**Comparison of Data Science Tools For K-12**

* [**Tools’ Capabilities**](#capabilities)
* [**Supported Interactions and Educational Features**](#interactions)
* [**Supported Accessibility Features**](#accessibility)

## Table 1: Tools’ Capabilities

| **Tools** | **Data Manipulations** | **Statistical Capabilities** | **Data Visualization** | | | **Data Availability** | | | | **Extensibility** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Tabular Display** | **Type of Graph** | **Creation Method** | **Built-in Data** | **Import** | **API** | **Export** |  |
| [Blockly](https://developers.google.com/blockly/) | Aggregating | N/A | ✕ | Line | Code | ✕ | ✓ | ✕ | ✓ | ✓ |
| [BlocklyDS](https://quant-research.group/blockly_dsv2/) | Filtering, Aggregating | Correlation, Linear Regression, Decision Trees | ✓ | Scatterplot, Bar Chart, Line Chart, Pie Chart, Box Plot, Histogram | Blocks | ✕ | ✓ | ✕ | ✓ | ✕ |
| [BlocklySQL](https://github.com/nicolaipoehner/blocklysql) | Filtering, Sorting, Aggregating | N/A | ✓ | N/A | N/A | ✓ | ✕ | ✕ | ✓ | ✓ |
| [BlockPy](https://think.cs.vt.edu/blockpy/) | Filtering, Sorting | N/A | ✕ | Scatterplot, Bar Chart, Line Chart, Box Plot, Histogram | Blocks / Code | ✓ | ✓ | ✕ | ✓ | ✕ |
| [Bridges CS](https://bridgesuncc.github.io/) | Filtering, Deleting, Sorting, Aggregating | Correlation, Linear Regression | ✕ | Line Chart | Code | ✓ | ✓ | ✕ | ✓ | ✕ |
| [CODAP](https://codap.concord.org/app/) | Filtering, Deleting, Sorting, Aggregating | Correlation, Linear Regression | ✓ | Scatterplot, Bar Chart, Histogram, Box Plot, Map | GUI | ✓ | ✓ | ✓ | ✓ | ✓ |
| [DataClassroom](https://dataclassroom.com/) | Filtering, Deleting, Sorting, Aggregating | Correlation, Linear Regression | ✓ | Scatterplot, Bar Chart, Line Chart, Pie Chart, Histogram, Box Plot | GUI | ✓ | ✓ | ✕ | ✓ | ✕ |
| [Datacommons](https://datacommons.org/) | N/A | N/A | ✓ | Scatterplot, Map | GUI | ✓ | ✕ | ✓ | ✓ | ✓ |
| [Dataland](https://learning-with-data.github.io/) | Filtering, Sorting, Aggregating | N/A | ✓ | Scatterplot | Blocks | ✕ | ✓ | ✕ | ✓ | ✕ |
| [DBSnap](https://ysilva.cs.luc.edu/dbsnap/app.html) | Filtering, Deleting, Sorting, Aggregating | N/A | ✓ | Scatterplot, Bar, Line Chart, Pie Chart, Area, Histogram, Bubble Chart | Blocks | ✓ | ✓ | ✕ | ✕ | ✕ |
| [EduBlocks](https://edublocks.org/) | Filtering, Deleting, Sorting, Aggregating | Correlation, Linear Regression | ✕ | Scatterplot, Bar, Stack Chart, Bar Chart, Line Chart, Stack Graph, Pie Chart, Radar | Blocks / Code | ✕ | ✓ | ✕ | ✕ | ✓ |
| [GapMinder](https://www.gapminder.org/tools/#$chart-type=bubbles&url=v1) | N/A | N/A | ✕ | Scatterplot | GUI | ✓ | ✕ | ✕ | ✓ | ✕ |
| [Google Colab](https://colab.research.google.com/) | Filtering, Deleting, Sorting, Aggregating | Correlation, Linear Regression | ✓ | Line Chart, Bar Chart, Histogram, Scatterplot, Stack Chart, Pie Chart, 3D Graphs | Code | ✕ | ✓ | ✓ | ✓ | ✕ |
| [GP](https://gpblocks.org/) | Filtering, Deleting, Sorting | N/A | ✕ | Scatterplot | Blocks | ✕ | ✓ | ✕ | ✓ | ✕ |
| [iNZight](https://inzight.nz/) | Filtering, Sorting | Correlation, Linear Regression | ✓ | Bar, Dotplot, Box Plot, Grid Density, Hexbin Plot | GUI | ✓ | ✓ | ✓ | ✓ | ✕ |
| [iSnap](https://isnap.csc.ncsu.edu/public/isnap/) | Filtering, Deleting | N/A | ✕ | Scatterplot, Line Chart | Blocks | ✕ | ✓ | ✕ | ✓ | ✕ |
| [JASP](https://jasp-stats.org/) | Filtering, Deleting, Sorting, Aggregating | Correlation, Linear Regression, Structural Equation Modeling (SEM), Machine Learning | ✓ | Scatterplot, Bar, Line Chart, Histogram, Box Plot,  Pie Chart | GUI | ✓ | ✓ | ✕ | ✓ | ✕ |
| [Jupyter Notebook](https://jupyter.org/) | Filtering, Deleting, Sorting, Aggregating | Correlation, Linear Regression | ✓ | Line, Scatterplot, Bar, Histogram, Box Plot, Violin, Pie Chart, etc. | Code | ✕ | ✓ | ✓ | ✓ | ✓ |
| Kaggle | Filtering, Deleting, Sorting, Aggregating | Correlation, Linear Regression | ✓ | Scatterplot, Bar, Line Chart, Histogram, Box Plot, Area Plot, Pie Chart | Code | ✓ | ✓ | ✕ | ✓ | ✕ |
| [MakeCode Data Science Editor](https://microsoft.github.io/jacdac-docs/editors/data/) | Filtering, Deleting, Sorting, Aggregating | Correlation, Linear Regression | ✓ | Scatterplot, Bar, Line Chart, Histogram, Box Plot, Heatmap | Blocks | ✓ | ✓ | ✕ | ✓ | ✓ |
| [mBlock](https://mblock.makeblock.com/en-us/) | Filtering | N/A | ✓ | Scatterplot, Bar, Line Chart, Pie Chart | Blocks / Code | ✓ | ✓ | ✕ | ✓ | ✕ |
| [NetsBlox](https://netsblox.org/) | N/A | N/A | ✕ | Scatterplot, Line Chart, Histogram, Map, Bar Chart | Blocks | ✕ | ✓ | ✓ | ✕ | ✕ |
| PlayData | Filtering, Deleting, Sorting, Aggregating | N/A | ✓ | Scatterplot | Blocks | ✕ | ✓ | ✓ | ✕ | ✕ |
| [Pyret](https://code.pyret.org/editor) | filter, sort | Correlation, Linear Regression | ✓ | Scatterplot, Bar, Line Chart, Pie Chart, Histogram | Code | ✕ | ✓ | ✕ | ✓ | ✕ |
| [Quorum](https://quorumlanguage.com/) | Filtering, Deleting, Sorting, Aggregating | Correlation, Linear Regression | ✕ | Scatterplot, Bar, Pie Chart, Line Chart, Histogram, Box Plot, Violin Plots | Code | ✕ | ✓ | ✕ | ✓ | ✓ |
| [Scratch Data Blocks](https://mitmedialabscratch.fandom.com/wiki/Data_Blocks#:~:text=Data%20blocks%20stored%20important%20material,blocks%2C%20variables%2C%20and%20lists.) | N/A | N/A | ✓ | Scatterplot, Line Chart | Blocks | ✕ | ✓ | ✕ | ✓ | ✓ |
| [Snap!](https://snap.berkeley.edu/) | Filtering, Deleting | N/A | ✓ | Scatterplot, Line Chart | Blocks | ✕ | ✓ | ✕ | ✓ | ✓ |
| [Tableau](https://www.tableau.com/) | Filtering, Deleting, Sorting, Aggregating | Correlation, Linear Regression, Complex Models | ✓ | Scatterplot, Bar Chart, Line Chart, Pie Chart Histogram, Box Plot | GUI | ✓ | ✓ | ✕ | ✓ | ✓ |
| [TinkerPlots](http://www.tinkerplots.com/) | filter, sort, aggregate, delete | Correlation, Linear Regression | ✓ | Scatterplot, Pie Chart, Histogram | GUI | ✓ | ✓ | ✕ | ✓ | ✕ |
| [Tuva](https://tuvalabs.com/) | Filtering, Deleting | Correlation, Linear Regression | ✓ | Scatterplot, Bar, Line Chart, Pie Chart, Histogram, Box Plot, Map | GUI | ✓ | ✓ | ✕ | ✓ | ✕ |

## Table 2: Supported Interactions and Educational Features

| **Tools** | **Runtime Environment** | **Programming Modality** | **Scripting Language** | **Instructional Materials** | **Classroom Assignments** |
| --- | --- | --- | --- | --- | --- |
| [Blockly](https://developers.google.com/blockly/) | Browser | Read-Only One-Way  Transition | Python, Javascript, PHP, Lua, DART | ✕ | ✕ |
| [Blockly-DS](https://quant-research.group/blockly_dsv2/) | Browser | Block-based | N/A | ✕ | ✕ |
| [BlocklySQL](https://github.com/nicolaipoehner/blocklysql) | Browser | Dual Modality | SQL | ✕ | ✕ |
| [BlockPy](https://think.cs.vt.edu/blockpy/) | Browser | Dual Modality | Python | ✓ | ✓ |
| [Bridges CS](https://bridgesuncc.github.io/) | Win/Mac | Text-Based | C++, Java, Python | ✓ | ✕ |
| [CODAP](https://codap.concord.org/app/) | Browser | GUI | N/A | ✓ | ✓ |
| [DataClassroom](https://dataclassroom.com/) | Browser | GUI / Text-Based | R | ✓ | ✓ |
| [Datacommons](https://datacommons.org/) | Browser | GUI | N/A | ✓ | ✕ |
| [Dataland](https://learning-with-data.github.io/) | Browser | Block-based | N/A | ✕ | ✕ |
| [DBSnap](https://ysilva.cs.luc.edu/dbsnap/app.html) | Browser | Read-Only One-Way  Transition | SQL | ✕ | ✕ |
| [EduBlocks](https://edublocks.org/) | Browser | Editable One-Way  Transition | Python | ✓ | ✓ |
| [GapMinder](https://www.gapminder.org/tools/#$chart-type=bubbles&url=v1) | Browser/Win/Mac | GUI | N/A | ✓ | ✕ |
| [Google Colab](https://colab.research.google.com/) | Browser | Text-Based | Python, R | ✕ | ✕ |
| [GP](https://gpblocks.org/) | Browser/Win/Mac | Block-based | N/A | ✓ | ✕ |
| [iNZight](https://inzight.nz/) | Browser/Win/Mac/Linux | GUI | N/A | ✓ | ✕ |
| [iSnap](https://isnap.csc.ncsu.edu/public/isnap/) | Browser | Block-based | N/A | ✕ | ✕ |
| [Jupyter Notebook](https://jupyter.org/) | Browser/Win/Mac/Linux | Text-Based | Python | ✕ | ✕ |
| Kaggle | Browser | Text-Based | R, Python | ✓ | ✓ |
| [MakeCode Data Science Editor](https://microsoft.github.io/jacdac-docs/editors/data/) | Browser | Block-based | N/A | ✕ | ✕ |
| [mBlock](https://mblock.makeblock.com/en-us/) | Browser/Win/Mac/iOS/Android | Read-Only One-Way  Transition | Python | ✓ | ✓ |
| [NetsBlox](https://netsblox.org/) | Browser | Block-based | N/A | ✓ | ✕ |
| [Playdata](https://playdatalab.github.io/editor/) | Browser | Block-based | N/A | ✓ | ✕ |
| [Pyret](https://code.pyret.org/editor) | Browser | Text-Based | Pyret | ✕ | ✕ |
| [Quorum](https://quorumlanguage.com/) | Browser/Win/Mac | Text-Based | Quorum, MySQL | ✓ | ✕ |
| [Scratch Data Blocks](https://mitmedialabscratch.fandom.com/wiki/Data_Blocks#:~:text=Data%20blocks%20stored%20important%20material,blocks%2C%20variables%2C%20and%20lists.) | Browser | Block-based | N/A | ✓ | ✕ |
| [Snap!](https://snap.berkeley.edu/) | Browser | Block-based | N/A | ✓ | ✕ |
| [Tableau](https://www.tableau.com/) | Browser/Win/Mac | GUI | N/A | ✓ | ✕ |
| [TinkerPlots](http://www.tinkerplots.com/) | Win/Mac | GUI | N/A | ✓ | ✕ |
| [Tuva](https://tuvalabs.com/) | Browser | GUI | N/A | ✓ | ✓ |

## Table 3: Supported Accessibility Features

| **Tools** | **Screen Reader Support** | **Color Palette** | **Simplified Representations** | **Customized Interactions** | **Font Size Modification** |
| --- | --- | --- | --- | --- | --- |
| [Blockly](https://developers.google.com/blockly/) | ✕ | N/A | N/A | ✕ | ✕ |
| [Blockly-DS](https://quant-research.group/blockly_dsv2/) | ✕ | ✓ | ✕ | ✕ | ✕ |
| [BlocklySQL](https://github.com/nicolaipoehner/blocklysql) | ✕ | N/A | N/A | ✕ | ✕ |
| [BlockPy](https://think.cs.vt.edu/blockpy/) | ✕ | ✓ | ✕ | ✕ | ✕ |
| [Bridges CS](https://bridgesuncc.github.io/) | ✕ | ✓ | ✓ | ✕ | ✕ |
| [CODAP](https://codap.concord.org/app/) | ✕ | ✓ | ✕ | ✕ | ✕ |
| [DataClassroom](https://dataclassroom.com/) | ✓ | ✓ | ✕ | ✕ | ✓ |
| [Datacommons](https://datacommons.org/) | ✕ | ✓ | ✕ | ✕ | ✕ |
| [Dataland](https://learning-with-data.github.io/) | ✕ | ✓ | ✕ | ✕ | ✕ |
| [DBSnap](https://ysilva.cs.luc.edu/dbsnap/app.html) | ✕ | N/A | N/A | ✕ | ✕ |
| [EduBlocks](https://edublocks.org/) | ✕ | ✓ | ✕ | ✕ | ✓ |
| [GapMinder](https://www.gapminder.org/tools/#$chart-type=bubbles&url=v1) | ✕ | ✓ | ✓ | ✕ | ✓ |
| [Google Colab](https://colab.research.google.com/) | ✕ | ✓ | ✕ | ✕ | ✓ |
| [GP](https://gpblocks.org/) | ✕ | N/A | N/A | ✕ | ✕ |
| [iNZight](https://inzight.nz/) | ✕ | ✓ | ✕ | ✕ | ✓ |
| [iSnap](https://isnap.csc.ncsu.edu/public/isnap/) | ✕ | N/A | N/A | ✕ | ✕ |
| [JASP](https://jasp-stats.org/) | ✕ | ✓ | ✕ | ✕ | ✓ |
| [Jupyter Notebook](https://jupyter.org/) | ✕ | ✓ | ✕ | ✕ | ✓ |
| Kaggle | ✕ | ✓ | ✕ | ✕ | ✕ |
| [MakeCode Data Science Editor](https://microsoft.github.io/jacdac-docs/editors/data/) | ✕ | ✓ | ✕ | ✕ | ✕ |
| [mBlock](https://mblock.makeblock.com/en-us/) | ✕ | N/A | N/A | ✕ | ✕ |
| [NetsBlox](https://netsblox.org/) | ✕ | ✓ | ✕ | ✕ | ✕ |
| [Playdata](https://playdatalab.github.io/editor/) | ✕ | ✓ | ✕ | ✕ | ✕ |
| [Pyret](https://code.pyret.org/editor) | ✕ | ✓ | ✕ | ✕ | ✓ |
| [Quorum](https://quorumlanguage.com/) | ✕ | ✓ | ✕ | ✕ | ✕ |
| [Scratch Data Blocks](https://mitmedialabscratch.fandom.com/wiki/Data_Blocks#:~:text=Data%20blocks%20stored%20important%20material,blocks%2C%20variables%2C%20and%20lists.) | ✕ | N/A | N/A | ✕ | ✓ |
| [Snap!](https://snap.berkeley.edu/) | ✕ | ✓ | ✕ | ✕ | ✕ |
| [Tableau](https://www.tableau.com/) | ✕ | ✓ | ✕ | ✕ | ✕ |
| [TinkerPlots](http://www.tinkerplots.com/) | ✕ | ✓ | ✕ | ✕ | ✕ |
| [Tuva](https://tuvalabs.com/) | ✓ | ✓ | ✕ | ✕ | ✓ |