Creativity Backstage

Being creative is probably a combination of being curious and being different. Many times an idea looks pretty obvious once it's there, and the question may be: *Why did it take so long before someone had the idea?*

CHINESE REMAINDER CLOCK To teach modular arithmetic, and more precisely the Chinese Remainder Theorem, it is quite funny to show a clock where the information on hours and minutes is conveyed by giving remainders of the numbers. Despite modular arithmetic being called "arithmetic of the clock" it is likely that the genesis of this idea is as follows. *After visiting Alhambra, being fascinated by plane geometry, I tried to draw an artistic clock dial where the 60 ugly minute marks are replaced by interesting points on the dial (the aim was drawing polygons so that their intersection points mark directions that are important for the clock). While considering which polygons would make sense to use, I factored 60 and this made the click.*

RECURRENCE SLIDER To teach recursive sequences, one can say that the recurrence is a magic formula that holds true all over the sequence. For example, the formula for the Fibonacci sequence is X+Y=Z, the variables being neighbouring terms of the sequence. One can write this formula on a mask (__+__=__) and then one sees a true equality when the mask is placed on the Fibonacci sequence (the terms being a number stripe). How did I come to this idea? *When I first visited the Mathematikum Museum in Giessen, I was touching every exhibit to play with it. The Fibonacci sequence was written as a long number stripe, and the initial two generating terms were marked by a metal frame. I simply went there trying to move the frame, but the frame was fixed. Click. (The director of the Mathematikum found my idea so good that he replaced the whole exhibit accordingly.)*

FOLDABLE HALF-METER The usual foldable meter is two meters long and hence not so practical for being used by pupils on their school desks. Its 50 cm variant (which is sold as key-chain) is more handy for children and it also allows building zig-zag geometric figures. It has been shown that pupils aged 4+ like to play with the half-meter. Where did I find this didactical idea? *When I was visiting Baumarkt in Regensburg (it is a huge shop selling screws, ladders, and so on..) I found the half-meter key-chain and found it cool. After buying it and playing with it, I realised the didactical potential.*

I could go on with more examples of "curiosity-driven" didactics. And in recreational mathematics it happened to me more than once that my investigations could have been done many years before (like the one of the Rubik Snake), but simply nobody did them.

If you think that new ideas are simply a matter of luck, then you must admit that creative people are lucky way above average, and how can it be? Surely one has to be at the correct time in the correct place, but one also needs to be open, curious, and playful. And do things for fun (even if no immediate use or application is in sight).
Sometimes being dissatisfied also helps. For example, I invented an ABC poster which is compatible in five languages (e.g. "Avocado" starts with A in many languages), being frustrated by a German poster in which "Monkey" was used for the letter A (in German, it is called "Affe"). This obvious idea became a commercial product, hence I encourage you to always protect your ideas as a general practice. Even if the ideas are small, and even if they look obvious. And even if you think "surely someone must have thought of that before", well, make sure to check it up!