**Poster Type: Idea**

# Google Maps for Everybody

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## Introduction

Geographic information systems (GIS) have long been a valuable tool to share data with a spatial component in a graphical way. GIS has proven to be a valuable tool to promote spatial understanding of data (National Research Council, 2005). Patterson notes that lack of time is a common barrier to using GIS in schools (2007). Limited access to appropriate technology (hardware and software) may also inhibit GIS use (Baker, 2004; Lloyd, 2001). GIS has been recognized as a tool to increase spatial awareness and literacy in higher education (Sinton D., 2009; Tsou, 2010; Sinton D. L., 2007). What has changed is the accessibility to GIS for people with limited GIS skills and software allowing innovative uses of GIS for teaching.

Google Maps (http://maps.google.com) as a product has matured into a simple GIS that allows sharing of spatial data with others online. Google Maps allows creation of simple layers that can be classified (grouped by attributes). Google Maps is a simple way to increase student spatial awareness both by supplying data in this format and by incorporating Google Maps into assignments. Google Maps can be used to share institutional data with faculty and administrators. In the classroom Google Maps can provide an introduction to GIS. Simple field maps can be created using the polygon tool over the imagery provided by Google Maps and acreage will be calculated. Discrete locations (points) can also be created. Data collected in the field with simple GPS units or cell phones can be imported along with data collected. Sharing is as easy as sending a link or printing a map.

Geo-coding is the process of converting data into coordinates that can be plotted on a map. This process can be cumbersome for users not trained in GIS. Google Maps makes this almost automatic. For program data there are many sources with a spatial component. These data are easy to share with colleagues. Some examples are locations of student teachers, secondary agriculture programs, and where students come from. All of these data have addresses which Google Maps will geo-code.

## How It Works

Data is prepared in Excel. Spatial data may be as detailed as street address/city/state/zip code or simply zip code. Spatial data may also be latitude and longitude if data is collected in the field. Data is arranged in columns with a heading. Additional data may be added to provide information in the map or to classify the data. For example, adding chapter name will allow the map to display this. Adding a major code would allow classification by major. Generally you would not include student names (a privacy issue).

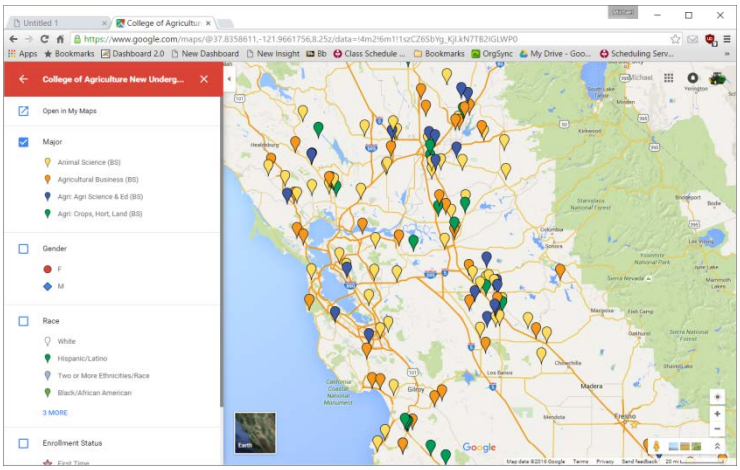
Once data is saved to Excel creating the map is simple. Open Google Maps, login (free), create a new map, and import your data. You will be prompted for what field (columns) contain the location data and what field to use as a label. Google does the rest and creates the map with "pins" at each location. You can customize the background, pins, and classify the data. Maps can be shared to specific people (via Google Drive permissions). Other sharing options include "only users with the link" or "public" which will show up in internet searches. Sensitive data should not be published. Maps can also be imbedded in other web sites (the code is provided).

Google Maps has been successfully integrated into a number of courses ranging from agricultural mechanics to agricultural education. Some examples include mapping GPS data in a land measurement lab, mapping field measurements in a range science class, plotting GPS livestock collar data, and showing secondary agriculture programs by type. In addition Google Maps have been used to share changes of student demographics with faculty. The ease of use is a key feature and ability to publish online makes sharing simple. Any tabular data that has the potential to be geo-coded can be used.

Google Maps may be saved as a PDF (useful for assignments or reports) or exported as KML (keyhole format) files for use in other mapping software. Maps created in Google Maps can be displayed in Google Earth (free application) which has more features.

## Results to Date

Google Maps have been implemented in several different distinct applications:




- Mapping data for consumption of faculty peers. For example student origins classified by major, or status (FTF or Transfer) or schools participating in CDEs.
- Using maps to increase student awareness. For example maps of secondary programs classified by region (district) or pathways taught. Map links are embedded in the course learning management system.
- Student assignments such as mapping the distribution of tomato processing plants, mapping field data, creating simple farm maps (adding polygons for fields), and determining area of a landscape for irrigation audits.

Google Maps is not a substitute for a real GIS program (such as ESRI's ArcGIS) as it is limited. However it is easy to learn and use. The simplicity and ability to publish online makes it accessible to users with no GIS experience. Sample maps can be viewed at: http://www.agedweb.org/googlemaps.

## Future Plans

A quick guide is in development for university faculty and secondary agricultural teachers. It will include sample types of data and discuss how to prepare data. Sample lessons are also being created for secondary agriculture programs.

## Costs

Google Maps is a free product. Minimal investment in time is required to learn this product. Most data sets are existing or are developed by students as part of a class.

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