

# Keefe Tech Inventory Manager

## 1. Summary / Goal

The Keefe Tech Inventory Manager is a system intended to manage inventory of items and stock of materials for the Metals shop. In the future however, it is also intended to be generalizable to other Keefe Tech shops.

### 1.1. Vocabulary

Specific terms are listed below

**User** - Anyone using the application.

**Administrator** - A teacher or school official who has administrative permission within the system.

**Student** - An account with normal user privileges. Typically, a student.

**Item Type** - Either a Material or a Tool.

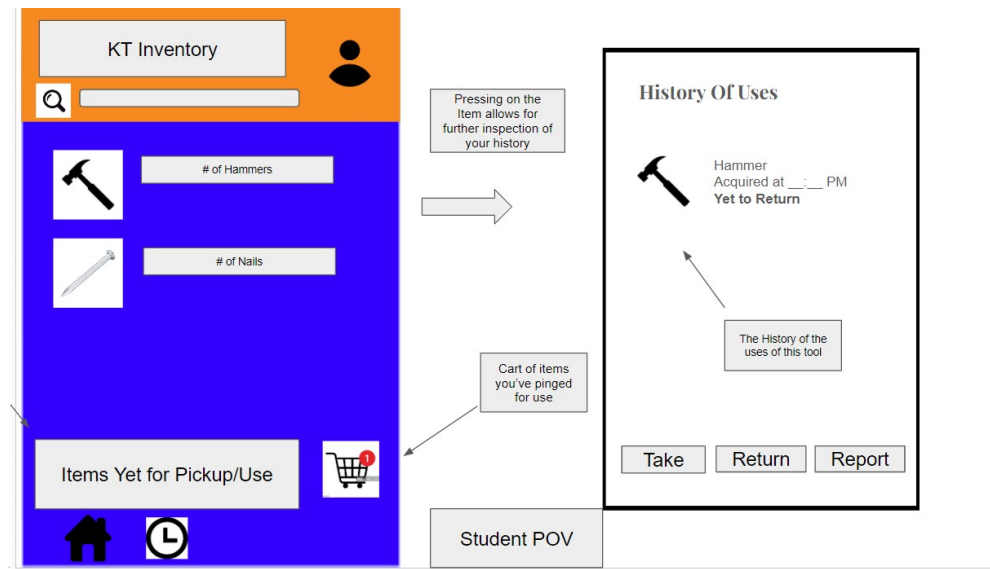
**Item** - The specific Material or Tool (for example, MiG welder)

**Item Instance** - The specific instance of a given material or tool (for example, MiG welder #3)

## 2. Platforms

### 2.1. App

The app version will be available for download on IOS and Android.



### 2.2 Website

The website version will be available on Chrome, Firefox, Safari, and Microsoft Edge.



## 3. Features

Below listed are possible features. Please indicate along with the feature how necessary, or how desired such feature is.

### 3.1. Accounts

There are two types of accounts. 'Student' accounts are attributed to students of the shop; 'Administrator' accounts are attributed to the teachers of the shop. There are separate tiers of access for both account types, with Administrators possessing the higher access abilities in order to manage the inventory and students within the system.

### 3.2. Barcode Scanning

The App will have the ability to scan a barcode associated with each item in order to quickly check out or return items. Similarly, the website will have an option to enter a barcode number to quickly check out or return items. Refer to *Section 5.1* for discourse between item-based barcodes vs type-based barcodes.

### 3.3. Item Search

Users can operate a search box within the navigation bar to quickly view the specific page for an item.

### 3.4. User History

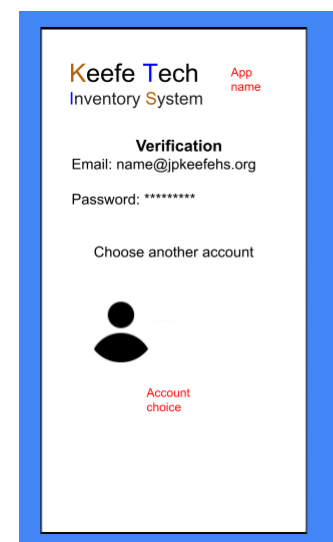
All users have a history associated with their account to keep track of what items they have checked out, what day and time they were checked out, as well as which of those items have been returned.

### 3.5. Item History

Each item's page will have a history of who has checked it out, how long they had them, and when/if they returned them (Accessible only to Administrators).

### 3.6. Sign Up / Sign In With Google

Students will be able to sign into an account / sign up with their google account, instead of a username and password. Refer to *Section 5.2* for more information about different options about the sign-up system.



### 3.7. Item Checkout / Return

Items can be checked out from the item view page, and returned through the student's user inventory page.

### 3.8. Material Checkout

Specific items such as nails, bolts, or other large quantity items are marked as 'materials'. Materials are checked out at specific quantities, and a different quantity can be returned when the user is ready. Refer to *Section 5.3* for specifics on different material management systems.

### 3.9 Pictures for Items

Thumbnail images can be uploaded by Administrators when creating or editing an item.

### 3.10 Inventory Expansion

Teachers have the ability to add new items to the inventory system, and categorize them with tags.

### 3.11 Multiple Shops

Different shops can use the same website and app to access their own individual inventory systems with integration of login codes. Similar to how Google Classroom works with classes being accessible through a 'class code', each shop will have their own 'inventory code' for students to join.



## 4. Pages Layout

### 4.1. Sign Up

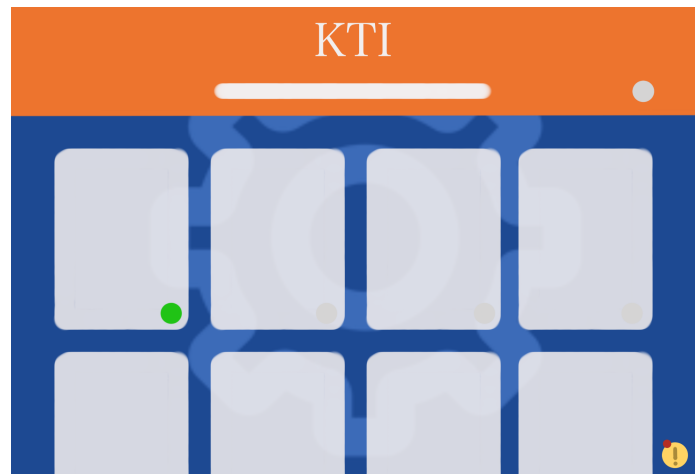
Users can sign up for a new account.

### 4.2. Log In

Users can log in to an existing account.

### 4.3. Item Search Results

When using the item search feature, items will be displayed in a grid view (list view toggleable) with a title and thumbnail. Selecting an item will take the user to the item's description page where checkout is available; alternatively, a small checkout button next to the title can be clicked to quickly proceed to checkout.



### 4.4. Tool Item

The thumbnail and title are displayed at the top of the page, with options to select an individual instance of the item, and an area to check out. Administrators have an additional option to edit the listing, add/remove instances of the tool, and print a tool's barcode/label.

### 4.5. Material Item

The thumbnail and title are displayed at the top of the page, with an option to select how much of the material they are checking out, and an area to check out. Administrators have additional options to edit the listing and print a material's barcode/label.

### 4.6. Confirm Checkout

After selecting the option to check out a tool or material, users are directed to a confirmation before finalizing the check out.

## 4.7. Student Profile

A student's profile is visible only to that student and the administrators of their shop. It shows their name, which items they currently have checked out, and their check out/return history. Administrators have options to archive the account, and return items on behalf of the students.

## 4.8. System Settings

Accessible by Administrators, options are available to manage inventory and system. Specifically, this page includes redirections to the 'Student List' page (*refer to section 4.9*), 'Create Item' page (*refer to section 4.10*)..

## 4.9. Student List

Administrators can see a list of their current students, organized by graduating year. Student profiles can also be selected and viewed from this page. A section is also included for pending students who have applied to enter the system, waiting for an Administrator to approve them.



## 4.10. Create Item

Administrators can add new items to the inventory; specify the item's name, description, type (material or tool), instances, and upload a thumbnail.

## 4.11. Return Tool

Students can return a checked out item by going to their current inventory. They are prompted, but not required, to submit a description of the tool's condition. Administrators can set if a tool requires a condition update.

## 4.12. Return Material

Students can return material they have already checked out. They can mark how much of the material remains that they are returning, and can give a description of what it was used on. Administrators can set if a material requires a condition update.

## 5. Contests

Below are contests, where development would vary based on the priorities of the client.

Selections are below.

Please provide a preference for each of the following below.

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### 5.1. Barcode System

When creating a barcode system, the standard is SKU, but Item-based barcodes are a proposed system that could allow more tracking of items.

Type Based Barcodes (SKU)	Item-Based Barcodes
<p><b>Type-Based Barcodes</b> are based on the item/material</p> <p>A type-based barcode would be far more resilient than an item-based barcode, and they're easier to stock as there's only one for each type of tool. An item-based barcode, however, would be more difficult to track.</p> <p>However, if malicious action is taken by a student (Theft, breaking), and they mark that they returned the item, it would be hard to track under type-based barcodes. This can be minimized with assigning an individual ID to each individual tool as well.</p>	<p><b>Item-Based Barcodes</b> are based on the tracking of each item instance.</p> <p>For example, if a student were to click "Return" on an item in the app after stealing it, it would be easy to track down the item, as you would only need to check to see what ID number was missing.</p> <p>However, the heavy wear &amp; tear from the metals shop would mean that careful management would need to be given to the care of these labels, and they'd need to be placed to minimize damage, as they aren't the same as the code on other models.</p>

## 5.2. Signup System

The sign up system has many possible methods. Below are possible options and their pros and cons.

Sign In With Google	Teacher-Approved Sign Up	Teacher-Created Login
Students can sign in with their school-registered google account, and once they select a shop, the teacher accepts them in.  Similar method to the teacher-approved sign up. Less vulnerable to the same attacks (by checking an @jpkeefhs.org email), but would take longer to implement.	Each student would create an account, and the account would have no permissions until approved by the teacher.  Vulnerable to an attack where malicious actors create a large amount of invalid accounts to drown out valid ones. Could be minimized with a “Clear All Unapproved Accounts” button.	The teacher will create a username and temporary password for each student in their shop. Students would sign in and then set their own passwords  Vulnerable to students forgetting logins. Also, can be a hassle for the teacher to enter in usernames for dozens of accounts and privately send out login information to all students.

## 5.3. Material Management

Material management has many ways it could be implemented. Note that in this case, options 2 & 3 aren't mutually exclusive, and could both be implemented.

No Materials (Materials as tools)	Materials as tools with special cases	Materials as fungible quantities
Materials are managed in the same system as tools, and students are expected to submit how much of the material they used when “returning the tools”	Materials are managed as tools, with a return and a description of condition, however students can mark the material as used up, which will keep its history, but no longer allow students to view or check it out.	Materials are represented as a count of items, and when returned, students state how much of the material remains, and the quantity in stock is updated accordingly.



## 5.4. Student profile pictures

### Student profile pictures

There was a debate about the necessity of student profile pictures.

Student Profile Pictures	No Student Profile Pictures
Students can upload profile pictures to be viewed by themselves and their teacher on the profile page.	Students aren't permitted to upload profile pictures, and all students have an identical gray icon instead.

## 5.5 Student Item Limits

Student Item Limits	No Item Limits
Administrators can set a maximum count of allowed checked out items for a student, and if a student tries to check out over this limit, they will receive an alert in the app/website.	If the feature is not needed, It won't be implemented. This would de-clutter the student profile interface somewhat.