What is a behaviour graph or BG?

In every episode, you will find the suggestion to create a behaviour graph concerning the feelings and emotions of Joris. A behaviour graph is a visual tool within system thinking. It is a simple means to allow the classroom to get acquainted with system thinking and it also provides a handy instrument to use the behaviour graph or BG (‘gedragspatroongrafiek’ in Dutch) for a series of applications.

An introduction in system thinking

System thinking is first and foremost a means of observing reality. It is the ability to see and understand relations in dynamic systems.

By this thought process, we will be able to see the bigger picture, and not merely the details.

You might compare it to the use of a zoom lens on a camera. We are alternately zooming in and out, in order to observe not only the details, but also overall picture. System thinking is the bias to see mutual relations instead of loose phenomena, to discern patterns of change rather than random indications, to notice the difference between a problem and a symptom. Children are - by nature- system thinkers at their proper level, but are often unlearning this capacity as they grow older. If we are capable as adults to grasp the complexity of reality, we are also able to exercise a positive influence on this reality. We are learning to accept that we ourselves are the system, and not only its ‘victim’.

Furthermore, system thinking is a means of communication: using a special language is intended to describe the functioning of the various systems. Our ‘usual’ language seems to be inadequate to formulate this complexity.

Finally, system thinking also involves using a series of tools, enabling us to visualize a system. These tools can be applied in education at all levels: with four year old children up to and including administrators and managers. A behaviour graph or BG is such a tool.

What is a behaviour graph or BG ?

A BG shows a pattern of change throughout time, an increase or a decrease of a variable. It is a simple tool within system thinking. In fact, a BG is a graph:

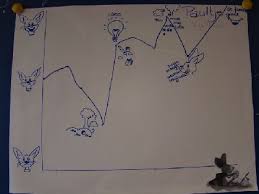
* Time is always mentioned on the X-axis, the horizontal axis
* The changing ‘behaviour’ is mentioned on the Y-axis, the vertical axis. This behaviour is called the variable. This is the case with all BG’s.

The aim of the graph is to demonstrate how ‘behaviour’ (the variable) is changing as times goes by. Time can be represented in various units: weeks, centuries, chapters, episodes,… Some variables can be measured. They are also called hard variables: contents, number, weight, temperature…. We all know these variables from science. But BG’s are not restricted to measurable items. Many variables actually do increase or decrease, but cannot be measured. For instance: self-confidence, happiness, aggression, grief, need for peace and quiet, attention,….Although these variables cannot be measured, they can be scaled. They are also called soft variables.

The variable in the following example is well-being (‘how fine I felt’) during holidays:



In this example, the BG illustrates how the main character in a narration is feeling throughout the story:



In our Storyline, the BG therefore reflects how Joris is feeling throughout various episodes. It consequently shows the well-being of Joris during his war adventures.

How do you make a behaviour graph or BG ?

In general, BG’s comprises three consecutive steps:

1. Description of a problem: in class, it may consist of telling a picture book, reading a story or studying an informative text.

2. Looking for the main variables. During this step, the question is to identify the key elements which are playing a role in this story or problem. Carefully examining and formulating these variables is one of the major and most difficult parts of system thinking. Since it is the very first BG for many children, the teacher informs them that it involves the well-being of Joris, or how fine Joris is feeling.

3. Drawing a pattern of the variable(s) in the behavioural pattern graph: The line in the graph indicates how the variable is increasing or decreasing throughout time.

If time is displayed on the X-axis and the variable on the Y-axis, the line can be drawn. It is of the utmost importance that this is done with precision, while avoiding that too much attention is paid on the details. It involves making a pattern visible. When working in groups, it is usually practical to allow everyone to draw his or her line and subsequently enter into a mutual discussion. The way in which the line is drawn, also depends on the perspective from the person who is making the graph.

Behaviour graphs can be used in various education situations and with the aid of various materials: language, reading comprehension, knowledge areas, newspaper articles, as a result of a film, stories and books.

They can also play a role in discussing several social-economic difficulties and feelings from children. They are coached step by step during the development of system thinking.

A behaviour graph with young children

The varied possibilities of system thinking in the classroom are not limited to the third grade and secondary education. Experiences have proven that four years old children are able to use this system and that all advantages from these procedures also apply to young children. Especially (picture)books provide a wide range of opportunities to use this tool. Also situations in the classroom, feelings of children, weather conditions and nature can be seized to use behaviour graphs.

For young children, BG’s can be meaningful for:

* improved understanding of a story, of others and of the world surrounding them
* making their thoughts and emotions visible and discussible
* remembering and rendering the contents of a story by means of the graph which is made in cooperation with or drawn by the children
* enhancing the involvement and understanding the reasons of change
* making predictions of the possible outcome

Talk with the children about the topics that are changing and about the motive behind these changes. The discussion is more important than the result in the graph! The various episodes of the Storyline contain the key question ‘How is Joris feeling ? Why is he feeling that way?’

A first step can be taken by drawing the lines into the air, along with the children (as if a line is drawn in a graph). At this occasion, the same kind of questions can be raised as during the previous episodes. Moreover, we can discuss the development of the ‘aerial line’: does it involve a steep rise ? Only upward or also downward ? Why ? The line can also be drawn on the ground or on a table, for instance by means of a rope. Yet another possibility is to make a special sand plank with an upward edge. Children can draw the line into the sand. It is essential that children understand the meaning of the line, but this must not become a goal in itself: working with a BG is therefore no drawing-lesson.

Subsequently, we can proceed to the behaviour graph itself. Jointly create the BG and ask the appropriate questions while drawing the line :

• Where does the line start ? Why exactly there ? How do you know this?

• Does it increase or decline ? What is the time lapse ? How do you know this?

Here also, it is not intended to obtain ‘the only correct answer’, but to have ‘probable answers’. Children can reach various conclusions, based on their perspective and arguments. Incite them to talk about this. Not the line itself is important, but the concurrent story of this line!

If the line is drawn, we can examine what has happened on various places along the line. What is the reason for the steep rise ? A practical tool is to place small drawings along the line (a symbol for the events in the story).If this work is finished, ask the children to retell the story by means of the graph. Owing to the visual support of the line and the drawings, this will be more successful than without using these tools.

Additional information as regards system thinking (in Dutch):  
[www.natuurlijkleren.org](http://www.natuurlijkleren.org)  
[www.duurzaamleren.org](http://www.duurzaamleren.org)

