Protocols Guide
High School Capstone, Language Agnostic, 11 - 12
Capstone Course

PROTOCOLS GUIDE

Below you will find the many protocols we suggest to help support students with the executive functioning skills necessary for working on a long term project. The protocols have been grouped into the three phases of each project - Launch, Project Mode, Presentation - and should be repeated for each of the projects in the course. (Please refer to the Pacing Calendar and Weekly Plans for more complete pacing recommendations.)

For ease, recommended days have also been included next to each protocol to provide a sense of timing - however, you should refer back to the full Weekly Plans for more complete details around pacing, and, as always, feel free to adapt as necessary for your class, students, and each project. These Protocols and Weekly Plans should serve as a guide for how to structure your projects - we welcome and encourage you to bring in your own protocols and structures to support your students.

Project Launch Protocols

At the beginning of every project teachers and students will spend roughly 5 class periods launching, ideating, and planning their projects.

A Project Launch Week occurs only once at the beginning of each project.

[Day 1] Initial Project Launch

This is one of the most exciting parts of every project - the Launch! You have one main goal - to get students excited about the project they are about to begin. You will want to spend the class period (or just the beginning of the class - brevity at this point is best) conveying three main points:

1. The **theme** students will create their project around

2. The general **skills** and **requirements** their project will need to meet
3. The **time frame** students will have to complete the project.

You will have the opportunity to spend the rest of the week getting bogged down with the details of each of these points - so don't spend too much time on them now - a broad overview should be more than sufficient to get students ideating.

This is also a good time to remind students of the "why" behind the projects we are asking them to create. Our Project Mode Philosophy dives into the nuance, but a more student facing summary can easily be defined as follows:

Projects **ARE**:

- An opportunity to collaborate.
- An opportunity to try something new.
- An opportunity to create something meaningful to you.

Projects are **NOT**:

- Competitive
- Finished - you'll get one small version of it done, but even great apps/web pages are never completely done.

[Day 1 + 2] Ideation Protocol

Once students know the theme of the project they can begin the ideation process.

The goal of this protocol is for students to generate as many ideas as possible that they could create around the theme of the project.

1. Generate Ideas

In small groups (3 - 4 students), ask students to brainstorm ideas. They should approach this process with two rules as guidance:

1. Accept and write down all ideas offered
    - The more the better
    - Nothing gets rejected at this stage
    - Create a happy brainstorming environment

2. Don't dwell on any one idea
    - Don't stop to discuss why an idea may or may not work (this hurts ideation)
    - We will have an opportunity to get into the details later.

Similarly these Brainstorming Norms may also be useful for students:

- Bring your best by bringing whatever comes to mind.
- No project idea is a bad idea.
- Be receptive to everyone's input and make sure everyone is heard.
- Save pressure, conflict, and refining ideas for later. (It doesn't matter if your idea already exists, if it seems too hard, or if it seems basic/boring).
- Move on immediately. Don't flesh out any ideas, yet.
- Remain engaged.

Ask all groups to record their ideas on a shared class document - the more ideas the better! (A little competition here never hurts - encourage students to be the group that generates the most ideas.)

Once all ideas have been conceived and recorded, it's time to share and review them. Ask each group to share their ideas as a class - this should mostly be a quick reading of each group's list from the class document (no need to expand on ideas or go into depth), instead this is an opportunity to:

- hear all the ideas
- consolidate ideas that seem similar across groups
- ask for clarity around ideas that may need further explanation so everyone generally understands the concept
- add any additional ideas that may come to mind

2. Difficulty Rankings

Students are asked to ideate their projects and features without considering what exactly they might be getting themselves into. Once students have pitched their ideas, give students a difficulty ranking for each project idea they've come up with. This can go a long way to making sure students aren't working on projects that will present a more significant challenge than they are prepared to or willing to face.

Here's an example ranking system:

> 🌶️ - This project will require you to use a subset of the skills we've learned, and will not require you to stretch beyond that.
>
> 🌶️🌶️ - This project will require your group to learn at least one new thing independently.
>
> 🌶️🌶️🌶️ - This project will require your group to learn multiple new things, and will be a challenge to complete within the existing time constraints.
>
> 🌶️🌶️🌶️🌶️ - This project will require entire new concepts that we haven't covered, and cannot likely be completed in the time we have. You will only be able to finish a more basic version of what you're envisioning. Your teacher may not be able to help if you get stuck, and you may have to compromise on the finished project.
>
> 🌶️🌶️🌶️🌶️🌶️ - This project may not be possible with the tech that exists in the world currently. If you undertake this project, your teacher will not be able to support you along the way.

It's important to stress that a level 1 (🌶️) project is a perfectly serviceable goal - do not use it to communicate that a project is not ambitious enough. If a student has communicated a vision for something that is truly not ambitious enough for the current project, this is an indication that the brainstorming launch could use fine-tuning, either in the examples shared, or in the way the project criteria is shared.

It's also important to be clear that you're actively discouraging that students tackle a level 4 or 5 project.

3. Express Interest

The last step in the ideation process is to have students express interest in their favorite ideas. Do this by asking students to put a plus sign (+) next to the three ideas they are most interested in working on.

This process allows the class to see which ideas are the most exciting or interesting overall. This is not an opportunity to make anyone feel bad about a project they personally find meaningful or exciting, nor does it mean that any project is a bad idea and should not be

created. Instead, it should be framed as an opportunity for students to discover that they may be the only student excited about an idea and therefore may end up working independently on that project if they choose to pursue it. This is not at all a bad thing, just one additional factor that may impact a student's ultimate choice.

[Day 2] Collaboration Form

Now that the Ideation Protocol is complete, it is time for students to share their preferences for group work.

> *Note: While we emphasize the power and importance of team projects, we also acknowledge that a full year of team projects may be overwhelming for some students. In these instances, know your students, and if needed, some independent project work may be valuable and necessary. We recommend a student work independently for only one or two of the three projects at the beginning of the year, and with a team for the Final Project. Additionally, varying the groups themselves will play an important role in keeping Project Mode engaging and fun for students and preventing unproductive partnerships.*

Creating groups is an incredibly important part of any project. We suggest sharing a form with students to gather information about who they would like to work with and what types of projects they are interested in working on.

We have found these questions to be a very comprehensive list in assisting with the formation of groups:

- List 3 to 4 Project Ideas you would be the most interested in working on.
- Who do you most enjoy working with?
- Who do you most respect or learn from when you are working together?
- Who do you think learns a lot from working with you?
- Who have you not worked with a lot, but you'd like the opportunity to work with them?
- Who are you a little nervous about working with, but think it could still be a productive partnership?
- Is there anyone you've worked with before that you're not certain would be a great fit?

- Which is more important to you working with people you requested or working on a project idea you're excited about?
- Do you prefer to work on your own or with a group for this project? (This could be an optional question if you choose to offer this up to your students)
- Anything else your teacher should know?

We find social-emotional questions like "Who is someone who you don't know well, but think you could learn from?" and "Who do you most enjoy working with?" to be most useful if you specify that students must provide a different name in each field. These pointed questions can help attune students to the fact that group formation is about more than working with their best friend.

Use student responses to create groups. This is best done on your own with a little bit of time to think thoughtfully about student responses.

Thoughts on Making Groups

Student-assigned groups can leave some students feeling left out, and can let good friends who don't work productively together end up paired.

Teacher-assigned groups can over index on the "icebreaker" mentality and result in complete opposites working politely together on a project that doesn't actually interest either of them.

The strongest grouping mechanic is any variation of ranked choice. Which is why we suggest you ask students to rank both their top project partners and their top project ideas. With those student responses in hand, you can create groupings of 2-4 that ensure that everyone is working with someone they've consented to work with, while still having enough control to ensure that unproductive pairings aren't repeated.

✨**Make Groups prior to Day 3!** ✨

[Day 3 + 4 + more as needed] Initial Project Planning in Design Journals

Working in their groups, students will spend the next two days (or more) thoroughly developing their project idea in their Design Journals (a student template for these journals can be found in the Curriculum Materials).

Projects that have thoughtful and thorough planning always have stronger execution. Therefore, teachers should be empowered to extend and adjust Days 3 and 4 as needed if students require more time to plan and ideate - this will only help ensure the long term success of each group. (For more details, refer to the Project Mode Philosophy's note on "Planning and Punting to Sustain Student Momentum.")

Each group should use one shared Design Journal document to organize all aspects of the initial project planning process. As groups progress from the Project Launch phase to Project Mode, students will continue to use their Design Journal as a resource and space for project reflection and revision.

Groups should progress through their Design Journal in order, but also at their own pace. Teachers may choose to review all of the Initial Project Planning requirements at the beginning of Day 3 or walk through each requirement one at a time as needed for each group. It is also recommended that teachers ask each group to seek out their approval before moving on to the next phase of the planning process.

Please use the descriptions below as guidance for each part of the Project Planning process.

1. [Day 3] Feature Roadmap and MVP

To start the planning process students should flush out exactly what it is they hope to build. As students begin planning their projects, encourage them to break their project up into versions, and help them define the most basic version (the Minimum Viable Project or MVP) of their idea.

Here is an example of how you might help a group scale down their idea into a more manageable prototype:

> *A group may decide that they want to build a college matching site.*
>
> Encourage them to start with only three possible matches (instead of hundreds). And then encourage them to iterate on that MVP by mapping out what types of features they hope to build from there.

The resulting Feature Roadmap might look something like this:

> *Version 1:* Build an app that allows the user to select a college from a list of three colleges.
>
> *Version 2:* Add a feature where the app shows the user information about the college that they selected.
>
> *Version 3:* Create a matching algorithm that asks the user one question, and based on their answer selects a college for that user.
>
> *Version 4:* Add five more colleges to the database.
>
> *Version 5:* Add more complexity to the matching algorithm, by adding another question that impacts the college selection.
>
> *Version 6:* Allow the app to show the user multiple possible matches.
>
> And so on…

When students are creating their MVP and Feature Roadmap they may feel some conflict between the idea that good projects "are never done" and the time frame they have been given. A strong roadmap will have many small attainable versions along the way, and some more lofty goals that the students may never reach. However, the project should function at every stage, allowing students to be proud of whatever they are able to accomplish in the time that they have.

2. [Day 3 + 4] Mockups & Design Guides or Flowcharts

When working on a project with an HTML user interface (as may be the case for a few of the projects in this course), have students mock up their pages before they start work. These mockups will be an essential reference to ensure all members of the project group have a shared vision and can also help group members clarify how new features and versions will iterate on prior designs.

Mockups will also ensure that the teacher can help students with a specific element of the page with a holistic view for how it will be incorporated into the project as a whole. This lessens the likelihood that a teacher will advise students to do something one way in the early stages of a project and then advise students to completely redo that section of the page when it's placed in the larger context of the project.

Design guides can also help ensure that students are agreed on the creative choices and boundaries that will guide their front-end work. Design guides might include a list of pre-approved color codes, typefaces, font sizes, or even a mood board or bank of images.

If students are working on projects that have more of a backend focus and are not visually based or a game component, they should spend time creating a flowchart that outlines the steps a user would take when navigating through their application. Just like their mockups and design guides, the flowchart should be an essential reference to ensure a shared vision.

START WORKING HERE

3. [Day 4] Define Roles (for group or partner work only)

When working in groups, it is especially important to clearly define roles for each person while also considering how these roles need to interact with one another. - particularly when each person is working on an element of the project that needs to fit together with the other components.

Each group should take the time to think about the project they want to create, considering both the MVP and the additional features they will want to add. How can they break these components into clearly defined roles?

4. [Day 4 +] Calendaring

Sldfj

[Day 5] Stand-Up for Initial Feedback

Does this just go with all the other stand-up stuff?

✨ TEACHERS: Make Learning Plans Now! We recommend one learning plan per student, even in group work, with learning plans based on the student project roles. You may want to also offer a generalized group learning plan, but this is optional. ✨

Project Mode Protocols

This happens multiple times and is repeated over three weeks

Stand-Ups

Include student side and

NOTE FOR PROTOCOL: could also be full class feedback for a group or two and spread stand-ups throughout the week, or every group sharing where they're at. maybe we can suggest them strategically for different points in the project development cycle?

- **Student Stand-Ups** (sharing course progress - daily? Every other? ??)

Standups

Launch each class with a brief full-class share out of what each group is working on, and invite them general sense of their team's readiness to start work.

A team is 🟢 green if they are ready to start work immediately.

A team is 🟡 yellow if they would appreciate your input or feedback.

A team is 🟠 orange if they have a feature that is blocked, but can work on something else while they wait for you.

A team is 🔴 red if they are totally blocked, and cannot continue work without help.

This standup will present you with an opportunity to both triage your support, and connect teams th struggling to work on a feature with teams that have already built a similar feature. That will help the team get unstuck sooner, and will also offer the successful team a chance to engage in an in-depth on the topic. Most importantly, this affirms the real-world truth that as a software engineer becomes knowledgeable and more senior, more and more of their job is about passing along their knowledg

From Julia: "Table Crits" - this is what i thought, this is what I've done, this is what I'm working on next

- Chance for students to connect with experts and offer help

One-on-Ones

In

- **Teacher Check-In** (One-on-one? Small group? Protocol Needed)

1:1s

Project mode affords an opportunity to check in with students individually while their peers continue work.

One-on-one conversation with students can help a teacher pinpoint when a student group needs h
interpersonal tensions, or spot an unequal division of labor and resolve it before the project ends.

Ask any questions you like during a 1:1. Consider including the following:

In your opinion, how is the project going so far?

What are *you* working on?

Is your group being helpful?

How do you feel about this class so far?

Work Sprint

In

- **Work Sprints w/ Protocol** (Timing, guidance on updating design journal, etc.)

Peer Feedback Protocols

Take time to define what "good feedback" is with students

- Actionable
- Specific (a question / suggestion / idea)
- kind

** also check HYPER ISLAND protocols

NOTE FOR PROTOCOL: options could include - 3 groups present, jigsaw, one stray, walk around, user testing, may include feedback from experts or users outside of the classroom

- **Peer Review** (Protocol and supporting documents needed)
- "Pinups" group presents to peers - Critical friends protocol (this seems really cool, here's wondering)

Midpoint Presentations

When some groups lose a little momentum, midpoint presentations can facilitate some cross-pollina

Have each group share out their unfinished projects and solicit feedback (one glow and one grow) other groups.

Midpoint presentations can help turn the imposter syndrome someone might feel seeing another gr
excellent work into an entry point for collaboration and support. If a group of students keep talking
another group's excellent design work, they still have time to ask that group for help with their desig
project is due. You can add in more specific guidance to facilitate these connections if necessary.

Optional Teach

In

- **Optional Teach** (Chance for teacher to bring in optional module lessons that might enhance/support what students are doing, or support a common need/error/misconception in class)

- May also include: guide for building teaching modules and/or directing student learning? (this might also be a Beth thing?)

Maybe also think about a way to use students as experts in the classroom - create a space of great resources and to claim themselves as experts at a skill (may take teachers telling them to add a link or put themselves down, but soon students will be adding to it on their own)

Goal Setting

In

- **Progress Check-In/Reflection** (Maybe end of week - allow time for students to recalibrate plans etc? Tie to final git push of the week?)
- Design Journal → group project reflection
- Learning Plan → individual reflection

[End of MVP] Mini-Presentation Feedback and Reflection Protocol

Move this down to presentation protocols? Or part of feedback protocols?

- think about some sort of mini presentation or feedback every few weeks for the final project - project mode will get VERY long so something to break it up might be good, or maybe more clearly identified MVP end dates?)
- Reflection protocol (see https://hybridhacker.email/p/retrospective-meetings-demystified)

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TEAM SELF ASSESSMENT (HYPER ISLAND TOOLKIT)

Presentation Protocols

Intro/Review Presentation Expectations

Includ

NOTE FOR PROTOCOL:
- What did you create and why? Sell it!
- What does your program do?
Show us how it works (by running it)
- What are you most proud of?
- If you had more time, what would you do next?

Presentation Feedback Cycle

Includ

NOTE FOR PROTOCOL:
(feedback from peers or feedback from teacher)

Question Storming

Includ

Presentations and Feedback

Includ

Final Share-outs

Make sure that teams have some opportunity to share out their final projects with their peers, and p a wider audience. These could be formal presentations, informal presentations, or even just a link sh activity.

Whatever you do, just make sure that student work is seen by a larger audience than just the persor their assignments.

Final Reflection

Includ

- **Presentation Protocol**

- End of project - how are these presented? Time? What is required in a presentation?