

Manual of Session 3 on the Language of tables and graphs:



Communication-rich lessons about graphs

Basic idea Lamavoc aims to develop a teaching approach and teaching units for workplace-related and language-integrated mathematics learning. One of the teaching units is about the language of tables and graphs. In this first session teachers are made aware of the relevance of language in math teaching in general and more specific the language related to graphs (diagrams) and tables. The focus is on diagrams and graphs of situations: some of these are vocational, while others are of general interest (from everyday live). This third session focusses on communicative practices in vocational contexts involving graphs and tables. Communication-rich activities were designed to promote talking, interaction and communication in situations where mathematics (i.e. graphs and tables) is part of a (vocational) context. These are activities like writing a script, having a conversation (aimed at giving advise, consult, explain decide etc.), making a vlog or podcast and also role playing.

Target group Teachers on numeracy (and mathematics) in (pre)vocational education.

Core activity In this third PD session teachers share their own experiences with trying out a communicative activity from the module. They also analyze student work on one of these activities. At the end they reflect on what they learned in the three pd-sessions and what this means for their future teaching.

PD Material PD materials - elbd.sites.uu.nl/lamavoc

- This manual (worksheet included in the appendix)
- The presentation: pptx

Classroom materials - fi.uu.nl/publicaties/subsets/lamavoc_en/

- The unit: The language on tables and graphs, more specific: the 3 teaching activities and teachers guides of part 1.

Other requisites:

- Laptop, Beamer

Possible schedule for a 2 hour PD session (other schedules possible)

Time	Activity	Material
Part 1: Introduction (10 min)		
8 min	Discussion about a graph (Statistical Process Control Chart). Check is they know this type of graph and how and were it is used. Have them tell what information they see in the graph in a correct and understandable way. Ask participants to reformulate vague utterances.	Ppt slide 2
2 min	Show the program of the 3 sessions and this first session	slide 3
Part 2. Role of communication in vocational situations + graphs or tables (15 min)		
15 min	Refer to the homework (collect examples) and share the findings. Some examples are presented on slide 5. Discuss these in a whole group discussion and together characterize the communicative practices (slide 6)	Sheets 4 - 6

Part 3.	Three communicative tasks (15 min)	Ppt slides 7-12 Pages 9-27
15 min	Present the overview of the tasks (slide 8 and 9) and refer teachers to the pages from the module. Give them 5 minutes to pages through the module and read parts of the student tasks and the manuals. Present and discuss the general structure of the lessons (slide) 10.	Slide 8 -10
Part 4.	Sharing outcomes of classroom experiment (homework) (30 min)	
20 min	Teachers in small groups share their classroom experiences with the rich communicative practices tasks	11-12
10 min	In the whole group collect findings and reflect on them	12
Part 5	Analysing student work (40 min)	
2 min	Show the tyre pressure task	13-15 Pages 21 & 21
18 min	Activity: teachers in small group analyse the student work on worksheet 1 (appendix)	Sheet 16 pages
10 min.	Share findings from analysis in whole group	Sheet 17-20
10 min	Discuss the value of this types of tasks	Shet 21
Part 6	Evaluation of PD course (>10 min)	
10 min	You may evaluate the session and course on your own preferred way. Connect back to the general background on language sensitive math teaching from session 1 and the teachers current and future practices.	Sheet 22-25

Worksheet 1 – student work on Tyre pressure task (see module)

On this worksheet you find three examples of student scripts and calculations for the Tyre pressure task. Evaluate each example for the requirements of the task. Take into account all aspects: the vocational context, the communicative practice and the mathematics and its languages.

You may also use the following guiding questions:

- What does each group of student appear to understand (of the context, math and the communicative task) ? How can you tell?
- List errors and difficulties that are revealed by the students' scripts and calculations.
- What feedback would you give each group?
- In what way would you support the students working on this task?

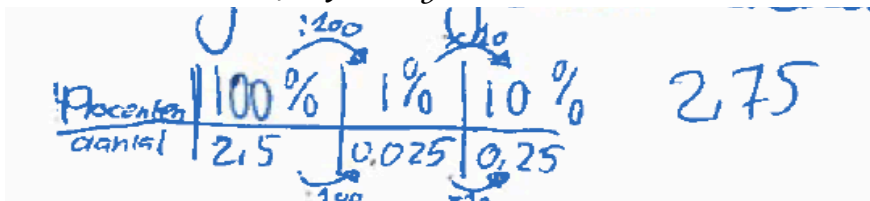
Group 1

Hello, can I ask you something? <- customer

Yes of course <- gas station assistant

I want to know how to pump my tyres for extra pressure <- customer

I will calculate it for you <- gas station assistant)



Group 2

Customer: hello, can I ask you something?

PH: Yes, you can

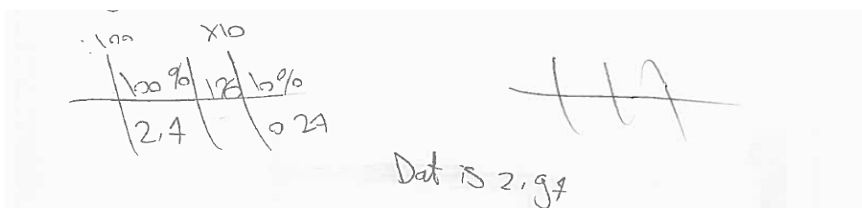
Cust: I don't know how to pump my tyres

Ph: can I ask you what kind of car you have?

Cust: Verso 2007 1.6

Ph: $v = 2,4$ $A = 2,6$ [V is front axle. A is back axle]

But an additional 10% is needed. I will calculate this [see table and answer 2,97]



Group 3

Customer: I don't know how to pump up my tyres

Pump assistant: What kind of car do you have, and does it have summer or winter tyres?

C: Yaris full hybrid, summer tyres

PA: I will take a look in the system

C: Very well

PA: I have looked it up and you need 2.42 front and also back, sir

C: Thanks for your effort. Do have a pack of chewing gum for me?