



Methodological demonstration for [chapter 10 “Children's perception of their city centre : a qualitative GIS methodological investigation in a Dutch city” \(pp. 163 -169\)](#)






- AlArasi Haifa, Martinez Javier, Amer Sherif
- Methodological demonstration by André Mano

Disclaimer

This document is an addendum to the chapter mentioned above which is part of the book [GIS in Sustainable Urban Planning and Management: A Global Perspective](#). The purpose of this document is to demonstrate the application of the methods described in that chapter using **QGIS 3.x** along with the data available [here](#). This document is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](#). Different license terms may apply for the data. If that is the case, a file containing the license terms is included with the data.

How to use this document

Most of the steps described are illustrated with screenshots. Bear in mind that what the screenshot depicts and what you see in your computer might differ slightly depending on the QGIS version you are using and the way your toolbars and add-ons are arranged. Along the text you will see different icons. The key for these icons is as follows:

-  Data or external resource to download;
-  A software action you are supposed to do;
-  Information specific about QGIS.
-  Additional or complementary scientific information;
-  An important concept which you may want keep in mind;
- [1]** An operation that is referenced in the flowchart of operations.

Additionally, for the sake of readability, the following style conventions are used:

- A reference to dataset or a layer uses *this style*;
- A QGIS command, or any clickable button is noted using **this style**.
- A QGIS menu or section is highlighted using *this style*.

At the end of the document, a diagram depicting the workflow described in these pages can be seen. It is advisable to look at it first and/or refer to it as you proceed.

Outline

Taking children as active social agents whose insights are relevant when it comes to urban planning, the book chapter describes a case study in the city of Enschede (the Netherlands), where a qualitative GIS approach (qGIS) was used to enable children to register their perceptions of the urban environment. The perceptions of a group of twenty-eight children aged 10-17 years are quantified and mapped.

Getting started

📁 Download the data; the data consists of the following files:

- Enschede.qgs – a QGIS project preloaded with the layers;
- CityCenter_buildings.shp – Polygon features with the building plants;
- Positive.shp – Locations always perceived as positive;
- Negative.shp – Locations always perceived as negative;
- Mixed.shp – Locations perceived both positively and negatively;
- A folder named “photos” containing a sample of the photos taken by the children documenting observation points.

➤ Start QGIS and open Enschede.qgis (Figure 1).

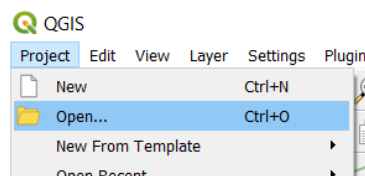


Figure 1 – opening a project

➤ From the *Layers panel*, **right-click** on a layer and access the attribute table to examine it. Repeat the procedure for the other layers (Figure 2).

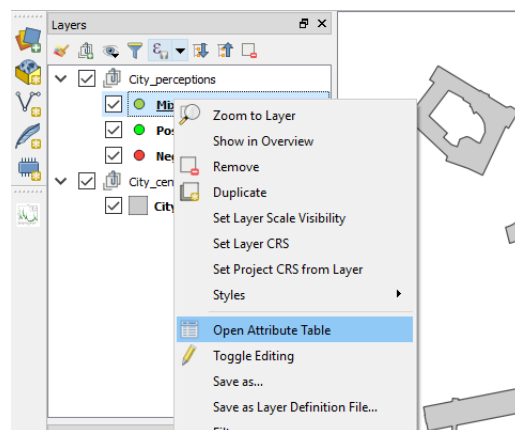


Figure 2 – assessing attribute table

Create diagrams [1]

The visualization of the data on the perception of children can be enhanced in the case of the mixed perceptions. To achieve that we will make use of diagrams to show the proportion and count of positive and negative perceptions.

- From the *Layers panel*, **right-click** on the layer *Mixed* and choose the option **Properties**. From the **Diagrams** tab choose **Pie chart** and then **Attributes**. Highlight the “Positive” and “Negative” attributes and click on **Add**. Choose the colors (we suggest green for positive and red for negative) and finish by clicking on **Apply** (Figure 3).

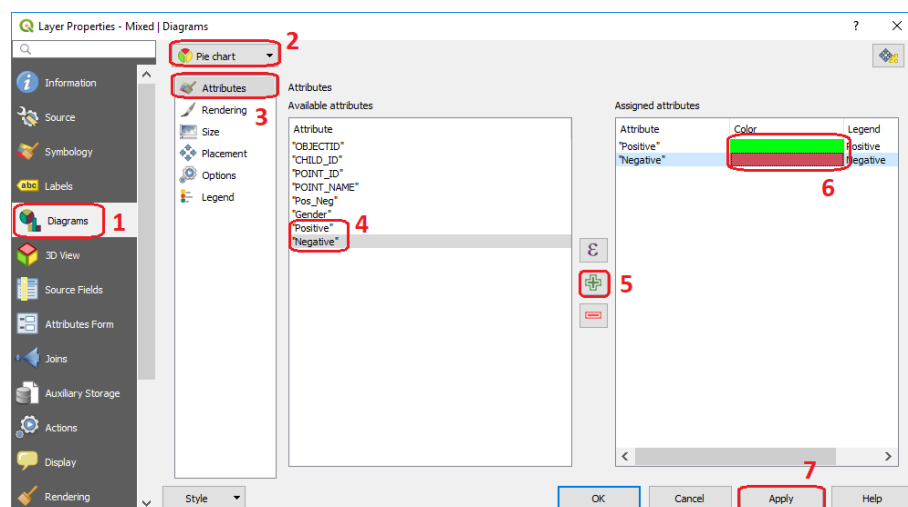


Figure 3 – Using attributes to define a Pie Chart

- Continuing on the *Layer Properties | Diagrams dialog*, click on **Placement** and mark the option **Over Point** and Click on **Apply** (Figure 4).

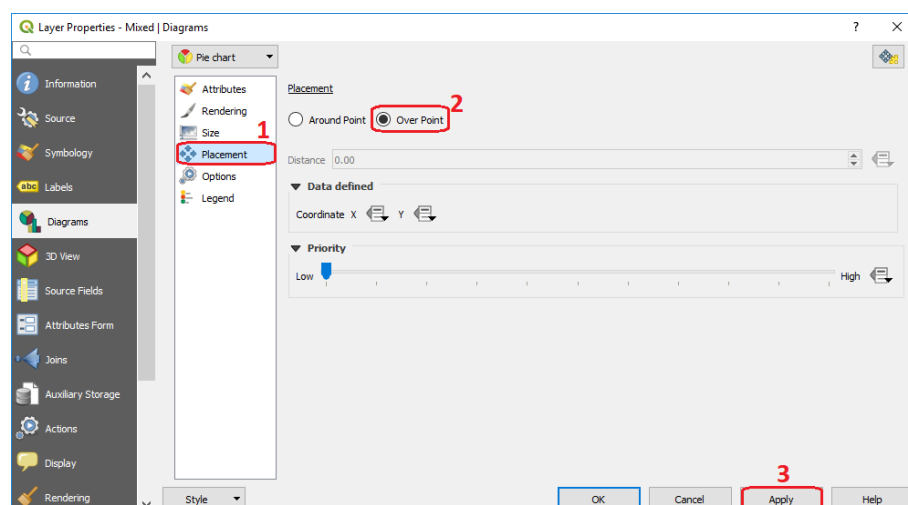


Figure 4 – Defining the placement of a Pie Chart

Q The reason why we are rendering the diagrams over the points is to make sure the diagrams will always cover the points whose data they are depicting thus ensuring that there is no double representation of the same data (i.e. as point and as diagram) which in turn results in a cleaner visualization.

☕ At this point, we have diagrams depicting the proportion between positive and negative perceptions. We will now define the size of the diagrams as a function of the total number of impressions (children's perceptions) that are behind it. The idea is that pie chart diagrams are not that revealing if we do not know the numbers behind them.

➤ From the *Layer Properties | Diagrams dialog*, click on **Size** and mark the option **Scaled size**. Click on the **Expression** button so that the *Expression Dialog* opens and enter this expression:

"Positive" + "Negative"

Hit **OK** to dismiss the *Expression Dialog* and proceed with the remaining options. Click on **Find** to determine what is the maximum value resulting from to expression we are using and indicate the size. Finally press **Apply** to finish the operation (Figure 5).

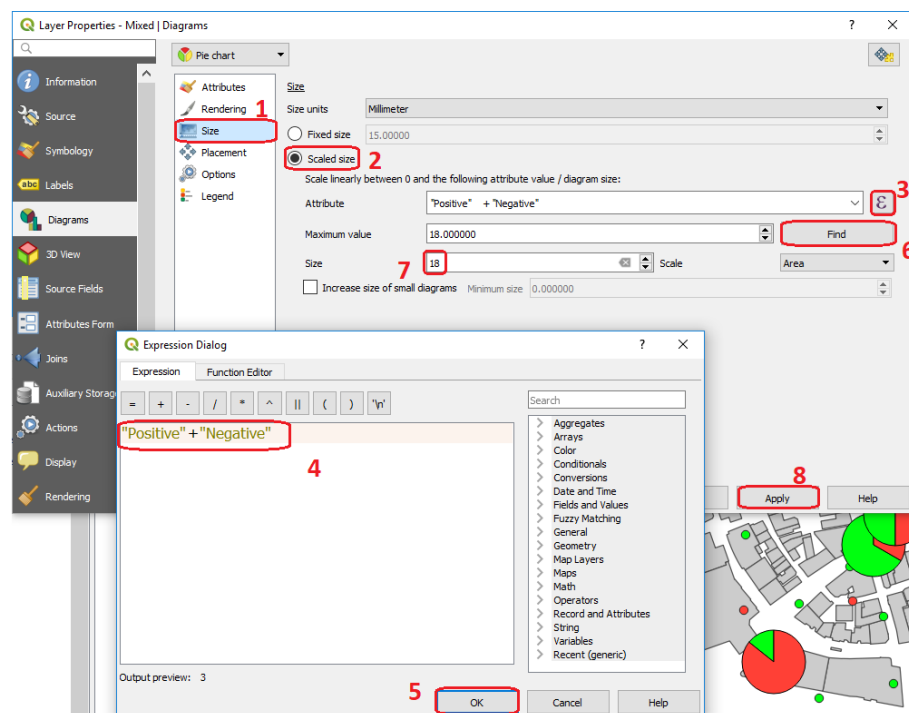


Figure 5 – Defining the size of the diagrams based on attributes/expression.

Q It is important to understand that the above results in diagrams with a maximum size of 18 because for that is the maximum value you can obtain when adding the

GIS in Sustainable Urban Planning and Management: A Global Perspective

values contained under attributes “Positive” and “Negative”. Diagrams whose count is below 18 will be sized in proportion to that size.

The last configuration step of the diagrams consists of defining how they will be depicted in the Legend window.

- From the *Layer Properties | Diagrams* dialog, click on **Legend** and mark the option **Show legend entries for diagram attributes** and click on **Legend entries for diagram size** button to open the *Data-defined Size Legend* dialog. In the *Data-defined Size Legend* dialog choose **Collapsed legend** and then on **Legend Symbol**. In the *Symbol Selector* dialog click on **Simple marker**, set the **Fill color** to transparent and dismiss the *Symbol Selector* dialog by hitting the **OK** button. Click on **OK** to dismiss the *Data-Defined Size Legend* and finally, being back on the *Layer Properties | Diagrams* dialog, click on **Apply** to conclude (Figure 6)

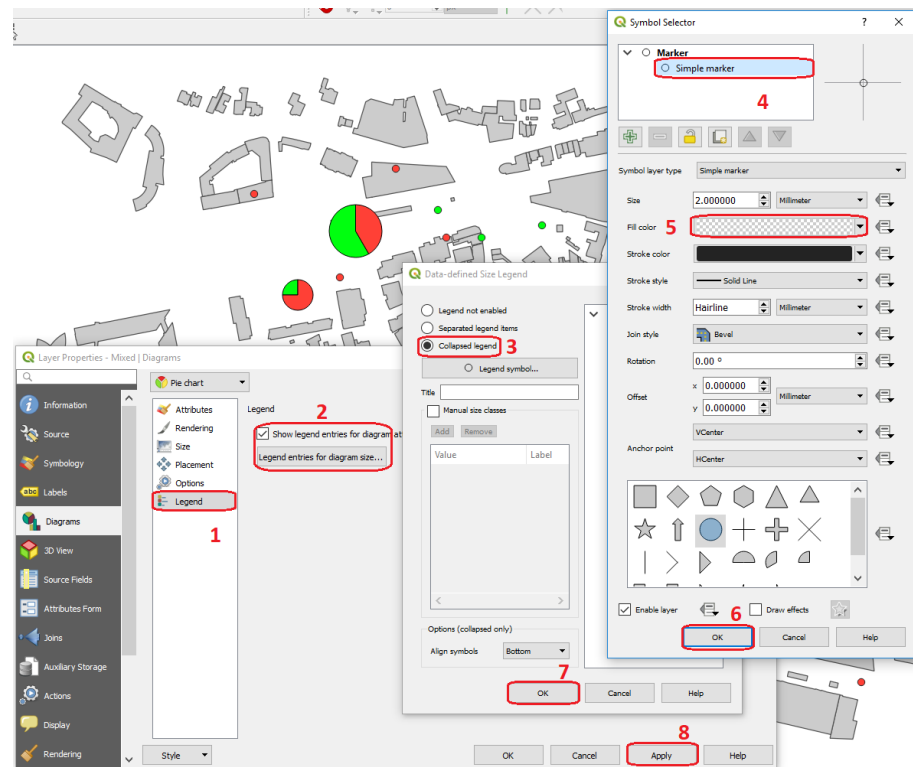


Figure 6 – Defining the size of the diagrams based on attributes/expression.

Your project and respective legend under the *Layers* panel should now look like this (Figure 7)

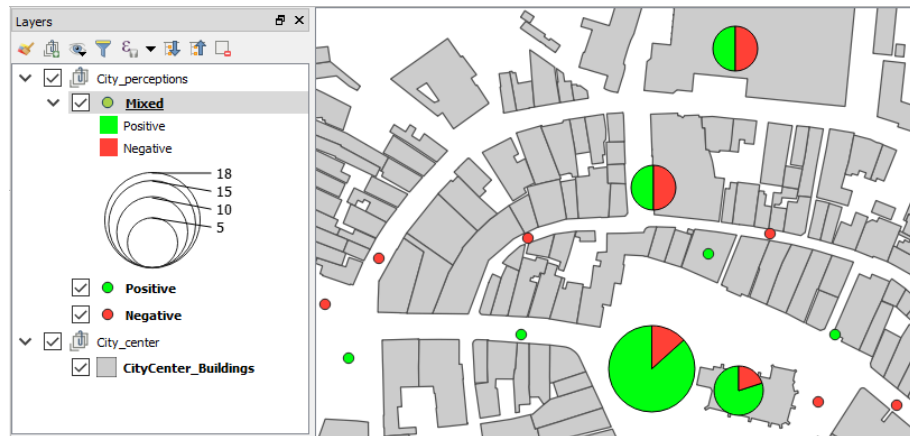


Figure 7 – Diagrams and respective legend entry under the Layers panel
Associate fieldwork photos [2]

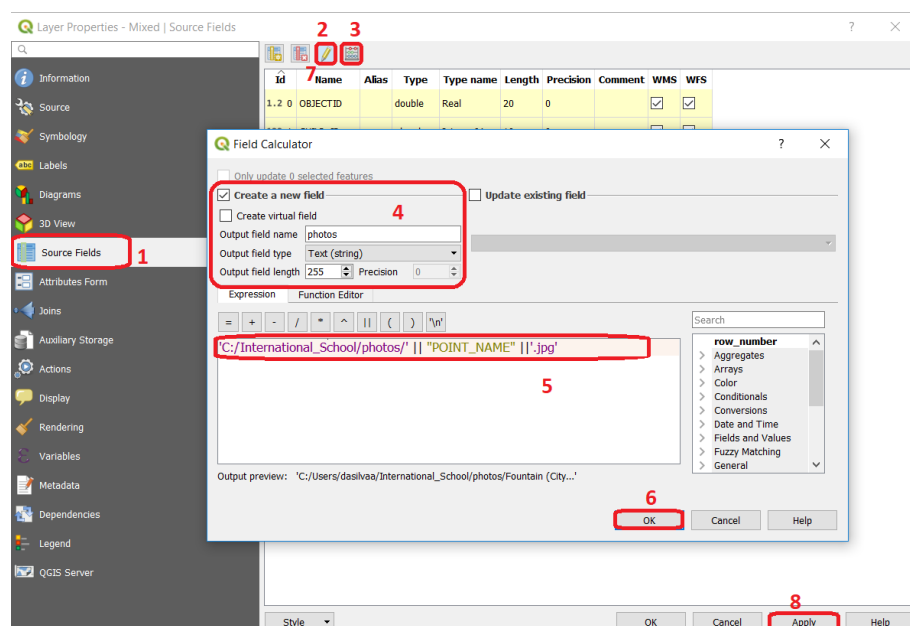
In addition to the diagrams, it is also possible to associate some of the photos taken by the children during the visit to the city centre with the point data. Doing this provides a direct document of the reality being observed by the children.

- From the *Layers panel*, **right-click** on the layer *Mixed* and choose the option **Properties**. From the **Source Fields** tab toggle **Edit mode On** and start the **Field calculator**. Mark the option **Create a new field** whose **Output field name** will be “photos”, the **Output field type** and the **Output field length** should be *Text* and 255 respectively. The column “photos” will take the result of the **expression**:

```
'C:/International_School/photos/' || "POINT_NAME" || '.jpg'
```

↓
The absolute path to the photos folder

Dismiss the *Field calculator* by pressing **Ok**, toggle **Edit mode Off** and click on **Apply** to finish the operation (Figure 8)



GIS in Sustainable Urban Planning and Management: A Global Perspective

Figure 8 – Creating and populating a new field using the Field Calculator

- Q In order for QGIS to show the photos associated with a vector feature, the path to the photos has to be stored in the attribute table of the vector layer in order to configure an action that will show a photo whenever the *Identify tool* is used over a feature (see next step). In this case the path is built from the expression:

Concatenate text

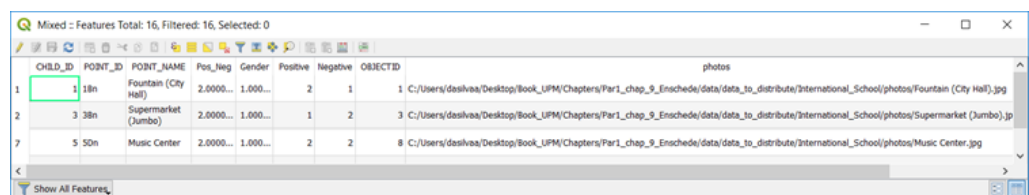
```
'C:/International_School/photos/' || "POINT_NAME" || '.jpg'
```

The absolute path to the photos folder take the text under attribute "POINT_NAME"

Which will result, for each feature, in something like:

C:/International_School/photos/Train_Station.jpg

The attribute table of layer Mixed should now look like this (Figure 9).



CHILD_ID	POINT_ID	POINT_NAME	Pos_Neg	Gender	Positive	Negative	OBJECTID	photos
1	18n	Fountain (City Hall)	2.0000...	1.000...	2	1	1	C:/Users/dasilvaa/Desktop/Book_UFM/Chapters/Par1_chap_9_Enschede/data/data_to_distribute/International_School/photos/Fountain (City Hall).jpg
2	3 38n	Supermarket (Jumbo)	2.0000...	1.000...	1	2	3	C:/Users/dasilvaa/Desktop/Book_UFM/Chapters/Par1_chap_9_Enschede/data/data_to_distribute/International_School/photos/Supermarket (Jumbo).jpg
7	5 50n	Music Center	2.0000...	1.000...	2	2	8	C:/Users/dasilvaa/Desktop/Book_UFM/Chapters/Par1_chap_9_Enschede/data/data_to_distribute/International_School/photos/Music Center.jpg

Figure 9 – Attribute table of layer Mixed

- From the *Layers panel*, **right-click** on the layer *Mixed* to access its properties and choose the option **Actions**. Click on the **Add** button to open the *Add New Action* dialog. Under **Type** choose “Open” and under **Description** enter any text you wish – we suggest “Show Image”. In the **Action text** box enter:

Open [%photos%]

Click on **Ok** to dismiss the *Add New Action* dialog and then **Apply** to implement the action (Figure 10).

GIS in Sustainable Urban Planning and Management: A Global Perspective

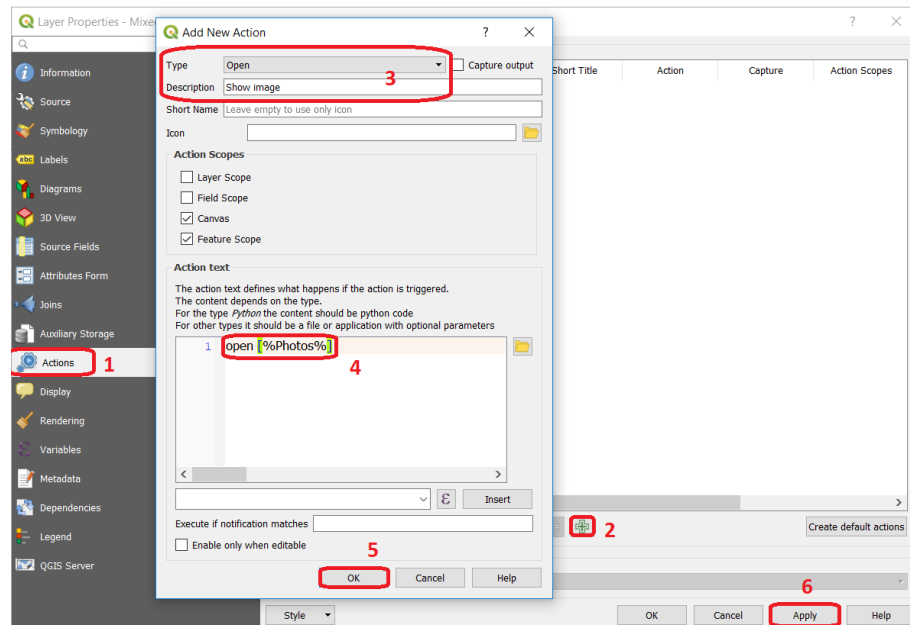


Figure 10 – Creating and populating a new field using the Field Calculator

- From the *Layers panel*, **right-click** on the layer *Mixed* and choose the option **Attributes form**. Choose the “photos” attribute, in the *Widget Type* section select **Attachment** and in the *Integrated document viewer* select **Image** and hit **Apply** to finish (Figure 11).

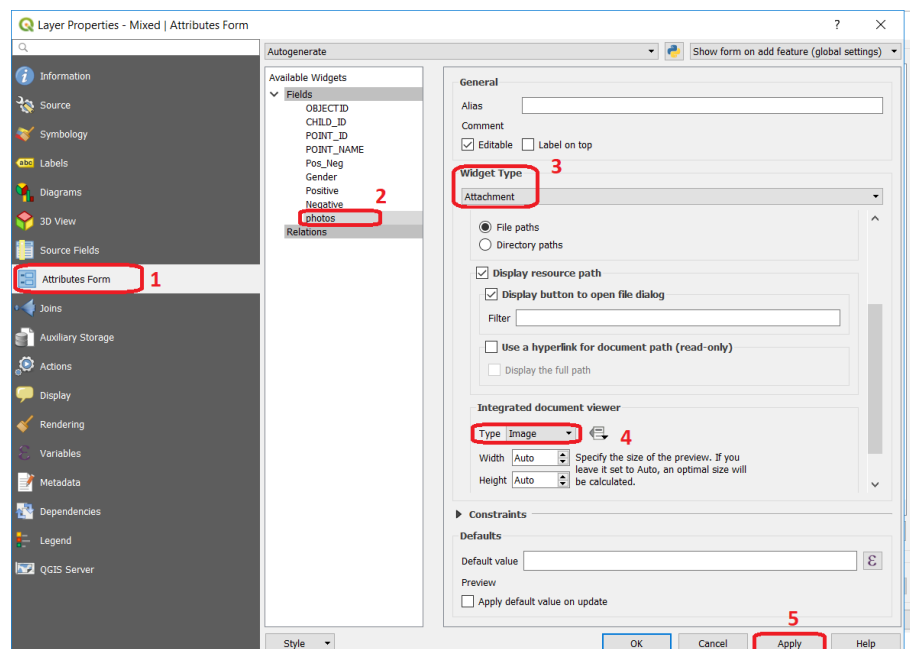


Figure 11 – Defining a widget

If you now use the identify tool over the features of layer *Mixed*, the *Feature attributes* dialog will pop up showing a photo along with the attributes of the feature that you clicked on - please note that not all features have a photo (Figure 12).

GIS in Sustainable Urban Planning and Management: A Global Perspective

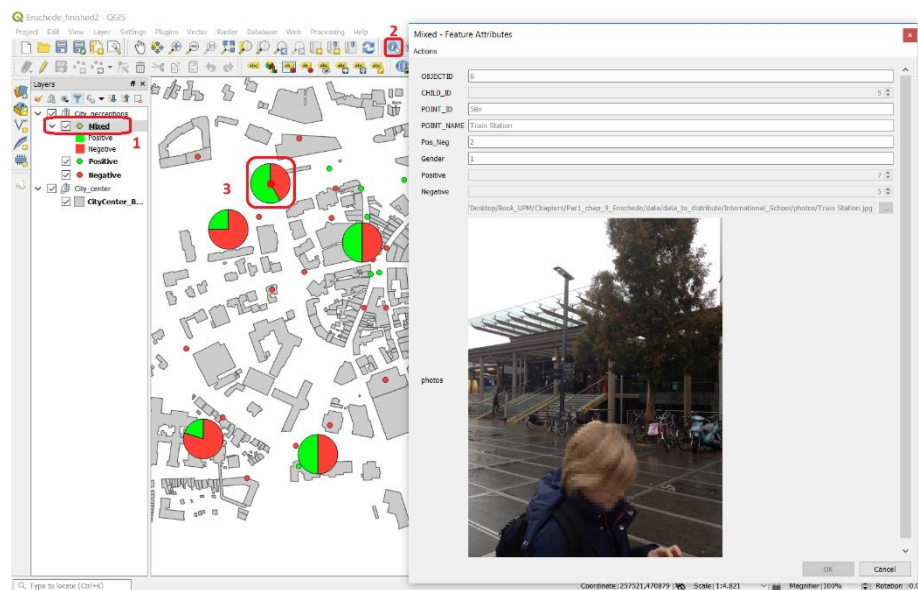


Figure 12 – Using the Identify tool

Add information to the attribute table [3]

The final step is simply a quick demonstration on how the information that we currently have in the attribute table can be enriched, for example to add a description of the photo.

- From the *Layers panel*, **right-click** on the layer *Mixed* and choose the option **Properties**. From the **Source Fields** tab toggle **Edit mode** *On* and click on the **Add field** button to create a new column. Under **Name** enter “Description”, make sure the **Type** is the “Text” and the **Length** is set to 255. Click **Ok** to dismiss the *Add Field* dialog, toggle **Edit mode** off and click **Apply** (Figure 13)

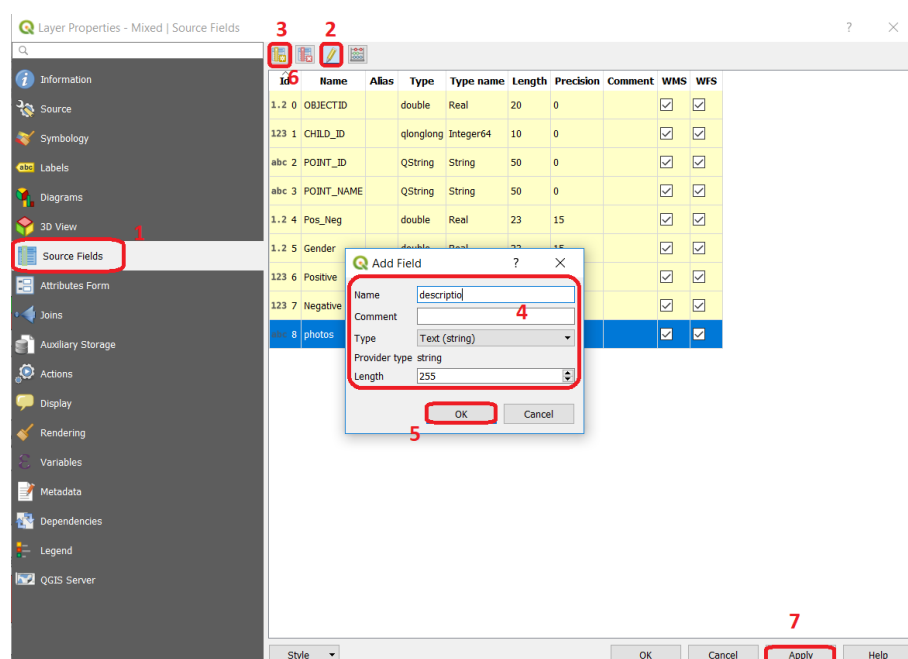


Figure 13 – Creating a new field

- From the *Layers panel*, click on the layer *Mixed* and toggle **Edit mode On**. Select the **Identify tool** and click on the “Oude Markt” point. The *Feature Attributes* dialog will pop up and under the **descriptio** attribute enter the text: “Me and my sister keep pressing the button and let the water over flows” (Boy, 12) Click **Ok** to dismiss the *Feature Attributes* dialog and toggle **Edit mode off** (Figure 14)

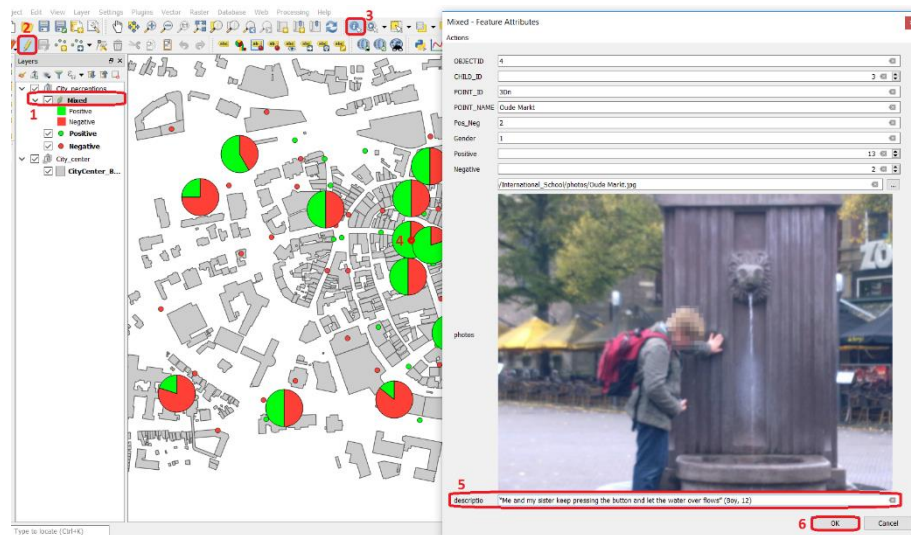


Figure 14 – Updating attribute table information.

Flowchart of operations

