COURSE CATALOG AND SCHEDULING WIZARD FOR

SWEETWATER HIGH

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A Capstone Proposal

Presented to the

Faculty of CST 499 at

California State University, Monterey Bay

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In Partial Fulfillment

of the Requirements for the Degree

Bachelor of Science

in

Computer Science

_____

by

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EXECUTIVE SUMMARY OF PROPOSAL

Course Catalog and Scheduling Wizard for Sweetwater High
by
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Bachelor of Science in Computer Science
California State University Monterey Bay, 2020

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BACKGROUND AND APPROACH

INTRODUCTION

PROJECT NAME AND DESCRIPTION

The proposed project is an online course catalog system with a course scheduling wizard for Sweetwater Union High School—a public high school in National City, CA. Sweetwater staff, especially counselors, have recognized the need for an online searchable course catalog for students to peruse before engaging with counselors for their annual pre-registration consultations. Because of the high counselor-to-student ratio, pre-registration is a lengthy process that takes weeks to complete, taking time away from counselors' other important roles such as supporting students' mental health.

In addition to this, classes are disrupted since pre-registration takes place during the school day. In order to minimize the time needed to complete pre-registration, a course scheduling wizard—a dynamic multistep form that takes students through the course selection process—was added to the originally proposed online catalog system. The wizard will enable students to pick prospective classes that are grade-level appropriate, fulfill their needed graduation requirements, and match their preferences and/or need to take specially designated courses (e.g., AP or bilingual). This project aims to benefit both staff and students by minimizing the time spent on pre-registration and maximizing time best spent on student learning and mental health.

ISSUE: HIGH COUNSELOR-TO-STUDENT RATIO

Sweetwater Union High School belongs to the second largest secondary school district in California but is the only high school that serves National City, a community

located in the South Bay of San Diego County. The school serves around 2700 students who take six courses per academic year, selecting from a course catalog of over 175 courses. There are only seven school counselors available to students to assist in course selection and registration, and this number is expected to shrink by half for the 2020-21 academic year due to the school district's decision to lay off over 230 full time staff—including 20 counselors— to address a budgetary deficit of 40 million dollars (SUHSD Resolution 4658, 2020).

With the current counselor-to-student ratio, each counselor serves approximately 385 (300 non-senior) students. During the annual pre-registration process, counselors meet with each of their students to assist them in selecting courses for the following academic year. The current process takes weeks to complete. Counselors assert that most of the time is taken up by explaining what courses are available and answering questions about what is learned in each.

SOLUTION: COURSE CATALOG AND SCHEDULING WIZARD

Much of the time spent on explaining the course available to students can be reclaimed with an online course catalog that is searchable and easy for students to navigate. Students should be able to quickly find classes by name, A-G requirement, graduation requirement, and grade-level. Other qualifiers for courses include whether the class is Advanced Placement or Accelerated/Honors, Fundamentals, Bilingual, or part of the CTE academies--Welding or Health.

Beyond creating a searchable online course catalog, Sweetwater students would benefit from a scheduling wizard that could, after taking in student details such as grade level, interest in AP courses, and the need for bilingual classes, will suggest courses that will meet each of their graduation requirements. The wizard will be a dynamic multi-step form that populates course choices for each graduation requirement based on student responses. Students will then select a course for each category, building a prospective course schedule for the upcoming academic year that can then be sent directly to their counselor (via a counselor portal) for review during pre-registration consultations.

EVIDENCE OF NEED

The project is needed because it has the potential to drastically minimize the amount of time a counselor must meet with each student, as counselors spend much of their time with students who have yet to pick potential courses before their meeting. Cutting the time a counselor must meet with each student maximizes the time a counselor can focus on other duties and minimizes the amount of class time each student misses. Using this tool will also cut down on paper waste as counselors currently distribute paper copies of course lists to every student to select from in preparation for pre-registration. This will cut costs, requiring less expenditure from an already limited budget.

PROJECT GOALS AND OBJECTIVES

GOALS

The goals of this project are to:

- Raise student awareness about the courses they can take to fulfill graduation and A-G requirements
- Empower students to develop their course wish list for the following academic year before meeting with their counselor
- Minimize the amount of time a counselor must meet with each student to plan the student's courses for the next academic year
- Maximize the amount of time a counselor can spend on other important duties like the socio-emotional well-being of all students
- Minimize the amount of time a student will miss class due to pre-registration

OBJECTIVES

The objectives of this project are to:

- Ingest all 175+ offered courses currently offered (including details like, name, description, graduation requirement fulfilled) into a MySQL schema

- Build out a search form that queries the database for course by title/graduation requirement for students who wish to explore course offerings at their leisure
- Use MVC design pattern to build a course picker wizard/widget that will allow students to create a course wish list for their pre-registration appointments with their assigned counselors
- Build a counselor portal where counselors can review student course wish lists during pre-registration appointments
- Use Drupal 8's User entity type to handle counselor accounts (admin account will be assigned to the site IT to add/delete counselor accounts)
- Only allow admin and counselor users to modify courses and view student course wish lists

ENVIRONMENTAL SCAN

Currently Instructure offers Canvas Catalog, touted as "the most beautiful, user-friendly, modern course-catalog solution available" (Instructure, 2020). Like their popular LMS, Canvas requires a site license to use. A site license requires a one-time set up cost along with a yearly subscription fee. According to Instructure's website, the implementation fee depends on factors such as the size of the school, the number of staff to be trained, and the level of support desired. In addition to this, the annual subscription fee depends on the total number of users. As noted previously, because Sweetwater's school district is in a deficit, the school is in no position to make purchase requests and is in need of a free or low-cost implementation.

While Canvas Catalog allows an administrator to add, modify, and delete courses like the proposed project, it does not provide a wizard for students to build a course wish list that will meet their graduation requirements and interests. High school course registration differs from college registration because a high school's course schedule (i.e. how many sections of a certain course is offered and during which period(s) it is offered) depends on student interest extrapolated from pre-registration. Therefore, students aren't registering for classes, but bidding for them to be offered. The wizard will allow students to make well-informed

decisions about the courses they select during pre-registration so that counselors (along with the Faculty Advisory Committee) can shape the course schedule so that it best meets the needs and interests of the students.

While some K-12 and higher education institutions may rely on a product like Canvas Catalog, most universities utilize custom built course catalogs. For example, the University of Dundee's course catalog is built with Drupal 8 (Manifesto, 2019), and is the basis of my project proposal. However, my goal is not only to use this example as a model, but to extend its functionality with the addition of the course scheduling wizard.

STAKEHOLDERS AND COMMUNITY

- Public high school students (grades 9-12, ages 13-19) and their counselors
- All students have access to laptops (one-to-one laptop distribution) and/or library desktop computers
- Students are familiar with search engines and filling out online forms (e.g. Google Forms)
- Counselors each have their own desktop computer and/or laptop in their office and are familiar with using content management systems (e.g. WordPress) and learning management systems (e.g. Canvas, PowerSchool, Infinite Campus)

APPROACH AND METHODOLOGY

The system will utilize Drupal 8 as a backend framework and content management system (CMS) in order to ensure that counselors, after minimal training, will be able to log in via Drupal's user management system in order to update, add, or delete courses and view student course wish lists. User management (adding and deleting counselor users as needed) will be managed by the on-site IT professional.

PART II

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ETHICAL CONSIDERATIONS

LEGAL CONSIDERATIONS

PART III

PROJECT SCOPE

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RESOURCES

RISKS AND DEPENDENCIES

FINAL DELIVERABLES

USABILITY TESTING AND EVALUATION

REFERENCES

Instructure. (2020). Canvas Catalog. https://www.instructure.com/canvas/higher-
    education/platform/products/catalog

Manifesto, Acquia. (2019). University of Dundee. https://www.drupal.org/case-
    study/university-of-dundee

Sweetwater Union High School District (SUHSD) Board (2020). Resolution 4658.
    https://sweetwaterschools.novusagenda.com/agendapublic/CoverSheet.aspx?ItemID=
    6960&MeetingID=552

APPENDIX

TITLE OF APPENDIX

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