	6 12.011 <b>C</b>	7 14.007 <b>N</b>	8 15.999 <b>O</b>	9 18.998 <b>F</b>	10 20.180 <b>Ne</b>
3	11 22.990 <b>Na</b>	12 24.305 <b>Mg</b>											13 26.982 <b>Al</b>	14 28.086 <b>Si</b>	15 30.974 <b>P</b>	16 32.065 <b>S</b>	17 35.453 <b>Cl</b>	18 39.948 <b>Ar</b>
4	19 39.098 <b>K</b>	20 40.078 <b>Ca</b>	21 44.956 <b>Sc</b>	22 47.867 <b>Ti</b>	23 50.942 <b>V</b>	24 51.996 <b>Cr</b>	25 54.938 <b>Mn</b>	26 55.845 <b>Fe</b>	27 58.933 <b>Co</b>	28 58.693 <b>Ni</b>	29 63.546 <b>Cu</b>	30 65.39 <b>Zn</b>	31 69.723 <b>Ga</b>	32 72.64 <b>Ge</b>	33 74.922 <b>As</b>	34 78.96 <b>Se</b>	35 79.904 <b>Br</b>	36 83.80 <b>Kr</b>
5	37 85.468 <b>Rb</b>	38 87.62 <b>Sr</b>	39 88.906 <b>Y</b>	40 91.224 <b>Zr</b>	41 92.906 <b>Nb</b>	42 95.94 <b>Mo</b>	43 (98) <b>Tc</b>	44 101.07 <b>Ru</b>	45 102.91 <b>Rh</b>	46 106.42 <b>Pd</b>	47 107.87 <b>Ag</b>	48 112.41 <b>Cd</b>	49 114.82 <b>In</b>	50 118.71 <b>Sn</b>	51 121.76 <b>Sb</b>	52 127.60 <b>Te</b>	53 126.90 <b>I</b>	54 131.29 <b>Xe</b>
6	55 132.91 <b>Cs</b>	56 137.33 <b>Ba</b>	57-71 <b>La-Lu</b> Lanthanide	72 178.49 <b>Hf</b>	73 180.95 <b>Ta</b>	74 183.84 <b>W</b>	75 186.21 <b>Re</b>	76 190.23 <b>Os</b>	77 192.22 <b>Ir</b>	78 195.08 <b>Pt</b>	79 196.97 <b>Au</b>	80 200.59 <b>Hg</b>	81 204.38 <b>Tl</b>	82 207.2 <b>Pb</b>	83 208.98 <b>Bi</b>	84 (209) <b>Po</b>	85 (210) <b>At</b>	86 (222) <b>Rn</b>
7	87 (223) <b>Fr</b>	88 (226) <b>Ra</b>	89-103 <b>Ac-Lr</b> Actinide	104 (261) <b>Rf</b>	105 (262) <b>Db</b>	106 (266) <b>Sg</b>	107 (264) <b>Bh</b>	108 (277) <b>Hs</b>	109 (268) <b>Mt</b>	110 (281) <b>Uun</b>	111 (272) <b>Uuu</b>	112 (285) <b>Uub</b>	114 (289) <b>Uuq</b> Ununquadium					

GROUP NUMBERS IUPAC RECOMMENDATION (1985) and GROUP NUMBERS CHEMICAL ABSTRACT SERVICE (1986) are indicated above the table. A callout box for Boron (B) shows: ATOMIC NUMBER 5, RELATIVE ATOMIC MASS (1) 10.811, SYMBOL B, and ELEMENT NAME BORON.

**LANTHANIDE**  
57 138.91 **La** 58 140.12 **Ce** 59 140.91 **Pr** 60 144.24 **Nd** 61 (145) **Pm** 62 150.36 **Sm** 63 151.96 **Eu** 64 157.25 **Gd** 65 158.93 **Tb** 66 162.50 **Dy** 67 164.93 **Ho** 68 167.26 **Er** 69 168.93 **Tm** 70 173.04 **Yb** 71 174.97  
LANTHANUM CERIUM PRASEODYMIUM NEODYMIUM PROMETHIUM SAMARIUM EUROPIUM GADOLINIUM TERBIUM DYSPROSIUM HOLMIUM ERBIUM THULIUM YTTERIUM LUTETIUM

**ACTINIDE**  
89 (227) **Ac** 90 232.04 **Th** 91 231.04 **Pa** 92 238.03 **U** 93 (237) **Np** 94 (244) **Pu** 95 (243) **Am** 96 (247) **Cm** 97 (247) **Bk** 98 (251) **Cf** 99 (252) **Es** 100 (257) **Fm** 101 (258) **Md** 102 (259) **No** 103 (262) **Lr**  
ACTINIUM THORIUM PROTACTINIUM URANIUM NEPTUNIUM PLUTONIUM AMERICIUM CURIUM BERKELIUM CALIFORNIUM EINSTEINIUM FERMIUM MENDELEVIUM NOBELIUM LAWRENCIUM

(1) Pure Appl. Chem., 73, No. 4, 667-683 (2001)  
Relative atomic mass is shown with five significant figures. For elements with no stable nuclides, the value enclosed in brackets indicates the mass number of the longest-lived isotope of the element.  
However three such elements (Th, Pa, and U) do have a characteristic terrestrial isotopic composition, and for these an atomic weight is tabulated.

Editor: Aditya Vardhan (adivar@netlinx.com)

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# SPOKESPERSON

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## Job Description:

- **Communicates group questions and clarifications with the teacher or other groups. (This is the only group member designated to do so.)**
  - *Good tools/phrases to use:*
    - “Our group is confused about how \_\_\_\_\_ relates to \_\_\_\_\_.”
    - “Our group reached consensus that the answer to number \_\_\_\_\_ was \_\_\_\_\_.”
- **Ensures all group members have had the opportunity to respond to the question before asking outside sources.**
  - *Good tools/phrases to use:*
    - “Does anyone in our group know the answer to \_\_\_\_\_?”
    - “Before we ask the teacher, could someone in our group clarify the answer to....”
- **Ensures that everyone in the group agrees on what question to ask if an outside source is needed.**
  - *Good tools/phrases to use:*
    - “Does everyone agree we need to find out . . . ?”
- **Presents conclusions of the group to the class, as requested.**
  - *Good tools/phrases to use:*
    - “The reasoning we used to answer number \_\_\_\_\_ was . . .”

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# Quality Indicators for POGIL Roles

## Facilitator

- The group begins promptly.
- The group stays on task, progressing through the activity in a timely fashion.
- All members of the group are participating.

## Spokesperson

- Seeks group input before consulting teacher or other groups.
- All group members feel satisfied that their issues have been addressed.
- Articulates questions and responses well.

## Quality Control

- Any individual sample collected should accurately demonstrate the groups' understanding.
- Regularly checks that group members' answers are consistent (not necessarily identical).
- Encourages individuals to make sure answers are thorough (i.e. showing work).

## Process Analyst

- Analyst reports to group regarding group performance at least one time during the activity as well as at the end.
- Analyst provides insightful and positive feedback on how the group is working.
- Analyst completes the process questions report form if directed.

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# QUALITY CONTROL

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## Job Description:

- **Guides consensus-building process; group must agree on responses to questions.**
  - *Good tools/phrases to use:*
    - “Would you all agree that \_\_\_\_ is an acceptable answer for question number \_\_\_\_?”
    - “Could you please rephrase what you just said?”
    - “Is your response/answer completely supported by your explanation/calculations?”
    - “Would that response make sense to someone from another group?”
- **Verifies that ALL individual responses are: 1) consistent on paper, 2) reflect the group’s consensus, and 3) are high quality.**
  - *Good tools/phrases to use:*
    - **Look** at responses from individual papers (sampling!).
    - Have all group members shown work on quantitative problems?
    - Do all group members’ responses have complete thoughts or explanations?
- **Ensures that accurate revisions happen after class discussions.**
  - *Good tools/phrases to use:*
    - Can all group members respond **correctly** to a question about what you learned?
    - “(Name) when you read (name’s) answer, do you see any differences?”

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## Process Skills

### **Personal Skills**

- Judging own progress in learning (i.e. Concepts, techniques and skills)
- Accepting peer review

### **Critical Thinking**

- Visualizing
- Building analogies
- Identifying similarities / differences
- Summarizing
- Defining rules
- Drawing conclusions

### **Communication**

- Articulating an idea
  - Expresses concepts, definitions and explanations in grammatically correct sentences
  - Verbally expresses ideas to group members during activity
- Defining purpose
- Rephrasing
  - Develop concept in own words
- Writing with technical detail
  - Express concepts, definitions, and explanations using scientifically correct language.
- Contributions to group discussion

### **Management**

- Managing time
- Utilizing resources effectively – both people and materials

### **Information Processing**

- Observing / recognizing
- Listening
- Predicting
- Reading
- Interpreting graphs / models

### **Problem Solving**

- Persisting / taking risks
- Identifying key issues
- Identifying assumptions
- Applying prior knowledge
- Understanding context

### **Teamwork**

- Respecting everyone's opinions
- Forming shared understanding
- Compromising/Cooperating
- Building consensus
- Sharing ideas
- Including all group members

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# PROCESS ANALYST

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- **Observes group dynamics and behavior with respect to the learning process, using report format.**
  - *Good tools/phrases to use:*
    - Is everyone in the group participating?
    - Are group members listening carefully to each other?
    - Are group members being patient and respectful of each other?
    - Fill out the report form that may be collected for the activity.
  
- **Reports to the group periodically during the activity on how the group performs.**
  - *Good tools/phrases to use:*
    - “Let’s stop for a minute. I have a couple comments on what we are doing well and a suggestion on how we could be more productive.”
    - “Let’s wait for (name) to catch up before we move on.”
  
- **Be ready to report to the entire class about how well the group is operating.**

# PROCESS ANALYST

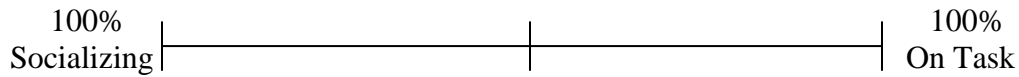
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## Process Analyst Report Form

1. Use of Time

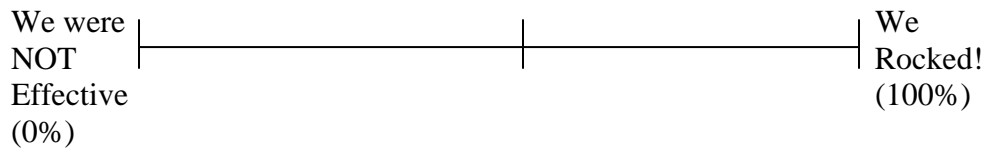


2. Which three process skills (from the list) did your group do particularly well?

3. What process skill(s) need improvement? Explain.

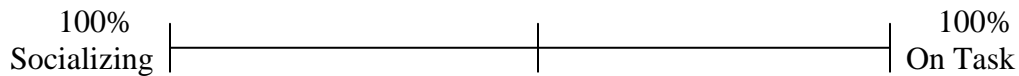
4. What frustrated your group most today?

5. Team Effectiveness



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