

## The Second Semester Reading Course at King Mongkut's Institute of Technology (Thonburi)

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In the second semester we use *English in Focus: English in Workshop Practice*<sup>1</sup> as our textbook. We also add supplementary exercises which we prepare ourselves. They are based on the passages from the book. The exercises include the diagram of ideas or concept diagram, acronym exercises, cloze tests and cue sheets. Part of one unit, Unit 6, is included as an illustration.

In preparing these materials we had some problems about our lack of technical knowledge. We needed to understand those technical passages before we prepared the material. As we are English teachers we do not have any idea about annealing, tempering etc. Therefore we turned to technical instructors for help. Arrangements for visiting the workshops of different departments were made. We asked our colleagues, some technical instructors, to give some lectures and demonstrate how to use various tools and instruments. We even had a try at using some instruments and tools ourselves; for example doing some soldering on a visit. The visits helped us a lot in preparing ourselves for teaching. We now knew what we had been wondering before. Furthermore, it gave the teachers more confidence.

After the exercises had been made by each teacher we presented them at the meeting that we had every week; discussions were held on each exercise and we made some improvements and corrections.

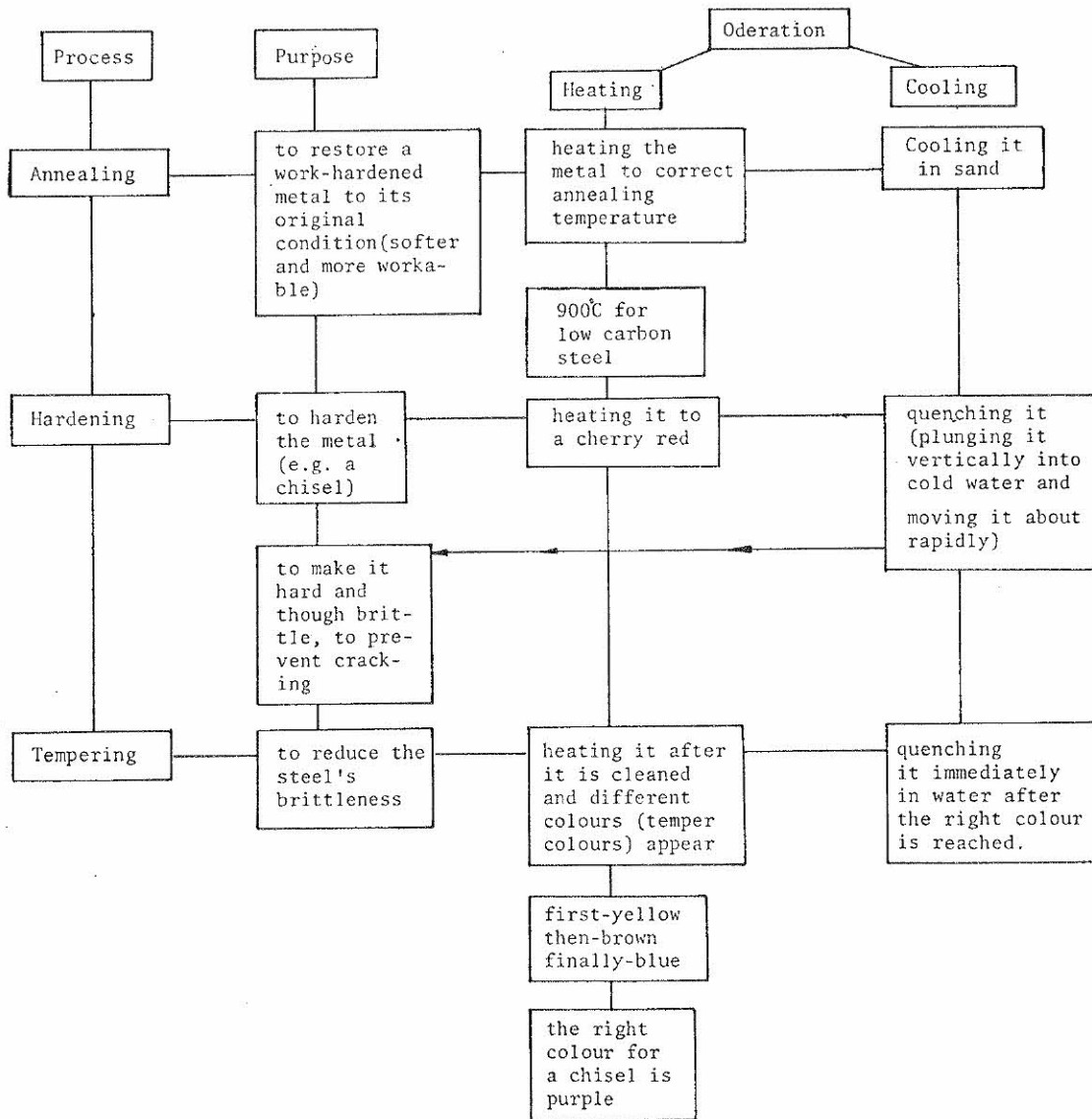
While we were practising our material during the semester we reported the feedback to the meeting. Then we decided which part should be used or left out next time, and which part should be revised or what should be added.

After trying our material for the whole year, we found that the book is not suitable for science students. For engineering students it is acceptable though we decided to leave out some exercises and add something else more worthwhile. As a result we plan to use *English in Focus: English in Physical Science*<sup>2</sup> for science students but we still use the same method of adapting the text, using the Jones/Roe module<sup>3</sup> plus improvements next year.

Unit 6 Focus. Heat Treatment

This material, exercises 1,2, and 3 should be used before Unit 6 of "English in Workshop Practice."

Diagram of Ideas 6. Study this diagram.



**Unit 6: Focus**

*Exercise 1* Use the information in the diagram to answer these questions:-

1. What is the purpose of the annealing process?
2. Ask and answer similar questions about the other two heat treatment processes.
3. What does the annealing process consist of?
4. Ask and answer a question about hardening.
5. Ask and answer about tempering.
6. What do they call the process of plunging a steel bar into cold water after it has been heated?
7. What is the name given to the process of making the steel hard?
8. By what process can brittleness in metals be reduced?
9. Ask and answer a similar question about restoring work-hardened metal.
10. What is done first in the tempering process?
11. Ask and answer a question about annealing mild steel.
12. What is the temper colour for chisels?
13. Ask and answer a question about the sequence of temper colours.
14. What is done immediately when the right temper colour is reached?
15. Ask and answer another question about quenching.
16. Ask and answer another about another cooling process.

*Exercise 2* Fill in the blanks, using information from the diagram.

The operations done to a metal are different according to the (1)\_\_\_\_\_. Every operation has (2)\_\_\_\_\_ main processes which are (3)\_\_\_\_\_ the metal and then (4)\_\_\_\_\_ it. (5)\_\_\_\_\_ is the operation which is to (6)\_\_\_\_\_ a work-hardened metal to its (7)\_\_\_\_\_ condition or, in other words, to make the metal (8)\_\_\_\_\_ and more workable. The process of doing this consists of (9)\_\_\_\_\_ the metal to its correct annealing (10)\_\_\_\_\_ and cooling it in (11)\_\_\_\_\_. For (12)\_\_\_\_\_ the annealing temperature is about 900° c.

The next operation is (13)\_\_\_\_\_. It hardens the metal of tools which need to be hard, such as a (14)\_\_\_\_\_. The process involves (15)\_\_\_\_\_ the chisel to a (16)\_\_\_\_\_ colour, then (17)\_\_\_\_\_ it vertically into cold water and (18)\_\_\_\_\_ it about rapidly. This cooling step is called (19)\_\_\_\_\_. It prevents (20)\_\_\_\_\_ and makes the steel very (21)\_\_\_\_\_ but (22)\_\_\_\_\_.

The last operation is (23)\_\_\_\_\_. It is for reducing the steel's (24)\_\_\_\_\_. The part of the chisel to be treated is first (25)\_\_\_\_\_ and then (26)\_\_\_\_\_ to different temper (27)\_\_\_\_\_. The first colour appearing on the metal is (28)\_\_\_\_\_, then it is (29)\_\_\_\_\_ and finally it becomes (30)\_\_\_\_\_. However, the (31)\_\_\_\_\_ temper

colour of a chisel is (32)\_\_\_\_\_. When the right colour is (33)\_\_\_\_\_, the metal should be immediately (34)\_\_\_\_\_ in water. Now the chisel becomes (35)\_\_\_\_\_ but less (36)\_\_\_\_\_.

Teachers should check the results of exercise 2. Students with more than 13 mistakes should be given 15 minutes to discuss the corrections with better students in their group before going on to the next exercise.

*Exercise 3* Read the following set of notes and fill the blanks with acronyms.

#### **Heat Treatment**

A work-hardened metal can be made softer and more workable again by the annealing process.

It (ANLg pncs) consists of heating the MTL to the correct ANLg temperature and allowing it (1\_\_\_\_\_)

A chisel can be hdnd by means of the HDg pncs.

It (2\_\_\_\_\_)

cnsts of htg it (3\_\_\_\_\_)

and then quenching it (CHSL) to prevent cracking.

This operation (4\_\_\_\_\_)

is done by plunging the CHSL vertically into cold water and moving it (CHSL) about quickly.

Brittleness can be reduced by the tempering (5\_\_\_\_\_)

The part (MTL) to be (6\_\_\_\_\_)

is cleaned first.

The MTL is heated to its (MTL) temper colour.

When the right clr for a certain (7\_\_\_\_\_)

is reached, it (8\_\_\_\_\_)

is (9\_\_\_\_\_)

in (10\_\_\_\_\_)

#### **Unit 6: Focus**

CUE SHEET PART ONE - 25 minutes are allowed.

#### *For Group Work*

1. This sheet should be distributed immediately after the cloze test on Unit 6 and the class divided into groups of four.
2. Each group should work together to find the correct answers and to show the cues etc. that they used to find the answers.
3. Teachers check answers before starting PART TWO.

Use the illustrations to help you complete the grid on page 3.

Answer No. 2 has been completed as an example.

### PART I

Use the illustrations to help you fill the blanks in the following, *one word* to each space.

It is generally supposed that the flanges keep railway trains on the line. So they do, but they would not be sufficient to do this by themselves. They are helped by the shape of the steel tyres. (See Fig. 1)

These 1. \_\_\_\_\_ are not quite horizontal, although they 2. \_\_\_\_\_ horizontal if they are given a careless glance. The 3. \_\_\_\_\_ edge of the tyre is of slightly less diameter 4. \_\_\_\_\_ the inner.

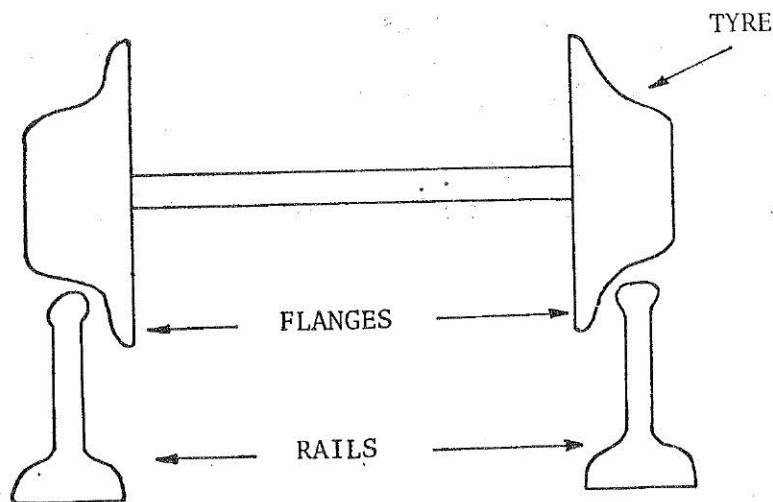
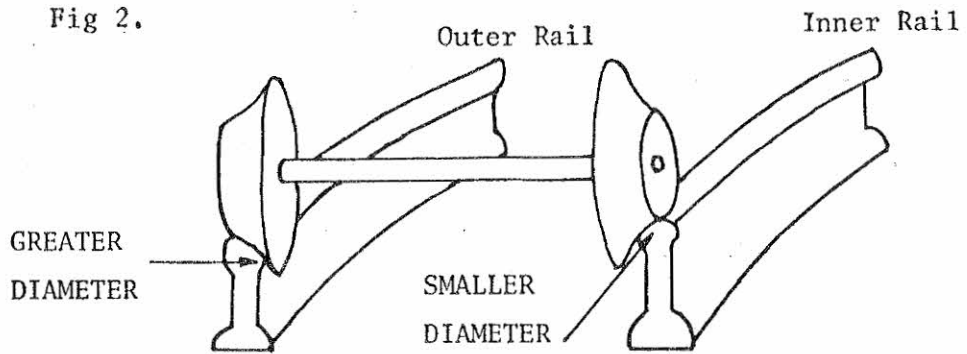


Fig 1.

The behaviour of wheels on curves 5. \_\_\_\_\_ troublesome. The outer 6. \_\_\_\_\_ on a curve is longer than the inner rail. 7. \_\_\_\_\_ you have a circular garden, and walk round the outer edge of 8. \_\_\_\_\_, you will walk much 9. \_\_\_\_\_ than if you walk round near the centre 10. \_\_\_\_\_ sharper the curve on a railway, the 11. \_\_\_\_\_ the difference in the 12. \_\_\_\_\_ of the two rails.

If two wheels are firmly fixed to one axle, 13. \_\_\_\_\_ the train reaches a curve, the outer 14. \_\_\_\_\_ must turn 15. \_\_\_\_\_ than the inner wheel because 16. \_\_\_\_\_ has to travel farther in the same time, But it cannot do 17. \_\_\_\_\_ if the two are fixed as one piece. Therefore 18. \_\_\_\_\_ or both of them must slip.



In this problem 19. \_\_\_\_\_ sloping surface of the tyre of the wheel is 20. \_\_\_\_\_ advantage. When a train runs round a curve, it tries 21. \_\_\_\_\_ continue in a straight line, and so it swings 22. \_\_\_\_\_ towards the outer rail. 23. \_\_\_\_\_ that case the outer wheel rides on its greatest diameter, near the 24. \_\_\_\_\_, and the inner wheel rides on its 25. \_\_\_\_\_ diameter, away from the flange. This helps the outer wheel to 26. \_\_\_\_\_ farther with the same number of turns 27. \_\_\_\_\_ the inner wheel. (See Fig. 2)

## Cue Sheet Part Cue

ANSWER	CUE	TYPE OF CUE	LOCATION	SPECIAL POINT ?
1. _____				
2. seen/appear/look				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
13. _____				
14. _____				
15. _____				
16. _____				
17. _____				
18. _____				
19. _____				
20. _____				
21. _____				
22. _____				
23. _____				
24. _____				
25. _____				
26. _____				
27. _____				

1. Alan Mountford *English in Focus-English in Workshop Practice*. London : Oxford University Press, 1975.
2. J.P.B. Allen and H.G. Widdowson. *English in Focus-English in Physical Science*. London : Oxford University Press, 1974.
3. K. Jones and P. Roe. "Designing EST Programmes in Academic Settings for Overseas Students", ETIC Occasional Paper, 1975.