# Criterion A

## Problem Scenario

My client, **Mrs. Richa Mehrotra**, is the IB MYP segment coordinator at an international school. Every year, the school sends out a book list to the students with all the reference books that they would need for the upcoming school year. Although some teachers recommend that students contact their seniors to collect their used books, it is often difficult for students to find and connect with seniors who would be willing to pass down their used books. I met Mrs. Mehrotra to understand the situation better.

Having been a student in the same school for over six years, this is an issue that I have experienced as well. All the juniors buy textbooks and other study material for all of their subjects. The outgoing students from every MYP batch did not require their old textbooks anymore, and these old books may have been thrown out. Furthermore, my client told me that IB textbooks are very expensive making it difficult for junior students to procure all the books first hand. **(refer to appendix A page no 1)**

Although a few students were already exchanging books at a personal level, there was no official/ automated channel for students to procure used books or for seniors to give away their textbooks or notes.

My client and I strategized a few ideas to combat this issue. A manual method to hand-down old books would be time wasting as people would have to physically sort through all the material to find the books they are looking for. It would also become difficult to segregate free and paid resources. This would also increase the librarian’s workload.

After much ideation, I proposed the final solution.

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| **Solution: “CIRCLE”, an online student community platform for students to buy, sell or donate used textbooks, calculators and student notes** |

## Rationale behind the proposed solution

My vision for the final solution is a site where senior students can list all the old textbooks and notes that they would be willing to hand down to their juniors. These would be sorted into different categories so that products can be easily located by students wanting to procure used books (i.e. customers). Customers can view all products available and view offers by the students handing-down their books (i.e. vendors) for the same product. They will place a bid for a product and an automated mail will be sent to the vendor with the product request. The solution would have successfully linked the senior and junior students thereby facilitating the exchange of products.

The goal of this solution is to make it easy for students to transfer used books. As students already use a variety of different softwares for academic work, especially after two years of virtual learning, we did not want to introduce a brand-new application for students to download. Furthermore, students in the school use a variety of different OS. An application would have to be created to work on all the different operating systems. Websites, on the other hand, would be easier to develop and for all students to use. Therefore, the solution will be created as a website.  My client also preferred to use website for the solution **(refer appendix A page no 2)**

The front-end for this web-based solution will be written in HTML, CSS and Pug. HTML will be used to organize all the information that the users see, CSS will be used to style it and will be converted into a Pug.js template to make it dynamic. JavaScript will be used for the backend development of the solution. Node.js along with Express module will be used for the development of the platform and executing the server-side code because of its efficient performance and easy development. MongoDB database will be used as it is fully cloud-based and facilitates easy changes. I am comfortable with these frameworks making them a feasible solution.

## Success Criteria

These success criteria have been discussed and edited with the client to ensure that it meets all the client needs. **(refer appendix A page no 3)**

1. Vendors should be able to access the following functionalities once logged in
   1. **Listing new products** onto the website
   2. **Editing** product information; program must update and save edits
2. Customers should be able to access the following functionalities once logged in
   1. **Navigating** through the website to find their desired product
   2. **Placing a bid** for a product they would like to procure
3. Startup page that provides options surf through the products available on the website without logging in
4. The home page loads within **5 seconds**
5. Users should be able to **search** for products on the home page
6. The program should include an **effective and secure user authentication system**. All users have to be authenticated.
7. Users should be able to **create a new account**
8. The website should display the following information about every product
   1. Product name
   2. Image
   3. Grade
   4. Subject
   5. ISBN number (if applicable)
   6. No. of vendors
   7. Selling price for each vendor
   8. Condition of product for each vendor
9. The program should be able to **sort** the products by price
10. Products on the website should be **segregated/categorized** by grade, product type and subject
11. Store all products in an **inventory database**
12. The program should have an **efficient system for the addition of products** to the inventory database
13. The program should send an **automated email** to the vendor of the product once a user bid has been placed
14. Users can **edit their account passwords**. The program must save an update these edits
15. Users can reset their passwords though an **email reset link** sent to their registered email addresses if they forget their password
16. Passwords should be stored in an **encrypted database** in order to prevent unauthorized access.