

Extension Questions

18. Plants that live on the floor of forests tend to have much larger leaves than plants that live in hot, sunny conditions. Offer an explanation for this in which you refer to specific parts of the internal structure of a leaf.
19. Cacti are plants that live in extremely dry environments. Unlike most other plants, cacti do not have regular leaves, but instead have spines. They do have green stems. How would the lack of regular leaves help cacti survive in their environment? In what part of the cacti would photosynthesis occur?
20. Thinking about the structure and function of leaves, work with your group to propose modifications you might expect to see in the leaves of aquatic plants. Use the space below to make a sketch of the modified leaf, justifying what you include as well as what you leave out.
21. Use your knowledge of plant cell structure to answer each of the following questions:
 - a. Where might water be stored for later use in the process of photosynthesis?
 - b. What might plant cells do with the sugars made during photosynthesis?
 - c. How does having cells with walls help a leaf to absorb as much energy as possible?

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Technical Extension Service, Inc., New York

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POGIL Shawn R. Simonson, 2023-07-03 Process Oriented Guided Inquiry Learning POGIL is a pedagogy that is based on research on how people learn and has been shown to lead to better student outcomes in many contexts and in a variety of academic disciplines Beyond facilitating students mastery of a discipline it promotes vital educational outcomes such as communication skills and critical thinking Its active international community of practitioners provides accessible educational development and support for anyone developing related courses Having started as a process developed by a group of chemistry professors focused on helping their students better grasp the concepts of general chemistry The POGIL Project has grown into a dynamic organization of committed instructors who help each other transform classrooms and improve student success develop curricular materials to assist this process conduct research expanding what is known about learning and teaching and provide professional development and collegiality from elementary teachers to college professors As a pedagogy it has been shown to be effective in a variety of content areas and at different educational levels This is an introduction to the process and the community Every POGIL classroom is different and is a reflection of the uniqueness of the particular context the institution department physical space student body and instructor but follows a common structure in which students work cooperatively in self managed small groups of three or four The group work is focused on activities that are carefully designed and scaffolded to enable students to develop important concepts or to deepen and refine their understanding of those ideas or concepts for themselves based entirely on data provided in class not on prior reading of the textbook or other introduction to the topic The learning environment is structured to support the development of process skills such as teamwork effective communication information processing problem solving and critical thinking The instructor s role is to facilitate the development of student concepts and process skills not to simply deliver content to the students The first part of this book introduces the theoretical and philosophical foundations of POGIL pedagogy and summarizes the literature demonstrating its efficacy The second part of the book focusses on implementing POGIL covering the formation and effective management of student teams offering guidance on the selection and writing of POGIL activities as well as on facilitation teaching large classes and assessment The book concludes with examples of implementation in STEM and non STEM disciplines as well as guidance on how to get started Appendices provide additional resources and information about The POGIL Project

Process Oriented Guided Inquiry Learning (POGIL) Richard Samuel Moog, 2008 POGIL is a student centered group learning pedagogy based on current learning theory This volume describes POGIL s theoretical basis its implementations in diverse environments and evaluation of student outcomes

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web in chapter 2 we examined the stresses in thin walled cylinders subjected to internal pressure the assumption of thin walls allowed us to develop a simple analysis that ignored the variation of radial stress when the wall thickness becomes appreciable in proportion

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web oct 12 2011 if the cylinder walls are thin and the ratio of the thickness to the internal diameter is less than about then it can be assumed that the hoop and longitudinal stresses are constant across the thickness it may also be assumed that the radial stress is small and can be neglected

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web a fluid container sealed by a piston is open c in this case an external axial force f_a is mandatory for equilibrium of the overall piston and cylinder assembly a bicycle pump is a common example if a_i is the internal circular area then a free body of either piston or cylinder end c must have $f_a p_i a_i$ and there is no need for axial wall stresses to

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web the classic equation for hoop stress created by an internal pressure on a thin wall cylindrical pressure vessel is $\sigma_{\theta} = p d / 2 t$ for the hoop stress thin wall pressure vessel hoop stress calculator where p is the internal pressure t is the wall thickness r is the inside radius of the cylinder

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web apr 5 2021 this experiment provides the insight on thin walled pressure cylinders where thickness is less than or equal to $1/10$ of the internal diameter when axial and biaxial load is applied on it

