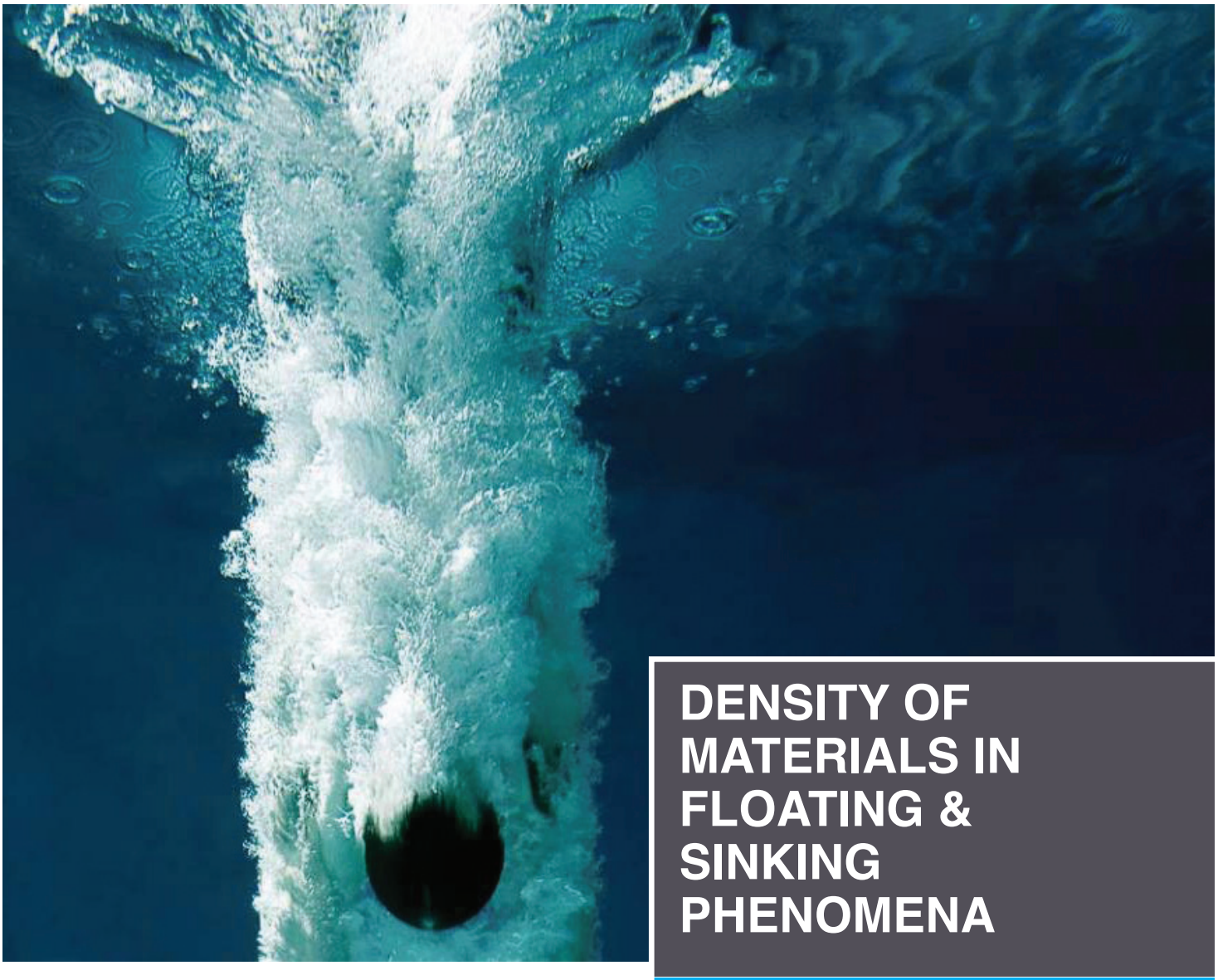

DENSITY OF MATERIALS IN FLOATING & SINKING PHENOMENA

TEACHING AND LEARNING ACTIVITIES

ADAPTED VERSION

MATERIALS SCIENCE PROJECT

UNIVERSITY-SCHOOL PARTNERSHIPS FOR THE DESIGN AND IMPLEMENTATION OF RESEARCH-BASED ICT-ENHANCED MODULES ON MATERIAL PROPERTIES

SPECIFIC SUPPORT ACTIONS

FP6: SCIENCE AND SOCIETY: SCIENCE AND EDUCATION

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ACKNOWLEDGMENT

RESEARCH FUNDING FOR THE MATERIALS SCIENCE PROJECT WAS PROVIDED BY THE EUROPEAN COMMUNITY UNDER THE SIXTH FRAMEWORK SCIENCE AND SOCIETY PROGRAMME (CONTRACT SAS6-CT-2006-042942).

DENSITY OF MATERIALS IN FLOATING & SINKING PHENOMENA

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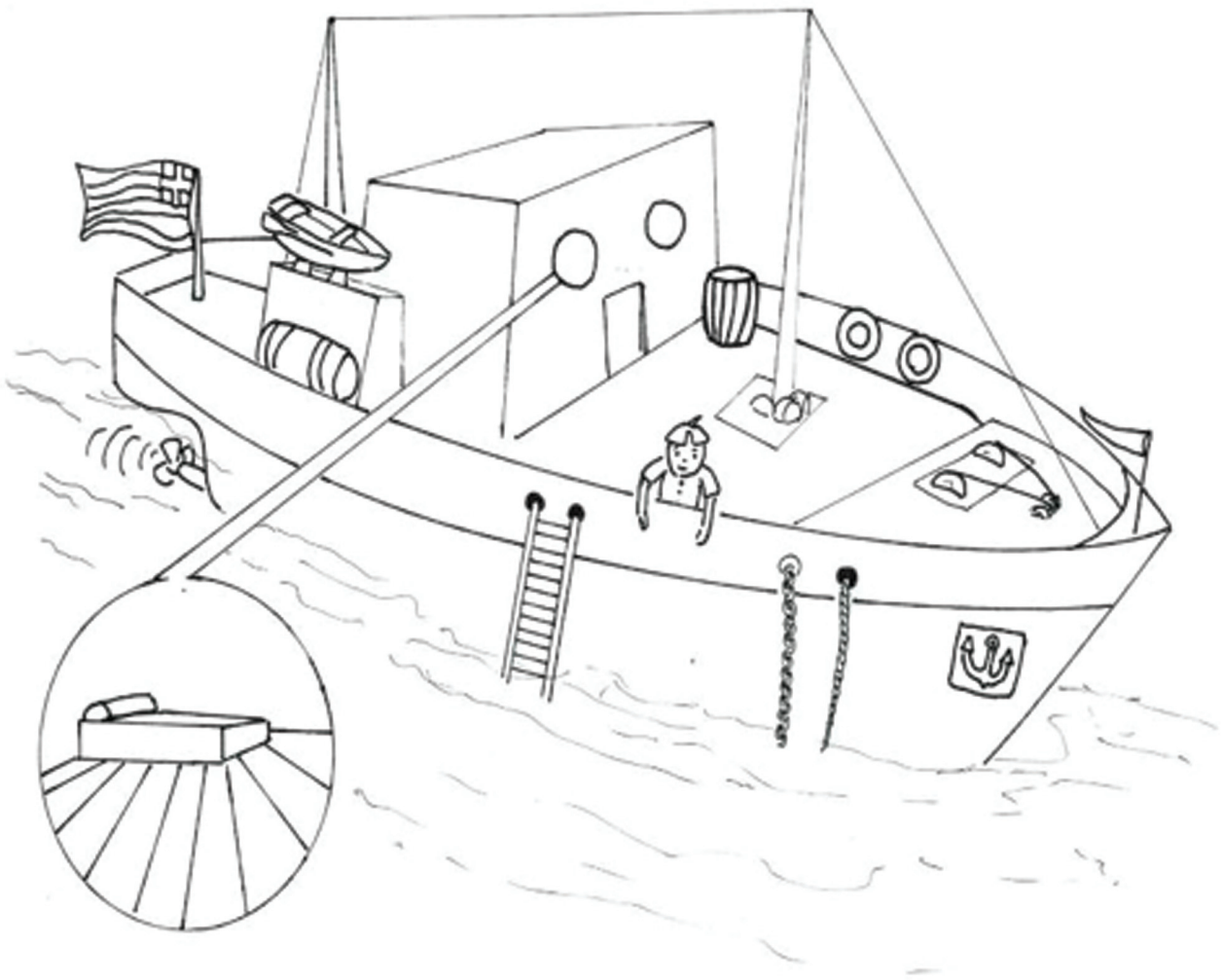
CONTENTS

WORKSHEET 1

1. **Examine the picture of a boat. Colour the objects that you think will sink with blue colour and the floating objects with red.**



2. **Explain why the objects you have chosen float.**

3. **Explain why the objects you have chosen sink.**

WORKSHEET 2

1. **In front of you there are objects made out of different materials. Predict which of them floats and which of them sinks. Mark your hypothesis into the table.**

OBJECT	PREDICTION (HYPOTHESIS)	RESULT

2. **Test which of the objects float and which sink.**
   Mark the result in the table above.

3. **Which properties (for example size, weight, material) affected the floating/sinking?**

4. **In the electricity experiments we found out that metal conducts electricity, but plastic does not! Try to make a similar conclusion about floating.**

WORKSHEET 3

COMPUTER

1. **Open the program Material Science. Go to the room "Testing body weight".**
   Test does the weight of an object affect floating. You can get carbon fibre pieces from the cabinet.

Go to the room "Testing body material and shape".
Test does the shape of an object affect floating.

2. **Leave. Go to the room "Testing Liquids".**
   What is the liquid in the vessels?

3. **Predict what happens if you drop an iron cube into the vessel.**

4. **Drop the cube into the vessel. What do you see?**

5. **What conclusion can you make according to your observations?**

WORKSHEET 4

COMPUTER

1. **Go to the room ”Weighing materials 1”**
   You can see three same-sized cubes on the screen – wood, rubber and iron.

2. **Compare the weight of the cubes to each other with the help of the scale.**
   Draw the cubes and name them in order from the lightest to the heaviest.

3. **Go to the room ”Weighing materials 2”**
   Compare the weight of the cubes to each other with the help of the scale. From the cabinet “Add material” you can get more materials.
   Draw 7 cubes and name them in order from the lightest to the heaviest.

4. **Go to the room “Floating-sinking of models”.**
   There is water in the vessel and a cube on the blackboard that indicates that the value of the water is four dots.
   Drop the wooden cube into the water. It floats.
   How many dots does wood have?

Drop the rubber cube into the water. It sinks. How many dots does rubber have?

5. **Come up with a rule that allows you to explain the floating with the help of the dots.**

6. **Go to the room “Floating-sinking of models 2”. There is glycerine in the vessel, and the value of the glycerine is 7 dots.**
   Test your rule by experimenting if the wood, metal and rubber float in glycerine.
   Take from the cabinet “Add material” carbon fibre and polyurethane and find out by testing what are their dots.

The carbon fibre has _____ dots **Polyurethane has _____dots**

WORKSHEET 5

1. **Put a small piece of glass in the water.**
   Does the glass have more density and so more dots than water?

2. **Put a glass bottle carefully in the water.**
   What can you see?

3. **What do you think about the density of the glass bottle?**

4. **Can you explain why the piece of glass has bigger density but the glass bottle has smaller density than water?**

5. **Put a Blu-tack ball in the water. What can you notice about the density of the Blu-tack?**

6. **Shape a boat from the same Blu-tack peace.**
How can you get however a material more dense than water to float?

7. **Out of what material is the ship of the guests made of?**

8. **Why does it float?**

9. **How could you get it to sink?**

10. **How could the ships that were sunk in the ocean (you saw in the beginning of the teaching episode) be raised?**

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ISBN 978-9963-689-74-3
2009