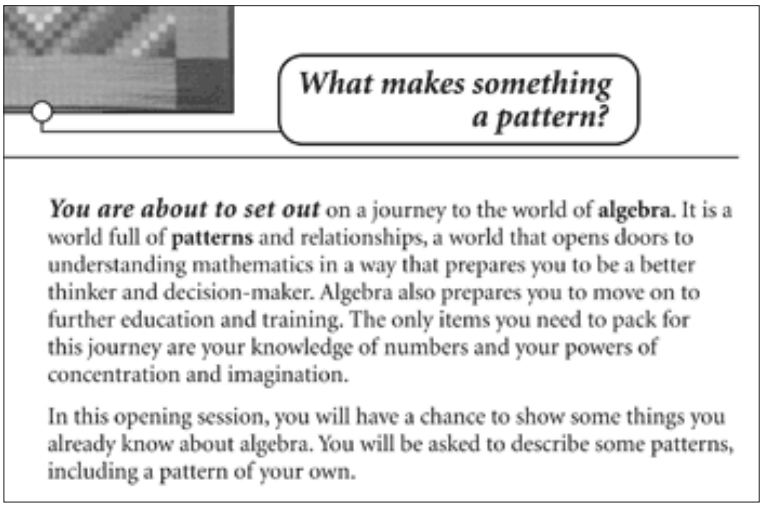
Narrative of a linear patterns activity in a Louisiana ABE/GED classroom

Resource: EMPower's *Seeking Patterns, Building Rules*: Opening the Unit



What makes something a pattern?

You are about to set out on a journey to the world of **algebra**. It is a world full of **patterns** and relationships, a world that opens doors to understanding mathematics in a way that prepares you to be a better thinker and decision-maker. Algebra also prepares you to move on to further education and training. The only items you need to pack for this journey are your knowledge of numbers and your powers of concentration and imagination.

In this opening session, you will have a chance to show some things you already know about algebra. You will be asked to describe some patterns, including a pattern of your own.

I included a few students from the ABE classroom to get a larger range of functioning levels and ages. I also divided the lesson into short 20-30 minute segments, for I feel as though my older ASE students are very focused upon their individual assignments that need to be completed before the next GED test. In addition, I have many young 16 year old students this year, all of whom probably have some type of attention/learning disorder. Breaking the lessons into short 1/2 hour time spans helps to keep their attention.

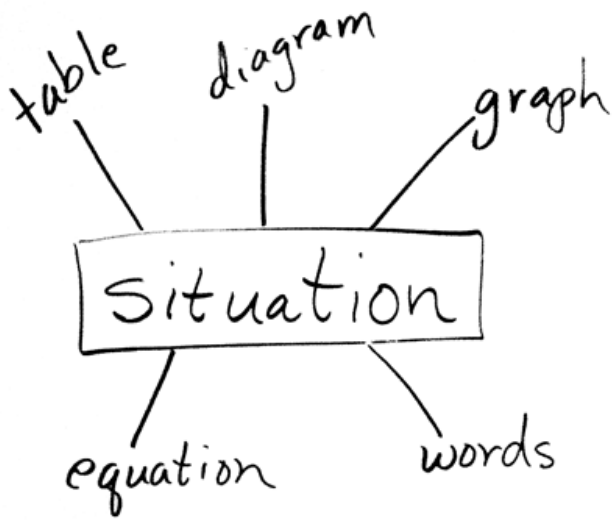
Lessons were 20 min. (day 1); 10 min (day 2)*
*Note that not all were able to attend the second day due to our center's open attendance policy. I administered initial assessments on separate days (given as an individual assignment). I also chose to use the student book assignments as follow-up assignments over the successive days.

What was planned and why

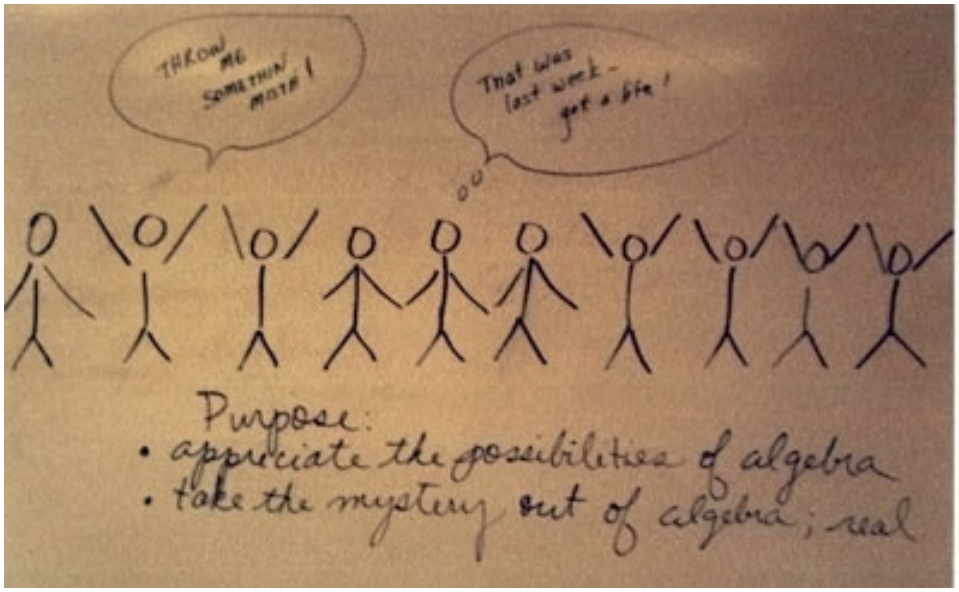
1. Reflect upon his/her own history with algebra;
2. Recognize that there are patterns in life and that any situation can be expressed in words, as a chart, graph, or diagram and as an equation

At around the same time as our last meeting, our GED candidates returned from taking the actual test. Feedback from those who took the math portion of the GED indicated that algebra questions occurred with some frequency. This information, of course, ignited some interest and goal setting among my students as to the importance of algebra. Our state standards, also, emphasize algebra in section 707 (Algebra). Our specific lesson addressed 707A 1, 11 and Section 705A 1, 4 (Data Analysis).

I drew this on the board:



I created hand drawn algebra brainstorm and copied to give to the class. I also copied the individual lessons out of the student book for distribution. The lessons were shortened to address the short attention span of my young students and to not detract from the individual focus of my older students. Most of my students are visual learners, so the visuals and drawing of the algebra "map" and the graphing of the individual data were appropriate. In addition, I added a cultural joke to the pattern of hands up-hands down stick figures. In Louisiana, we have Mardi Gras and reach w/our hands up for the throws from the floats in the various parades. I put cartoon bubbles on the stick figures related to the recent holiday.



The class begins...

For Activity 1, I introduced the concept of algebra, how it relates to real life, and had recent GED candidates share their opinions about the importance of algebra on the test. We did the algebra mind map activity and shared with the entire group. Most comments were as follows: "hated it" "confusing", etc. but some students actually mentioned specific teacher names from the local high school.

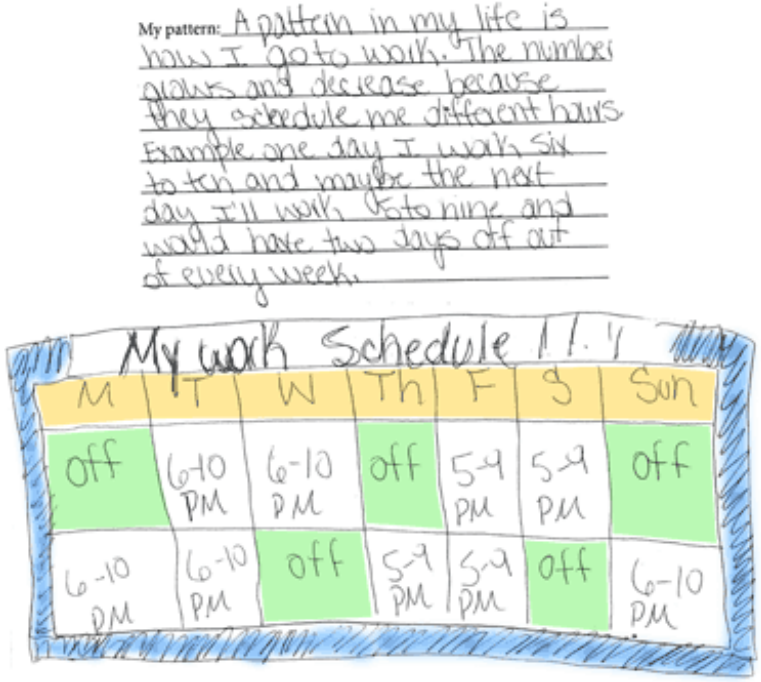
Activity 2: One of My Own Patterns

1. Describe in complete sentences a pattern in your life that involves numbers.
2. Tell how the pattern plays out over time, in terms of a week, a month, or even longer. Explain how the numbers grow or decrease over time and how they help you predict the future!
3. Use a different representation—a diagram, table, graph, or equation—to show the pattern you just described in sentences. Try to make a representation that someone else could look at to predict what the outcome of your pattern would be in a year or longer.

In Activity 2, we began One of My Own Patterns with the introduction of the drawing that was on the board (stick figures). I explained that I wasn't going crazy due to the recent Mardi Gras holiday, but that I had put the stick figures on the board to test them to see if they could find a pattern. I followed the script as described in the book. Answers to "What comes next? How do you know?" were answered quickly and accurately. One student, almost immediately, found the odd/even relationship. Another students answered the question, "What would the 532nd pattern be?"

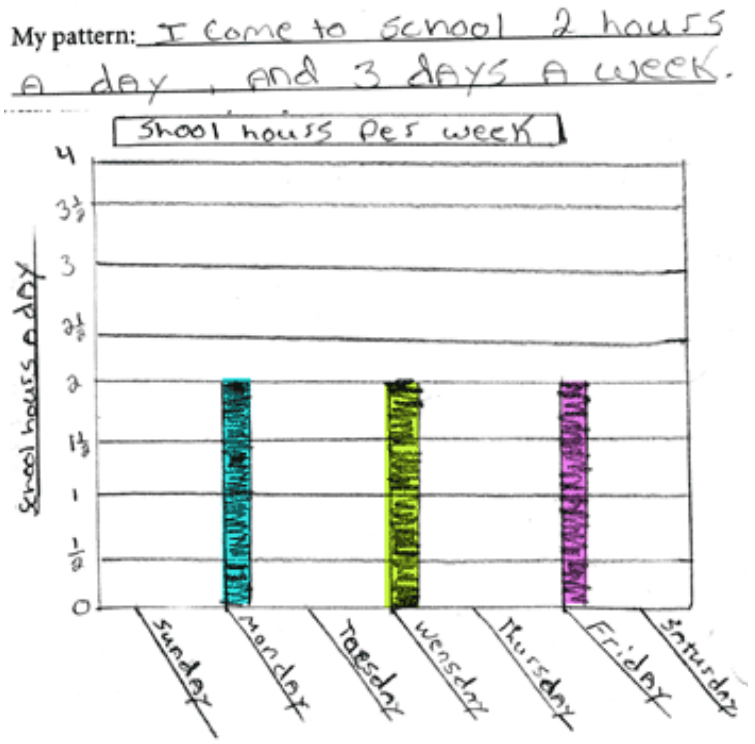
We then talked about patterns in life and talked about how at work, at home, etc., we all have patterns. We did not write a list on the board due to space constraints; we just talked about the patterns.

One girl mentioned that at work, she has a schedule that is posted every so many weeks. She was the first to describe a pattern in her own life (on right). On her schedule is listed the days and hours she must work.

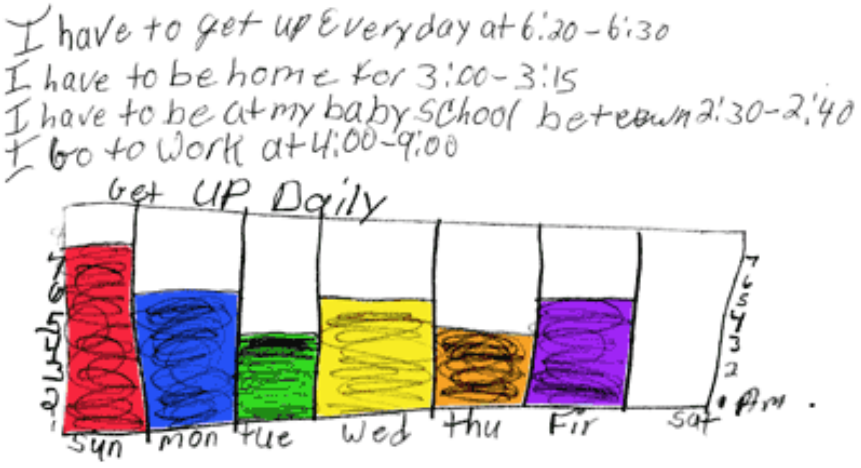


I then distributed the One of My Own Patterns worksheet. As I observed students, I noticed that a few had difficulty identifying a pattern, so I individually asked questions until a pattern was selected. For example, one 17 year old student told me that he couldn't think of anything. I asked if he played video or computer games, and we used his pattern of hours of play each day for a week as an example.

Another student was able to contribute to large group discussion, but had difficulty using expressive vocabulary to describe his personal pattern. He did, however, have a nicely drawn bar graph to illustrate his pattern.



One student was very enthusiastic and came up with 4 statements to illustrate her pattern but could not demonstrate a pattern, so I asked her to simplify by choosing only one thing to chart. With assistance from her table partner and from me, she completed the activity.



The Teacher's Reflection

My biggest challenges were

- helping the students shift from their individual assignments to a large group activity; they were engaged and enjoyed the lesson, however, once it was presented. (I'm still adjusting to this and have mostly done the lessons when I observe most students ready for a break or are at a transition in their individual activities; for example, changing books, going from journal writing to another assignment.)
- dealing with my usual interruptions (phone calls answered by staff member; however, sometimes I'm not able to ignore certain calls)
- dealing with physical layout of our center. There is no office or greeter. Therefore, people walking in off the street, enter a hall and peek into the first classroom to get assistance. I hold all my lessons in the first classroom. There is no other space available and convenient to move my students.

All kinds of mathematics emerged in class: a rich appreciation that algebra is not just a class you take; it's everywhere. I think the students are comfortable with the visual representation thanks to the other lessons from EMPower. Thinking of a personal pattern was hard, even though we had done some group brainstorming. Many students were actually on high school level or near and had been exposed to or had actually taken algebra before so they were able to bring knowledge of how they actually have patterns in the work force and at home. In proceeding classes, we should continue to make the algebra connection and relate it to the necessity of life and for what's on the GED test.

My strength as a facilitator is that I like relating math to real-life patterns. My weaknesses are that I have trouble following a script sometimes, and I feel very comfortable with the subject of algebra. However, I was taught "just to solve the equations'' and not be interested in the situation.

The activities worked well in my classroom. Students enjoyed them; easy to integrate into my normal teaching day. They had real life applications; the pattern activity made the students feel very smart and encouraged them to look at algebra a different way. Some of the students did not pay attention to the instructions to the initial assessment, so there was some anxiety there. However, I believe I explained the activity very well and emphasized that if you don't know, put "don't know". They were surprised at this format.

Using personal examples sucessfully supported the activity; followed up w/student book GED practice activity. Some of the student book activities were too easy for my target students, but would be necessary for lower level students. It's important to read the activity suggested questions and adapt to fit your own situation.

As I said before, I'm beginning (and so are my students) to see that algebra is not just a subject required in high school; It is practical. Also, a new student entered our center w/the need for private college algebra tutoring. Normally, I would have connected him w/the high school's math dept.; however, after looking at his assignments and asking him to attend only on Friday afternoons when I have more time, I believe I can now help him (and remember some old stuff myself.)