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Introduction



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Imagine you are trying to play an instrument. What would help you learn your new music skills? Our team set out to find the answer. We are in Andrew's section focused on **education**, and we chose to focus in on **music** as our problem domain. Music is an incredibly demanding skill that requires intense practice, memorization, coordination, and focus. We hope to uncover some needs within music education to make learning better.

Our initial two interviews provided insights into the process of music education, and how different parts of one's music journey interacted with each other.



*“We met Michelle, a Stanford senior and multi-instrumentalist. We were amazed to realize that while Michelle started in a place of self-doubt, she grew to a place of self-confidence. It would be game changing to help other musicians **transform self-doubt into self-confidence.**”*

Additional Needfinding

Results

Our next three interviews shed light on the different ways people practice. We interviewed Paul, a guitar teacher; Ronna, a psychologist and drum student; and Josh, a jazz bassist and instructor.

Paul, the Guitar Teacher



The primary tension we encountered in this interview lay in the decision to **teach the music the student wants to learn** to keep the student interested or to **teach the music that would be most beneficial** for the student's learning goals. From this interview, we identified a need for a **customized education path** that **suits the student's musical interests**.

Ronna, the Psychologist and Middle-Aged Drum Student



Ronna's journey of going from avid ballroom dancer with no musical experience to committed drum student offered several powerful insights about reframing. From this interview, we derived a need to **reframe failures for budding musicians** to keep them from becoming discouraged.

Josh - Middle-Aged Professional Jazz Bassist, Middle School Band Director



Josh surprised us with a tension between how he thrived on **external accolades and goals** to fuel his practice, but also wanted to practice from a place of **intrinsic motivation and deep appreciation of music** for its own value. From this interview, we derived a need for the average musician to find **practice as deeply gratifying** as Josh does.

POV→HMW→Solution →Prototype

POV 1 - Self-doubt → Self-confidence

We met Michelle, a Stanford senior and multi-instrumentalist. We were amazed to realize that while Michelle used to doubt herself as a musician, over the period of a few years she grew confident enough to take risks and push herself musically. It would be game changing to help other musicians **transform self-doubt into self-confidence**.



From this POV, we generated many how-might-we's, some of which were:

How might we. . .

- **Make musicians feel that they have a great capacity for improvement?**
- Reframe failures into something positive (growth opportunity)?
- Provide confidence boosting experiences to musician?
- Inspire musicians to take risks?
- Make a wider range of affirmations meaningful?
- Remind musicians of the amazing progress they've already made?
- Let self-doubt connect them to others with similar experiences
- Remove the self-doubt phase altogether?
- Constantly provide tailored and meaningful affirmation?
- Set musicians up for success and achievement
- Remove the need for confidence and make risk-taking a smaller deal?

HMW 1 - Capacity for Improvement

How might we make musicians feel that they have a great capacity for improvement?

From this how-might-we we generated several solutions, including:



- **Inner critic + inner affirmer**
- Show where similar musicians are after X-amount of time
- Remind musicians of the progress they've made (show them early recordings of them playing songs vs. now)
- Make progress visible (timeline, completed modules, etc.)
- Keep track of progress with milestones
- Get helper next step from more experienced musicians
- Provide encouragement from other musicians
- Tell learner about growth mindset
- Show visualization of learner achieving their goals
- Show steps people took to get to a similar goal (not time)



- Map your journey to an idol's



- Inspirational VR pep talk
- Each day you're shown a random user profile and have to give feedback (compliments)

Prototype 1 - Critic vs. Affirmer



We saw the power of reframing challenges and struggles. Building on Shirzad Chamine's research on "positive intelligence," we wanted provide an interface for musicians to externalize, understand, and take control of their inner dialogue and self-view.

Our solution gave reflection prompts post-practice, and grew or shrunk a critic or affirmative stick figure as their reflections were absorbed as either self-critical or self-affirming. We also allowed our prototyper to choose to reframe neutral statements to be either critical or affirming.



Specifics: We gave the participant a stack of post-its after a practice session. Participants write down answers to a set of prompts for 3 minutes.

Prompts:

- What did you do well?
- What could you improve?
- What did you do poorly?

One by one, the statements are read out loud by the participant. Two stick figures representing one's inner critic and inner affirmer "fight" over the statements one by one and deem which side it goes on. If the statement is self-praise or constructive criticism, the affirmer wins and grows larger, while the critic shrinks. If the statement is destructive criticism or self-limiting, the critic wins and grows larger, while the affirmer shrinks. After all statements are read, participant spends 3 more minutes writing a few more notes and then the processing repeats.

| Assumption | Validated? | Insight/Takeaways |
|--|------------|--|
| People have critical and affirming thoughts, and can recall them after practice | yes | Michelle recalled an array of details ranging from challenges focusing, mistakes, specific musical components, and progress. |
| Writing out your self-talk will help you understand and change it | yes | As she progressed, Michelle became more aware of the agency she had in shaping which inner voice got “fed” based on her framing. |
| People are willing to externalize their thoughts | no | Her reflections tended to be facts, not personal judgements, but the explanation for why they happened or how to change them moved them into personal criticism or encouragement. |
| Seeing a critic shrink and affirmer grow will motivate you to frame things more positively | yes... | Michelle said the experience of watching the angry critic growing in size was compelling and unpleasant, and made her want to make it shrink. However, the prototype felt “low stakes” and so she was more interested in discovering how the critic/affirmer would respond |
| Critic vs Affirmer is a helpful dichotomy | unclear | The exercise clearly helped Michelle see and respond to her inner thoughts. However, she shared that her own inner voice is less binary and more of a “coach” who’s constantly affirming but also clear with helpful critique. |

POV 2 - Camaraderie

We met Michelle, a Stanford senior and multi-instrumentalist. We were amazed to realize that some of her favorite musical memories center around teamwork with her band and the camaraderie that came with it. It would be game changing to provide budding musicians with a **chance to experience this camaraderie** with similar musicians.

From this POV, we generated many how-might-we's, some of which were:

How might we. . .

- **Unite similar musicians with a common goal?**
- Bring musicians together of similar level/interest?
- Give musicians a chance to share their work w/others?
- Provide a meaningful team experience for budding musicians?
- Help them find compelling goals to rally around?
- Build connection between musicians?
- Find core synergies underneath superficial differences?
- Make long-term plans together?
- Give people permission to be fully themselves?
- Connect musicians to fellow musicians of similar age and/or instrument?

HMW 2 - Unite musicians

How might we unite similar musicians with a common goal?

From this how-might-we we generated several solutions, including:

- **Escape the room by playing right notes**
- Tinder for musicians
- Pair musicians with similar taste in music and experience level
- App that brings together local musicians
- Fighting AI enemy band
- "Concerts" where multiple musician teams perform (could also be battle of bands)
- Vote worst team off paradise island
- Anonymous band "matchmaking," short-term goals, can permanent add people you meet here
- Remove the need to message 1st
- Pair each team with a "coach" or director who leads them to a big achievement
- Evaluate users on a standard scale and match interests in a "marketplace" style platform

Prototype 2 - Escape the Room

For the escape the room prototype, we chose to test on The Mendicants, an a cappella group on campus. We picked an unfamiliar piece of music with four voice parts. We divided the Mendicants into four teams (based on voice part) and separated the teams physically. Each

team had to find the pieces of their sheet music, put them together in order, then learn the music. Upon singing the music correctly, they were allowed to progress to the “common” room. Once all teams progressed to the “common” room, they had to sing the music together to escape the room. To create urgency and focus, the entire challenge had a time limit of seven minutes.



We were pleased to find that this prototype was quite successful. Specifically, the Mendicants were excited to complete the challenge and most were engaged the entire time. Having them find and piece together the music was a good way to pique their interest and build immediate team dynamics, which transitioned nicely into learning the music together. The time pressure forced them to focus on the task at hand, and almost all of the Mendicants seemed pleased to complete the challenge. In terms of what didn't work, we initially had difficulty with buy-in. Many of the Mendicants were extremely reluctant to try the prototype, but these same Mendicants seemed to thoroughly enjoy the experience. Of the four teams, we had one team

that was far less interested in completing the challenge than the other three teams. Without anyone on this team who was motivated to learn, the team struggled far more than the others. However, the other teams went over to help them (since they all needed to finish to escape), and brought them into the learning experience.

| Assumption | Validated? | Insight/Takeaways |
|---|------------|---|
| Fun leads to productivity, engenders teamwork | yes | Good team dynamics are more easily created when the task is entertaining |
| The experience would be engaging | yes | Creating initial buy-in will be a critical factor for us, as the experience itself was engaging for participants |
| Time pressure leads to urgency and focus | yes | Time pressure incentivized teams to learn their parts quickly, which meant dedicating their full attention and effort to the task |
| Will produce memorable, triumphant feeling | yes | “Escaping the room” as a team creates a meaningful victory, especially if the participants were engaged throughout. |

POV 3 - Practice grind → Practice high

We met Josh, a jazz bassist and instructor. We were amazed to realize that Josh strived for practice to be a rich, immersive, meditative, incredible journey of flow and focus. It would be game changing to ***turn the practice grind into the practice high.***



From this POV, we generated many how-might-we's, some of which were:
How might we. . .

- **Make practice a reward, not a punishment?**
- Make practice feel sacred?
- Create rituals which focus and ground you?
- Make fears and insecurities explicit and familiar?
- Create flow and timelessness?
- Let practice feel deeply intertwined with outside goals?
- Let people learn from master practitioners?
- Make celebrating practice a communal affair?
- Let people uncover and appreciate the richness of their instrument?
- Make practice an eagerly anticipated pleasure?
- Make practice as rewarding and meaningful as performance?

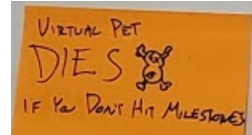
HMW 3 - (Practice == reward) && (Practice != punishment)

How might we make practice a reward, not a punishment?

From this how-might-we we generated several solutions, including:

- **Each musical piece is a pokemon that you train by getting better at it**
- “Unlock” your next mystery practice session (exciting animation)
- Actual musical journey to explore by hitting milestones
- Bite-sized chunks, each giving a little dopamine rush (cool animations, etc) on completion
- Gamified rehearsal (with points)
- Reward perseverance in rehearsal
- Provide affirmation from other musicians for practicing
- Play a fun song during each session

- Wise sage gives you a mystical mission/task at the start of practice
- Personalized challenges just outside the user's comfort zone



- Virtual pet dies if you don't practice enough

Prototype 3 - Musical Pokémon

For this prototype, we began with a music concept our prototyper wanted to master (for Michelle, this was understanding how you substitute dominant chords in jazz). We broke that goal down sub-concepts and assigned a pokemon evolution to each. As Michelle learned each sub-concept, we replaced her (printed out on a paper) pokemon with the next evolution pokemon.

| Assumption | Validated? | Insight/Takeaways |
|---|------------|--|
| Achievements of leveling up pokemon will be rewarding | no | Michelle was personally really eager to understand the topic we were learning, and it was clear the understanding of it was the reward. |
| The pokemon will be an exciting motivator | no | see above |
| The Pokemon's growth and evolution will feel synergistic and parallel to your own | yes | Michelle reflected that, because she came in 1. viewing mastering the current concept as a tool that would evolve her musical ability and an important and explicit way and 2. she had already explored and worked with the concept before, so she was familiar with what it could "evolve" you to do as well as where she felt still missing information, Pokemon evolution fit well. "I liked feeling like I could level up." "I kind of understood it the whole time, but I wanted to master it. It did feel like I was leveling up, the new me could make all these new insights." |
| Incremental progression helps hone in on zone of proximal development | yes | For me as a teacher, as well as Michelle as an active learner, the Pokemon metaphor pushed us to explicitly break a complex notion into the |

| | | |
|--|--|------------------------------|
| | | next achievable “evolution.” |
|--|--|------------------------------|

All in all, we were struck by how the (circumstantial) fact that Michelle was learning a concept she'd had previous exposure to allowed her to understand it's relevance and usefulness. That made us question how you think about concepts you can grasp the importance of, vs new concepts you don't understand, affects your practice mindset.

Most Successful Prototype

The most successful prototype for us was our “Escape the Room” prototype, where a group had to use their music learning skills and work together to achieve a common goal. The incredible transformation from reluctance and boredom to instant engagement and fun was really surprising to us. We believe that the reframing of practice is incredibly important and can change practice from being a grind to being fun. Typically, the group rehearses in a similar fashion, splitting up into voice parts and learning their own part before joining everyone else and learning together. However, by reframing practice (refracting), we made practice more engaging and efficient.