

City Tutor App

Anand Geetey

JJ Pionke

Ken Wu

When people are moving to a new place, especially a city, they feel intimidated, lonely, and isolated. They are eager to get familiar with the city in a short time, and be a part of the city community. They want to learn their surroundings and engage the community but often have trouble doing so for many reasons including not knowing where to start. In order to help these people to learn the city quickly, our group designed the app – CityTutor, to help them learn their new surroundings and connect to the people that live in the new city that they now inhabit.

Goals of Software

CityTutor helps the learner learn a new city, the local language, and helps them make connections with other people in the community that they are now living in. Through the creation of paths, learners are able to learn the local area geographically, historically, and culturally through actual mapping via Googlemaps, a Wikipedia-esque API embedding for the historical aspect, and peer support via community outreach/creation through reviews and path teams. Ultimately, the app is about learning a their new home community geographically, historically, and culturally, including basic language skills. This learning is accomplished through a variety of scaffolding, badging, and community support that differentiates it from other apps that aim only to get you from Point A to Point B.

Target Audience

Our target learners can be segmented into two groups. One group is people who move to a new city for a job or to study. The other one is tourists, especially those that will be in the city on an extended stay. This app is aimed at people ages teen and up. Specifically, this app is for anyone who has moved to a new city and wants to explore their new home city in an exciting and fun way that involves connecting to the community of people who are in a similar situation as well as people who have lived in the community long term and want to welcome newcomers.

People who are not familiar with the local language and/or people who want to learn the ways of the local community better will also find this app useful.

Design Process

After brainstorming an initial concept, we started building on ideas of what effected us most deeply when we have been in situations where we were strangers in a strange land without a full set of language skills to help us learn our new homes. From there, we developed a set of questions and did potential learner interviews to determine exactly what people wanted or were looking for in terms of support as they relocate to a new city. From there, we discussed apps that already exist that fulfill some of the skills or requirements that we were thinking about such as mapping software, badging, and historical/cultural information. We did a more formal comparative analysis of apps that related to travel like the Lonely Planet app. At that point, we started discussing various educational theories and how we could utilize them to make the app a better learning tool, but also fun and interesting. In terms of educational theories, we quickly zeroed in on motivational issues, behaviorism, and constructivism. We then drew up a series of wireframes to help us figure out what the flow of the app should be and used storyboards to help flesh out the wireframes more fully. We drew more detailed lo-fi mockups that evolved into

digitized screens as well as an interaction map to help us better visualize what the final product would look like. The next stage after this would be to actually build a working model which is something that we did not do as it was beyond the scope of this explorative developmental phase.

Design Rationale

As a group, we embarked on this project because we have all had the experience of moving to a new city in a different country. We also have all had the experience of moving to cities where our native language is not spoken fluently and we had to learn the local vernacular to some degree to better communicate our needs and wants to the people around us.

We decided that an app that would allow people to either follow a preset path or to make their own, if a preset path doesn't exist for their city, would be the best type of app to learn their new home communities. The creation of paths then is about scaffolding learning, as such, scaffolding is like how "...training wheels allow young bike riders to practice cycling when they would fall without support....computer scaffolding enables learners to do more advanced activities and to engage in more advanced thinking and problem solving than they could without such help" (Bransford 2000). The learners control the level of scaffolding that they get, especially in terms of language. In "challenge" mode, parts of the path that they are following is hidden and the challenge is to continue to find their way to where they want to go without so much structural support. Challenge mode then allows learners to test how well they have learned the geography and the area around them. The settings could certainly be modified to allow for different levels of challenge and a host of other variables. The idea is to challenge learners, not frustrate them so if they become lost or need to see the whole path, the entire thing can easily be brought back. Though learners can be intrinsically motivated because of needs like purchasing food, seeking entertainment, or exercising in various places, to explore their new communities

more deeply, and to make it more fun, some extrinsic motivation in the form of badges is a part of the app.

The use of badges allows for some extrinsic rewards that can either be set to private or can be pushed out onto social media or even a badging system like Mozilla Openbadges. The badging in the app relies on behaviorist educational theory, or the idea that "...learning as a process of forming connections between stimuli and responses" so that learners will be guided through a process of learning (Bransford 2000). James Paul Gee discusses gaming and learning in his article, "Learning by Design: Good Video Games as Learning Machines". Our app aims to follow the four principles of Empowered Learners that he lists: Co-Design, Customize, Identity, Manipulation and Distributed Knowledge. Whereas co-designing means that the learners are creating something (paths), customize refers to being able to change and adapt aspects of the app to best fit the learner's learning style (adjustable scaffolding), identity is where the learner becomes invested and sees the app as part of their identity (community, reviewing of paths and places, badging teams), and finally manipulation and distributed knowledge allows for the learner to use and adapt the app in a way that helps them learn the city and the language spoken there more efficiently (the whole app). By implementing these four ideas, we can get greater learner buy-in and achievement, especially in terms of the badging aspects for both individual and group learning.

"Learners have come to be viewed as active constructors of knowledge, no longer being seen as passive receivers of transmitted information. We also now recognize that constructing understanding is not an isolated activity but occurs within the framework of a learning community" (Metcalf 2004). It's not just that learners follow paths or check into places like they would if they use Googlemaps or Foursquare, they have to create their own paths and challenges.

This is, in part, what makes CityTutor different than other apps available in so far that part of the fun and learning that takes places through the app is creating new paths, groups, reviews, and so forth. Though the badging aspect can be completed on one's own, there are specialty badges for team efforts as well as for interacting with other members of the CityTutor community through reviewing of paths and places, sharing of paths, and forming of teams to make or follow paths. This will in turn create a more robust and comprehensive learning experience. This gives the learner a chance to not only reflect as they leave reviews (public or private) of paths and places, but also to interact with the community that they are now a part of both as a new denizen of their city but also of the CityTutor community in that city.

A design rationale that was important to all of us was the inclusion of language scaffolding. CityTutor is not meant to help the learner be a language master, but it is meant to help them become conversant in the basics of the language of their new city, especially to help them get around and get the things that they need. Through scaffolding that the learner controls, they can set the language assistance at a level that is appropriate to them. The language level is automatically set to medium support when the app is first started, unless the learner changes it, in large part as a way for learners to gauge where they are in terms of language. Starting the language out on easy may give learners the impression that their skills are better than they actually are and likewise, starting out on expert might dishearten learners. By starting on medium, learners can get a feel for where they are and adjust the app language settings accordingly.

Finally, through a related website, learners can track their statistics including things like how many paths have they followed or made, how many times have they been someplace, what categories of places do they visit the most often (restaurants, museums, parks, etc), and other

types of personal data that learners might enjoy knowing. The data could then be used by them to either adjust their explorations or allow the app to help them adjust, especially in challenge mode when parts of the path disappear, as they try to get from one destination to the next. Likewise, the app will track when the learner raises or lowers the language setting so that learners can have a better idea of where their language strengths and weaknesses actually are.

Learner Needs

When learners move to a new city, they will experience culture shock and will certainly be overwhelmed by the new environment. Even the most prepared learner will have difficulty with finding places and adapting to the new city. Besides becoming more comfortable in their new geographical surroundings, learners also need to have confidence to go out and meet people and to explore. While the CityTutor app can't give a learner confidence per se, it can be used as a tool to help them build their confidence in their surroundings as they learn the city and the community. The app also helps learners meet other people, some of whom are local and interested in meeting new people and some of whom have a shared experience in moving to a new city. The app will assist learners in practicing their language skills to help them get around more easily.

Learning Goals

1. Language Improvement

People might have little to no language skills in the places that they have moved to or their language skills are only from courses and they need more assistance with practice and practical application. The app will aim to provide learner controlled scaffolding for language assistance. There will be various levels of scaffolding so that more advanced speakers don't get bogged down with language lessons that are too easy for them. In this way, language

acquisition will take a constructivism approach through an exploration of language via scaffolding that the learner controls.

Scaffolding will have five levels of difficulty. The “Easy” setting will have, for example, English and French words together along with a pronunciation guide and grammar assist so that learners can become familiar with the structure of the language. The Medium level removes the pronunciation and grammar assist, though they can be easily brought back if the learner gets stuck. The Hard level has everything in the language of where you are, though again, the learner can bring back aspects of easier levels if they need to. The app is initially set to Medium to allow the learner to gauge where they are in terms of language learning and adjust as they need to.

In terms of constructivism then, the learners use the language scaffolding to not only practice language skills but to actively build vocabulary through the places that they explore by having words and phrases available to them that are place specific (food and drink words for restaurants for instance).

2. Exploration of the Local Environment

Learning a new city is more than just finding where to get groceries, it’s also understanding the history and quiriness of the place. Currently existing applications work very well at helping people find the things that they are looking for so the aim of CityTutor is to help people build confidence and explore the places that they live in. Part of the app revolves around social connectivity in part to help people find the things that they are looking for but also to have some fun and to develop a learning community that the learner can rely on..

Learners can check in, take pictures, and write reviews (or do podcast/vodcast reviews) when they visit a new place. They can generate and save the path that they take whenever they

want, and then the path will be posted into their friends' news feed as well as the system database so that others may follow it and explore. By doing so, learners can create paths that help them find what they need but also explore the city that they live in. For instance, a learner might make a themed path to explore unique local trees. The learner could then annotate, or leave notes on the path directions, about why the trees are unique, other things to see close by, and what the path means to them. Sharing the path with others via social media and depositing it into the system database would allow others to comment on the path but also to follow it. In this way, exploration is scaffolded in a fun and interesting way.

In terms then of extrinsic/intrinsic motivation, the app aims to give learners a boost by awarding badges but also by encouraging learners to leave reviews and ideas on each other's paths. Though there has been conflicting research, for the most part, various research studies largely agree that, "...there is substantial support for the general hypothesis that expected tangible rewards made contingent upon doing, completing, or excelling at an interesting activity undermine intrinsic motivation for that activity" (Deci 1999). If extrinsic motivators like badges don't lead to intrinsic motivation, then why including badges at all? The answer largely lies in the idea that learners are different and their goals as learners vary. Mihaly Csikszentmihalyi and Kim Hermanson state, "Research describes students who are intrinsically motivated as having 'learning goals', while students who are extrinsically motivated have 'performance goals'" (1995). In light of this then, having a motivator, like badging, assists learners in their goals, whatever they might be, and in whatever way they learn.

3. Inclusion into the Local Community

A common, reliable, and effective way to better learn the community is to ask people who are or have been in the same situation as you. People who come to a new city, whether or

not they are travelling in the short term or are there for a long-time residence, are all eager to meet and know people who are similar to them. Connecting with people similar to one's self might be the most effective way to learn the city or how to become a part of the community. CityTutor encourages learners to form groups with the same interests, or native language, or similar experiences, etc. Further, by connecting to people that live locally, and have for quite some time, newcomers can more easily integrate into the community.

The social media aspect of CityTutor is designed for learners to post messages about where they go, but we would also encourage people and businesses to post their events. For example, if a local coffee shop hosts a games night or the local library has video game tournaments every Saturday, putting this information in CityTutor would help newcomers not only find this information more easily but create more opportunities for them to join in.

The app seeks to use behaviorism to help people use external forces (each other) to adjust attitudes and behaviors. This is further reinforced through the badging system. B.F. Skinner believed that, "...learners learn by doing, experiencing, and engaging in trial and error" (Burton 2004). By engaging in a larger community of learners, the person using the app will accomplish what Skinner describes by leaving reviews of paths and places, following or creating paths with others, and generally exploring their world in a community of like-minded individuals.

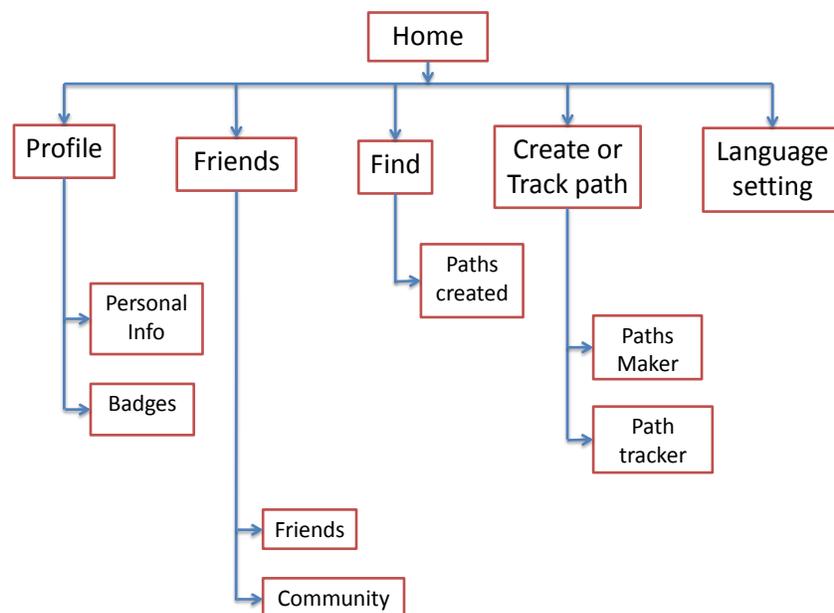
Context of Use

Learners will use the app for a wide variety of reasons. It is our hope that they will use it to find the things that they need like grocery stores and theaters. We also hope that they will use it to really explore and learn their surroundings. We envision that learners will follow or create paths to cultural landmarks (monuments, museums, parks, etc) to not only learn about them but to meet others. As the learners explore their city, they will create paths that will help them

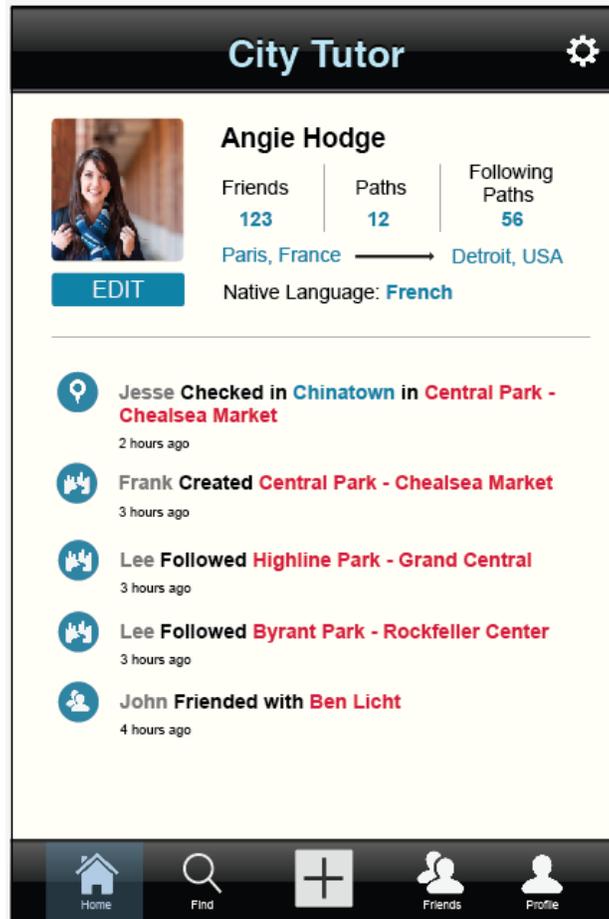
remember where to go. In addition, they will practice their language skills through common phrases that are associated with the places that they go.

App Flow

As we started to discuss what the app should look like, it quickly became apparent that we needed to develop an interaction map to track what we were doing. Below is the basic interaction map that we came up with, where Home is the main screen that then links to other basic information screens. Part of the main idea behind this information architecture is to keep things relatively simple and prevent the levels from going too deep so that the learner doesn't become lost as they navigate the app.



While the above is the interaction map, the actual home screen might look something more like this:

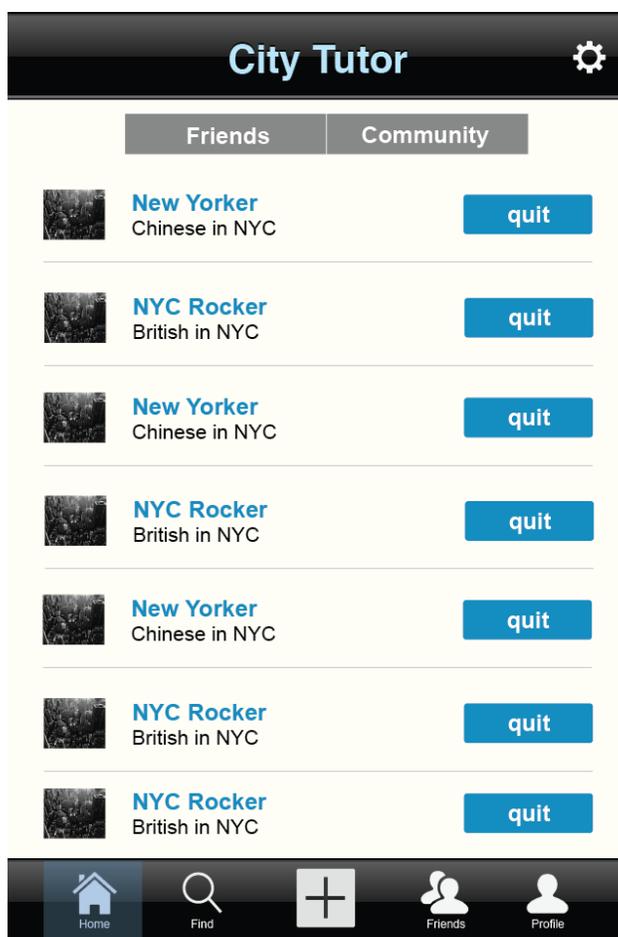


Extrinsic Motivation:

1. Badges aren't earned for checking into places but rather they are earned for creating paths that other learners can follow or for assisting other learners through leaving reviews on paths. For instance a Speedpath badge might be where the path takes a learner through a set of three or more destinations in less than 30 minutes or a Super Reviewer badge might be for when a learner has left 100 reviews on various paths/locations. The badges act as an extrinsic motivator to help learners not only continue using the app and thereby learning their new city better, but also to connect to the community more deeply through interaction. Below is an example of what the "Speaker Badge" might look like whereupon the learner has left 10 reviews:



2. Social media integration encourages learners to compare their own performance with their friends thereby creating competition in some ways through the accumulation of reviews and the making of paths. For instance, learners could create groups that would allow them to have a higher learner “score” through the sheer number of reviews, etc that they would produce, especially in competition with other groups. Badges could be awarded in group competition to encourage collaboration and different types of path making. This would be both constructivism and behaviorism in terms of learning theory. Below is an example of the main community page:

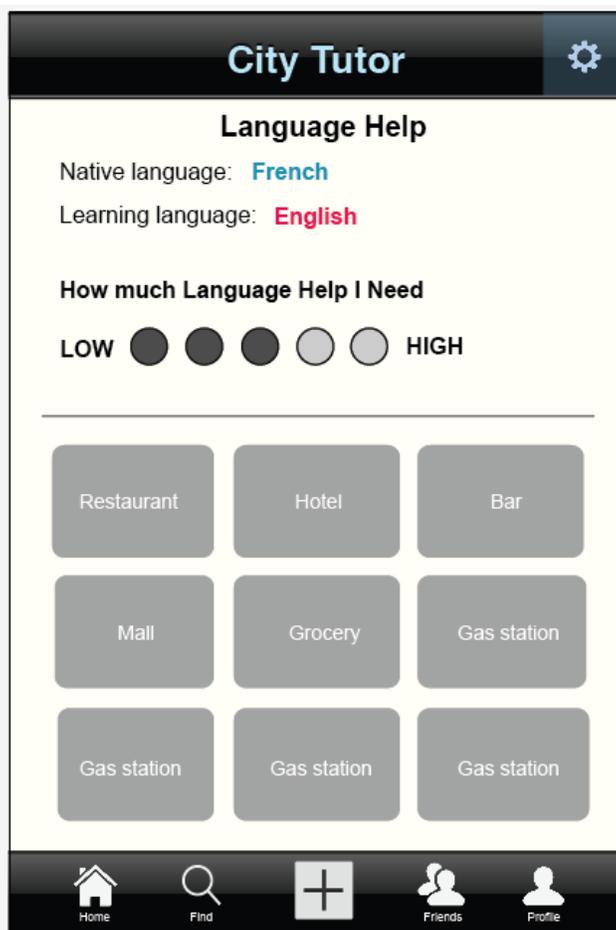


By creating and participating in communities, the learner will learn their new city and develop community bonds.

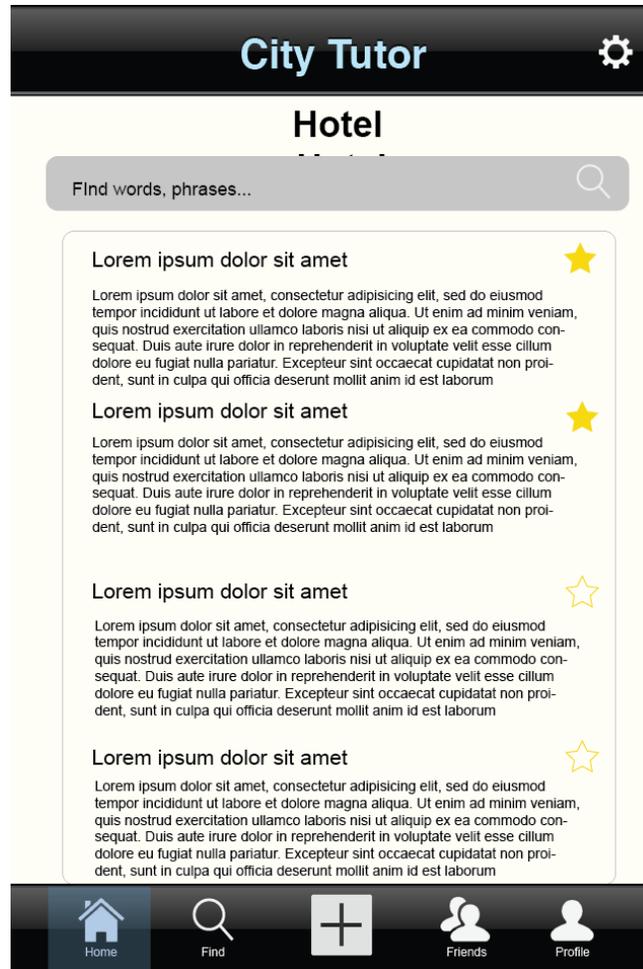
Language:

Language learning is a key component of moving to a new city, especially a new city where the learner's language is not the primary language spoken. The app is designed to help learners by giving the learners several levels of scaffolding that they control. The easy setting, for instance, might give the learner all of the words and phrases in both languages (e.g. English and French). A medium setting might be where words and phrases that the learner has indicated they know will no longer appear in their native language. The expert setting would have all

words and phrases in the new language. Words and phrases in general are linked to places and the things that one does there. For example, when checking into a restaurant, the learner would see language support that pertains to ordering food, asking for the bill, and so on. Below is an example of what the language support might look like in terms of choosing the level of support and what kind of situation you find yourself in such as at the mall:

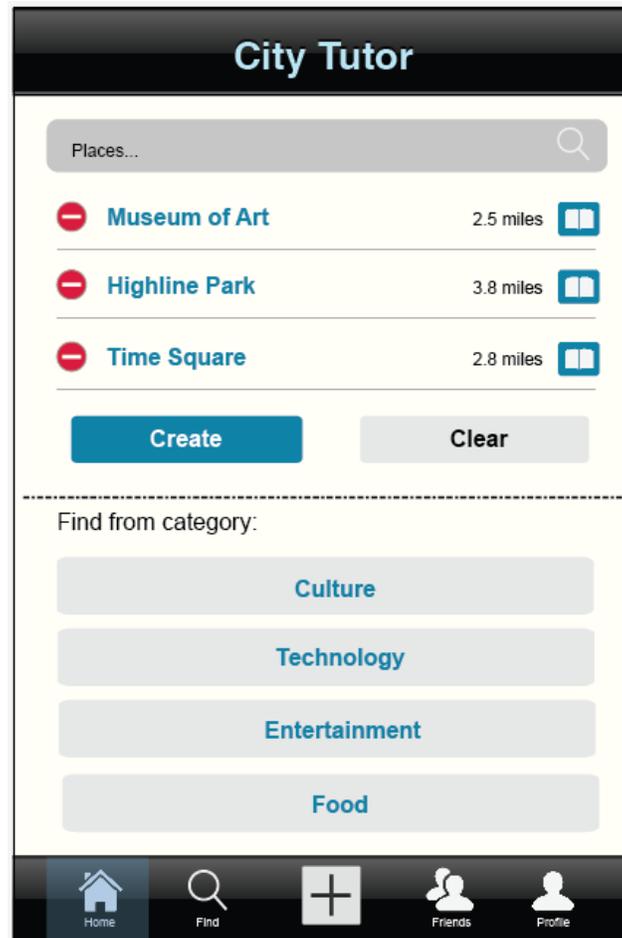


Here is a more in-depth example of what the language scaffolding might look like where the star indicates phrases or words that the learner has marked as being particularly important or useful:

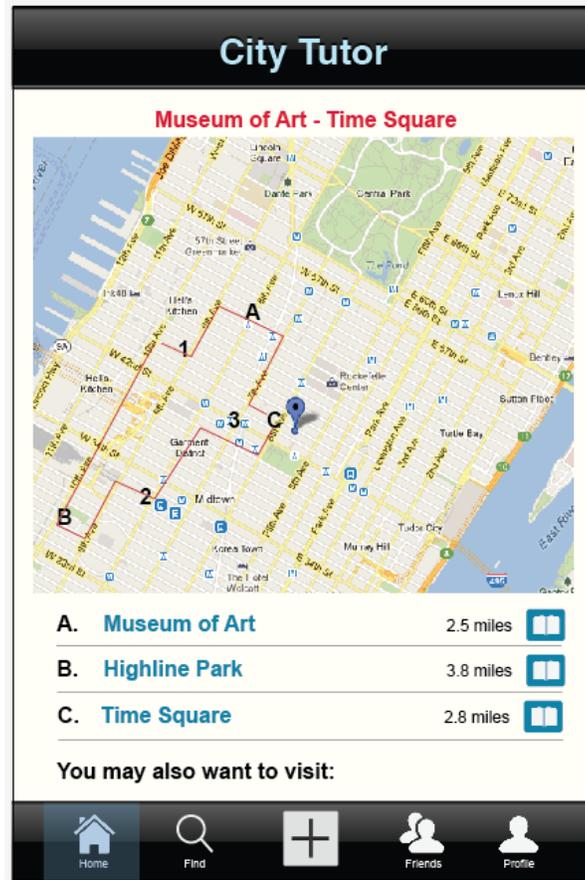


Path Making:

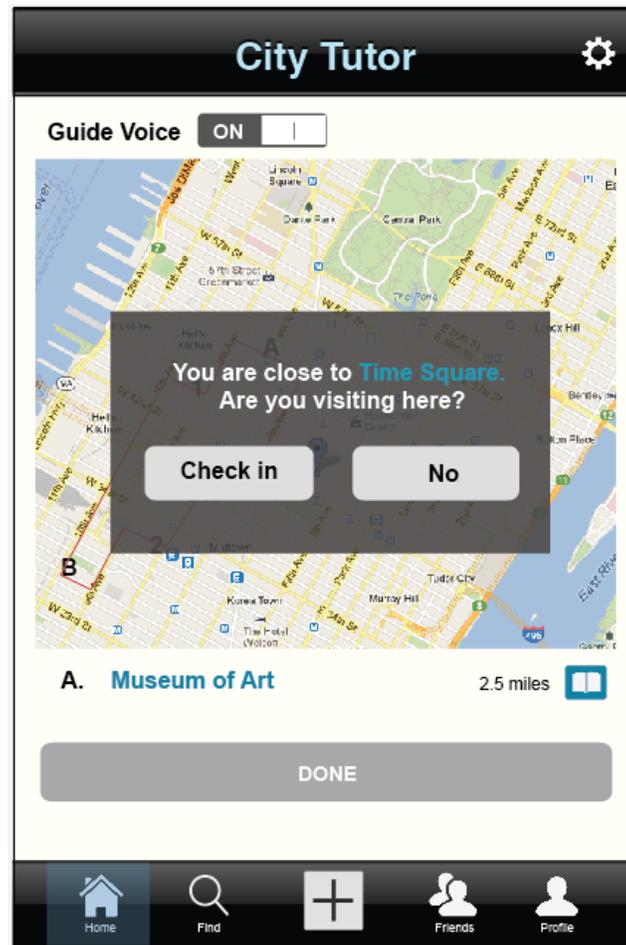
Arguably, one of the most important parts of the app is the ability to make paths. Path making is important because it helps the learner to learn not only the layout of the city but also the historical and cultural aspects as they check into places and explore. A learner can follow a pre-set path, they can make one before they go, or they can make one as they explore so that they can follow it again later. In challenge mode, learners can follow a path that has portions of it hidden to help them test their abilities at remembering where they are and where they are going. Here is an example of a learner making a path from the Museum of Art to Times Square in New York City. This screen shows the learner making choices about where they want to go. They can choose from categories and add it to the list of places to stop.



The next screen actually shows the path that they are going to take. The path is suggested. The learner can of course modify the path by dragging the line around to the way that they wish to take.



In Path Tracker mode, the learner can check into places so that the app remembers where you've been and then they can create a path from there. Here is a screen shot of check-in screen in Path Tracker mode:



Platform

The focus of the program will be on mobile devices using the APIs of Googlemaps, Wikipedia, Yelp, and Facebook. The mobile app would also be developed using xhtml, css, javascript, and jquery. Ideally, the app would be available for both Android and Apple products.

There would be an integrated website that would allow learners to access their data and create paths and reviews on a larger screen if they so desired. Initial city information and language support would be downloadable to the mobile device so that learners can explore without having internet connectivity. However, to take advantage of the full functionality of the app, it should be connected to the internet via smartphone so that learners can participate in the local community more fully.

Works Cited

Bransford, J.D., Brown, A.L., & Cocking, R.R. (Eds). (2000). *How People Learn: Brain, Mind, Experience, and School*. (Expanded Edition). Washington, D.C.: National Academy Press.

Burton, John and Moore, David and Magliaro, Susan. (2004). Behaviorism and Instructional Technology in David Jonassen (Ed.), *Handbook of Research on Educational Communications and Technology*. 2nd ed. (pp. 3-36). Mahwah, NJ: Lawrence Erlbaum Associates.

Csikszentmihalyi, Mihaly and Hermanson, Kim. (1995). Intrinsic Motivation in Museums: What Makes Visitors Want to Learn? *Museum News*. May/June 1995, pp. 34-37, 59-61.

Deci, Edward and Koestner, Richard and Ryan, Richard. (1999). A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation. *Psychological Bulletin*, 125, pp. 627-668.

Gee, J.P. (2004). Learning by Design: Games as learning machines. *Interactive Educational Multimedia*, 8 (April 2004), 15-23.

Metcalf, Shari Jackson and Krajcik, Joseph and Soloway, Elliot. (2000). *Chapter 4. Model It: A Design Retrospective*. In M.J. Jacobson, & R.B. Kozma (Eds.), *Innovations in Science and Mathematics Education* (pp. 77-115). Mahwah, NJ: Lawrence Erlbaum Associates.