**Statistical Analysis**

The video made during the last group project has been used to show to the children how the app was supposed to work and in which way it can be used. This experience was incredibly useful in term of feedback and this is mainly due to the data collected through the questionnaire that children filled after the video.

The aim of this chapter is to analyze the results of the questionnaire from a statistical point of view and try to get the maximum out of the data collected. In order to achieve this, we will first look at the sample from where the data were collected, then we will go through the type of data that has been collected. With this in mind, we will be on the perfect track to perform an analysis of the main ideas and tendencies through a qualitative analysis before moving on a quantitative analysis by representing the data collected in such a way that we can manipulate them with number and then construct graphs in order to read them more easily. Finally, we will finish the discussion by an enumerating and discussing the suggestions that have been made.

**The sample or where our data comes from?**

The quality of a study depends on numerous factors such as the tools used, the way the data are represented, the questions’ pertinence… However, among all these factors, a primordial one, essential for a good study, is the sample, that is to say, the source from where the data get collected. For the project, our sample was 128 children aged from 11 to 12 years old. This is undoubtedly a good sample, firstly because our application was targeting this specific population and secondly because we got 128 different opinions, and this is already a rather good basis for a project like ours. That being said, one opinion was stating that the application was more suitable for younger children, thus, it would have been interesting to have some children aged of 9 to 10 in order to see if their opinion would have drastically changed or not but in a general way, we consider our data as representative.

**The type of our data or what did we get?**

As if finding a good sample was not difficult enough, another essential factor is the quality of the questionnaire and this becomes especially true in the case of children. The questionnaire was made to give to the children the ability to develop their ideas and bring suggestions which means that all the answers gave where before all qualitative and not quantitative. In other terms, the data was made of very heterogenous answers, some very developed whereas others where binary. This brings richness to the data but also a layer of complexity in term of analysis as it becomes harder and somehow subjective to really “count” the opinions. In order to best capture the information in the data, we decided to perform a qualitative analysis first by highlighting the general tendencies of the answers before doing a more “robust” quantitative analysis. Keeping in mind the data we have, our analysis has, of course, a part of subjectivity and there would be probably some other way to analyze them.

**The general tendencies or what’s come out of this globally ?**

Before trying to put our data under the form of numbers, we can already look at them and get the general tendencies of children. When we speak about general tendency here, we are not talking about the variance, we are simply referring to main ideas/opinions that comes out of the data. We were able to identify 3 general tendencies:

* **Application useless and potentially boring in the middle/long term**: That was, unfortunately one of the main tendencies, a certain part of the opinions has pointed out that our application would be simply useless or boring relatively quickly. The problem was that in all these opinions, almost no real reason was given. One was pointing out that he prefers playing real game than educative app and another more interesting opinion admitted that even though he found the idea great, he would be bored quite quickly due to the fact that the portrait process is repetitive.
* **Application very interesting and original for the learning process and the discovery of history through it:** Fortunately, there was another main tendency, even more present than the first one that finds the application really interesting and the idea original. They point out that the learning process embedded in the app under the form of an interactive game would not only be interesting in term of knowledge but also nice for comparing the portrait with other persons. Globally, the children seem quite interested by the famous personage especially for all the history behind, some opinions stating that it would be a funny way to learn history. Two children say that they found the idea great because they would discover new centers of interest. This process of learning and discovery was one of the main aims of the app and thus, hopefully, the children seem to agree on that.
* **Partial or total misunderstanding of the application concept:** A third tendency, less present than the two others is a partial/total misunderstanding of the app, in other terms, the children did not understand the idea behind the app. Some of them were honest and write it, other, through their comments, were taking the app for something else (a scanner, a snapchat filter extension with old portrait…). And of our opinion, this tendency is even more present that we think for the simple reason that a lot of opinions were binaries, that is to say, “yes” or “no”, thus probably, a part of these children did not understand well the concepts and simply gave an answer for giving one. After having discuss between us, it is true that our video was probably kind of unclear for the children that were not in the front of the class and instead of putting a music with texts, a voice off would have probably really help them understanding the app.

**The quantitative analysis or can we make the data more readable?**

By definition, qualitative answers (our data) are more complex to analyze for the simple fact that they are not numbers (scale, ratio…) and consequently, constructing graphs and other entity making the data more readable becomes harder. Thus, we had to find a way to convert our data in a quantitative way. We decided to get two main ideas out of the data:

* Does the child like the app?
* Would he use it?

Both of these opinions are scaled from 0 to 2, 0 being absolutely not, 1 being maybe, 2 being for sure. For every opinion out of the 128, we took the freedom to grade it accordingly to this scale.

For us only, we added two more column, a binary one for the writing (if the child writes correctly or not) and one for the class the child was in (first or second class). We wanted the highlight a potential correlation between their ages or their level at school and their opinions on the app. However, we did get any really meaningful correlations.

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Now that we have quantitative data, we can build two graphs in order to make a more robust and precise analysis of our data based on the two questions above. As the scale has a largeness of 3, we choose to represent the data as histograms.

To the first question, “do the children like the app?” we got the following histogram.

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This graph shows a net tendency of children liking the app which really show that the idea is considered as interesting and original. Ignoring those that are undecided, we got a rather good percentage of 74 against 10, which means that the majority like the app and find it interesting. Now a better question is, “would the children use it?” and here apparently, we get a sharp difference which shows that the children can like an application without having in mind to use it.

*“image\_3\_data\_analysis”*

Here definitely the tendency is less good, with a small majority of children that would use it against 1/3 of children that would definitely not use it. For the first question, the ratio liked/non-liked was 7, here the ratio is only 2. Thus, even though the children seem to like the app, they are less excited by the idea to use it. As explained in some opinion, the “educative” side seems to be a barrier, indeed, children were explaining studying enough in school and preferring playing for real on their phone and relaxing than continuing learning while playing. We can then clearly see that our app is not unanimous and that even though we try to create a game behind it, the majority of children did not consider it as such.

The suggestions or can we do better?

Now come the interesting part in having made the questionnaire in such a way that children were able to develop their answers. Although, the majority did not make any comment on it, we got from some children some really good suggestions and potential improvements on the app. Here are those that were the most noteworthy:

* One child was pointing out the fact that characteristics of the person could be added in order to improve the matching process. Although it would somehow break the game aspect, it is true that a variant of our app could have been done to be an educative purpose only application used per classroom in which children were asked to choose proposed characteristics (only positive attributes) of their classmates in order for all children in the class to get associated to a given portraits based on their classmate attributes. The teacher would supervise the process and discuss the results with the children and by doing that children would get in contact with famous personages and history though an educative, in-class game.
* Another child stated that modern VIP should be added in the app as they are more interesting than the past ones. It’s a good idea as modern famous personage would probably add other dimension than history in the app, like science, biology, physics (with Higgs for example). One of its classmates was also pointing out the possibility to add fictional VIP (from films and series) but that would break the educative aspect of the application (adding Jon Snow from Game of Thrones would be not really useful in term of knowledge and history).
* Another very good opinion stated out that the presence of a search bar would be nice in order to specifically search for a given personage a bit like a Wikipedia of famous personage. That would be an interesting and optional feature for children not interested in the game aspect but more interested by the information and the personages themselves.
* *(Other suggestions?)*