

Statistical literacy for beginners - Tailoring statistical information to children

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Abstract and Paper

Statistical literacy and communicating in the right way to our users, has been an important topic over the last years. Statistics Belgium decided to set up a project that aimed to communicate statistics to school children.

What?

Statbel Junior is a small website, dedicated to children from 8 to 12 years old. The website is set up for a classroom context: the teacher can introduce the website, and afterwards children can go look and browse for themselves.

Why?

Statistical literacy is an important point of attention for statistical offices worldwide. It is a way to address a young public and to communicate official statistics to them in an attractive and understandable way. Statistics Belgium want to make younger children acquainted with statistics, to arm them for the future, and to take away the fear of statistics at the very beginning of their knowledge.

How?

Statistics Belgium created a small website with municipality figures. We show children where to find themselves in these figures: population, evolution of the population, nationalities, buildings and traffic accidents.

Since showing figures is not enough, we explain them very clearly how these figures are being calculated exactly, and why there is a difference between e.g. a median and an average age.

When?

The website was launched in December 2018, and communicated to all elementary schools in Belgium. The website is available in Dutch, French, German and English.

Who?

Since we, at Statistics Belgium, did not have much experience, nor in the educational field, nor in the field of visualizing statistics in a child friendly manner, we decided to cooperate with external partners. One partner created the technical possibilities on the new website, another created the visualizations, yet another carried out user tests with children and their teachers.

First reactions?

Teachers from all over our country reacted very enthusiastically on this new website. They told us it helped them in their daily work on both the mathematical concepts and the insight in their own municipality.

The website was represented in press: newspapers, radio and tv reported on this. They also interviewed children, who were very eager to use this new website and had some brilliant ideas for future work.

What's next?

Statistics Belgium want to carry on communicating on statistical literacy. One of the plans regarding Statbel Junior: send out our statisticians to the class rooms that use Statbel Junior, as to work actively with the website and to give children the chance to 'meet a statistician'. In a second stage, we will possibly enlarge the figures that are represented on the website.

Statistical literacy for beginners

Tailoring statistical information to children

Author: Wendy Schelfaut, press officer & manager external communication

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www.statbeljunior.be

1. Context

Over the last few years, statistical literacy and communicating in the right way to our users has been an important topic in discussions on multiple levels. Statistics Belgium has followed these discussions with great interest. At the end of 2017, we decided to take our first steps in the field of bringing our statistics to young students.

Within the managementplan, the general director integrates Quick Win Projects, year by year. The main goal of these projects is to tackle the addressed problem in an immediate manner. Starting in January, the 12 projects need to deliver some concrete results by the end of the year.

At the end of 2017, the *dissemination of our figures to schools* was proposed as one of the topics of a Quick Win Project. The project was assigned to me in my function of manager of external communication. A diverse working group was immediately founded, specifically for this project, with a mix of communication experts, statisticians, methodologists, quality experts, open data experts and IT experts.

Several topics were discussed in the first meeting of the working group. Overall, we decided to rename the project to the idea of Statistical Literacy for Young Users. Since our working group, and the organization in a whole, was unexperienced in the field of statistical literacy, we began to explore the educational field in Belgium. Education is organized on a regional level. The Dutch-speaking region, the French-speaking region and the small German-speaking region are all separately responsible for the schools and the educational system within their region. To make this even more complicated, schools are structured in different types, and are represented by different associations. This being the case, a federal institution may not intervene in the educational system.

Nevertheless, we decided to reach out to teachers and experts within the educational field. We set up a plan to develop both a practical, useable tool for primary schools, and a report on how to develop new statistical products to address the needs of secondary schools. An a later phase, we also decided to participate in the European Statistics Competition, as the call to participate came at exactly the right time.

In this paper, only the development of the tool for primary schools is being described, under the form of a timetable. We will address the main question on the tool: what is it, why was it created, how, when, who the audience is and what our possible next steps are.

2. What?

The tool to present the figures of Statistics Belgium in primary schools is called Statbel Junior. Statbel is short for Statistics Belgium, and is the brand under which Statistics Belgium presents itself since January 2018. In January 2018, we launched our new general website, www.statbel.fgov.be

The new main Statbel-website being launched at the beginning of our project year, we decided to name its little brother as 'Junior'. At that moment, Statbel Junior was born.

We even created a more simple version of our own logo, to better address the children we were aiming at:



The website is very small, compared to the main website. Only five topics are being examined:

1. Population
2. Evolution of the population
3. Nationalities
4. Dwellings and buildings
5. Traffic casualties.

Statbel Junior is a website dedicated to children from 8 to 12 years old. The website is set up for a class room context: the teacher can introduce the website, and afterwards children can go look and browse for themselves.

Statbel Junior combines strong data visualisations with strong datasets. Graphical elements and quizzes make an interactive tool that makes children understand the data and some of the main statistical concepts. Data are presented under the form of graphical representations, mathematical calculations and accessible images.

The starting point of Statbel Junior is to make children look for themselves in the statistics that are presented: what is my age? How many people live in my municipality? What type of dwelling do I live in? Is this type much represented? What is my nationality and that of my friends? Which other nationalities do I find in my municipality? And what about traffic casualties? Is it safe to ride my bike?

3. Why?

Statistical literacy is an important point of attention for statistical offices worldwide. It is a way to address a broad public and to communicate official statistics to them in an attractive and understandable way. Young people are one of the target audiences much represented in actions on statistical literacy. Statistics Belgium wants to make younger children acquainted with statistics, to arm them for the future, and to take away the fear of statistics at the very beginning of their knowledge on statistical concepts.

Many of these concepts are firstly being taught in primary schools. However, the first goal of Statistics Belgium was not to teach mathematical or statistical concepts to young children. We supposed this was already well done by their teachers.

What we especially aimed for, was to make our statistics much more accessible for young children. Our main website is being consulted by very different types of users, some of whom are teachers. We knew they were using our data, but when they wanted to search or use our data in class rooms, they had to download several large Excel files, go look for the figure they needed, and represent this in a graphical manner. This was a big threshold to use the figures in the classroom.

What added to our motivation to take action in this field, is that we wanted to create a statistical product that was attractive for young children. Statistics are being perceived as part of mathematics. But statistics tell a lot about your own situation, and make it possible to better understand and know the world you are living in.

Statistics are a great way to tell stories, to start a conversation, to see differences and similarities. Statbel Junior invites children to dive in this magical world of statistics, to start telling their own story and that of their neighbors.

4. Who?

Statistics Belgium managed to take its first steps into the educational field at the beginning of 2018. The main idea was to target children in primary schools, as well as their teachers. Since we were unexperienced and had only a small working group to work with, we immediately decided to reach out to the community of teachers, via our own network. We sent out two surveys: one to explore the field, a second one with more specific questions.

Survey 1: exploring

In this survey, we wanted to make sure we were on the right track towards a tool on municipalities. The main questions:

- Short description of the idea. If we would develop such a tool on municipalities, would you be interested?
- If so, in what year of primary school?
- What kind of equipment do you have in your classroom to use this type of tool?

The answers to these questions helped us to set our goal straight and to further detail the target audience. Most teachers indicated they would only use this type of tool in the 4th, 5th or 6th year of primary school. Therefore, we reduced the target age from 6 to 12 to 8 to 12 years old. The answer to the third question was very diverse: from teachers with tablets and smartboards in their classrooms to others with only 1 computer for the entire school. For this reason, we made Statbel Junior easily printable for those teachers with no digital equipment in their classroom. Our goal is to reach each and every classroom, and equipment may not be a barrier to use or not use our tool.

Survey 2: diving deeper

Once we had the first confirmation that our tool would be of interest to teachers, we developed our ideas further, and started to ask them about their day-to-day work in the classroom. The main questions:

- Do you know Statistics Belgium?
- Do you use our figures in your classroom?
- Are you in need of figures on your municipality?
- What kind of figures or themes, out of these suggestions, would be of interest to you?
- What types of visualisations would work well in your class room? Can pupils read graphics, percentages...?

The answers to these questions were arguments for the fundamental decisions on the themes we were developing with Statbel Junior, on the need for figures and the need to use and explain less or more visualisations.

5. How?

Since we, at Statistics Belgium, did not have much experience, nor in the educational field, nor in the field of visualizing statistics in a child friendly manner, we decided to cooperate with external partners. One partner created the technical possibilities on the new website, another created the visualizations, yet another carried out user tests with children and their teachers.

First idea: tool based on other Tool 'Discover your municipality':

<https://statbel.fgov.be/fr/commune/bruxelles#dashboard1>. Very soon, it became clear we would need to develop or own tool. This municipality tool could provide us with ideas, but it wouldn't be the perfect answer to our specific requirements.

Therefore, we set up an external demand, for financial and administrative purposes. In this demand, 3 main principles and 3 main requirements were explained.

Principles:

- Principle 1: online, digital, visual
- Principle 2: municipality figures
- Principle 3: recognizable for children

Requirements:

- Recognizable visuals
- Both strong visuals and qualitative data
- Intuitive; easy to use for young children

In short, we wanted to create an online, digital and visual tool that used municipality figures (a little less than 600 municipalities in Belgium) and made those recognizable for children. The tool should contain recognizable visuals, should combine both strong visuals and qualitative data and should be intuitive and easy to use for young children.

Once the external partner was chosen, they immediately started to create the technical aspects, as well as the visuals. The deadline was very short: we wanted to launch the website in October. From the very start of creation and design, Statbel Junior was developed in collaboration with teachers and young children. After one month of development, we went testing the website in a classroom context. There were many lessons to learn after this first testings. These lessons were immediately implemented in the further development of the website. In August, after 2,5 months of development (with a summer break), we tested in another classroom. These are the main lessons learned from this user testing:

- challenge: break down. Children wanted to click. We had to break down the available content in smaller pieces to make them more digestible.

- ❑ challenge: writing in plain language. The statistical language is not at all appropriate for smaller children. Even when we thought we explained things simply, we had to make them even more simple.
- ❑ key: downsizing. We started of with an idea of 10 indicators, but decided to go through with 5 of those. The quality of the explanation and visualisation was key, compared to the quantity of indicators.
- ❑ little text, many buttons. In short: kill your darlings. Make the text as little and comprehensible as possible, and use buttons. Children want to click, anywhere they can, so give them this opportunity.
- ❑ interactivity & active usage. The young pupils loved the first interactive graphics, and so we added a bit more of those, and a small quiz on almost every page.
- ❑ teacher support is important. The help and support by the teacher is indispensable to make Statbel Junior a success.

In the end, Statistics Belgium managed to create a small website with municipality figures. We show children where to find themselves in these figures: population, evolution of the population, nationalities, buildings and traffic accidents.

Since showing figures is not enough, we explain them very clearly how these figures are being calculated exactly, and why there is a difference between e.g. a median and an average age.

6. When?

As indicated earlier, the Quick Win Project was expected to deliver immediate results. Statbel Junior was created in the time range of one year:

- December 2017: first ideas and working group being developed
- January – March 2018: in search of tools and ideas for primary schools
- April-May 2018: external demand and partnering up
- June-October 2018: design & development, with user testing in classrooms
- November-December 2018: launch of the website and communication to primary schools. The website is available in Dutch, French, German and English.

7. First reactions?

Teachers from all over our country reacted very enthusiastically on this new website. They told us it helped them in their daily work on both the mathematical concepts and the insight in their own municipality.

The website was represented in press: newspapers, radio and tv reported on this. They also interviewed children, who were very eager to use this new website and had some brilliant ideas for future work.

Feedback on process & development:

- Teachers are happy to share their knowledge
- Tools for making statistics understandable are wanted
- Creating with users was very helpful
- Internal development was time-consuming

Feedback from teachers, after launch:

- “How much do I need to pay to use this tool?”
- “Funny”
- “Graphs and pictures are well chosen”
- “Many unexpected results”
- Suggestions to add topics & figures
- Worth the visit for both the teacher, the student, parents, other youngsters & adults
- Teachers from secondary schools asked to add other ages

Reactions from children at presentation:

- “Statistics? What is that?”
- “Statistics, that is what hangs in caves, right?”
- “How can I become a statistician, and work for your office?”

8. What's next?

Statistics Belgium want to carry on communicating on statistical literacy. One of the plans regarding Statbel Junior: send out our statisticians to the class rooms that use Statbel Junior, as to work actively with the website and to give children the chance to 'meet a statistician'. In a second stage, we will maybe enlarge the figures that are represented on the website and build our relationships with the educational field.