

The background is a light cream color with a fine, dotted pattern. It is decorated with various musical notes in teal, orange, and red. There are also several abstract, hand-drawn shapes in orange, teal, and yellow, some with a textured, scribbled appearance. A teal speech bubble in the upper right contains the text 'CS 147'.

CS 147

Making Music in Early Adulthood:

Experience
Prototyping

Reminder of Our Ensemble!



Will Fang

CS AI '25
French Horn!



Julia Hernandez

SymSys HCI + Soc '24
Viola!



Emily Macias

CS HCI '25
Guitar!



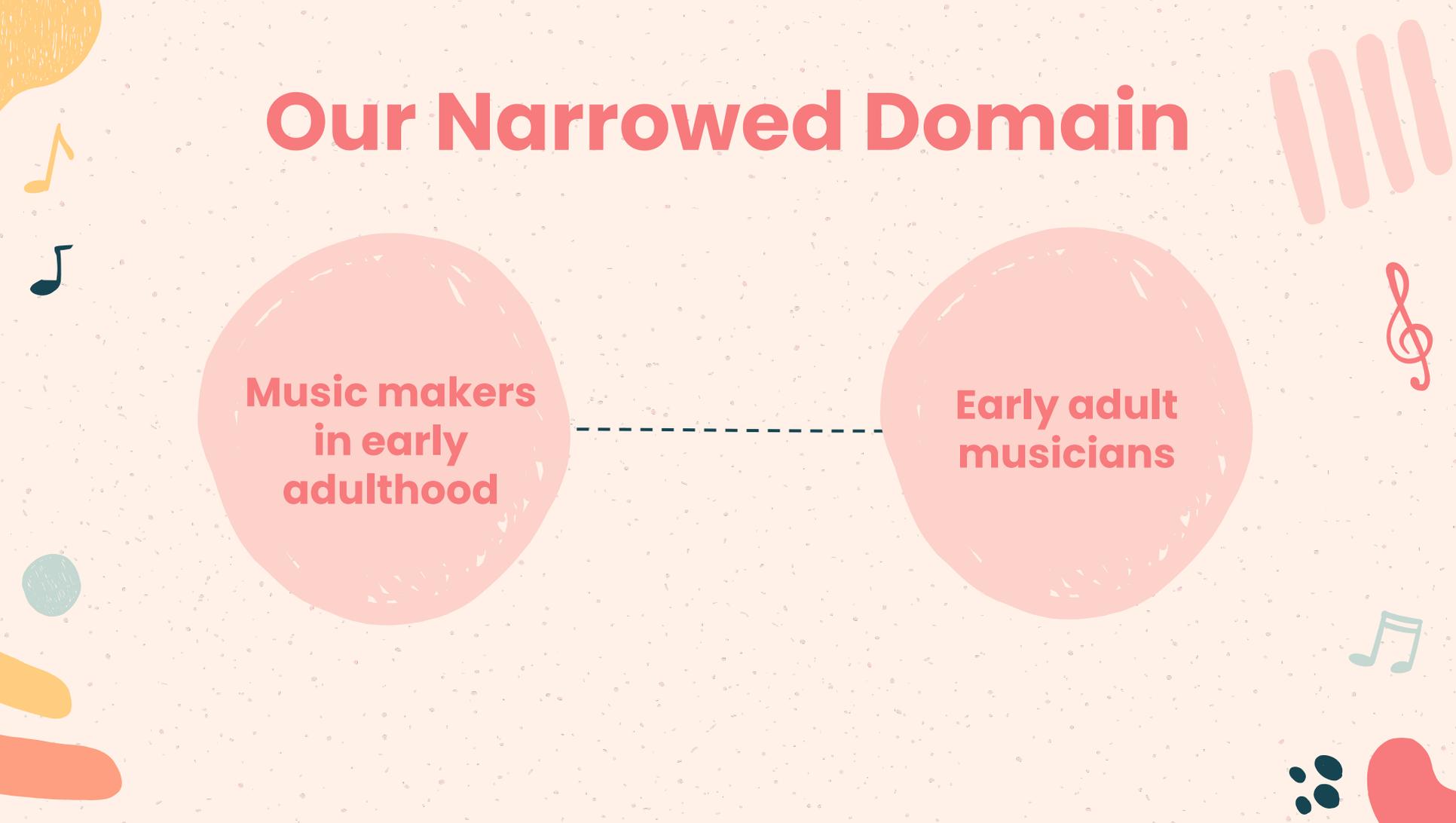
Aditi Tuli

SymSys Neuroscience '25
Piano!

Our Narrowed Domain

**Music makers
in early
adulthood**

**Early adult
musicians**





Roadmap



01 Additional
Needfinding

02 POVs

03 HMWs

04 Brainstorming
Solutions

05 Experience
Prototypes

06 Analysis & Summary





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Na Young

20-year-old composer, singer,
songwriter, and producer from
Stanford

Met at EVGR

Interviewed by Emily, notes taken by Will



Na Young



I couldn't do EE all day...

- Uses music to relate with people who struggle with mental health
- Gets feedback from friends and family, but feels nervous getting feedback from strangers
- Gets many opportunities via word of mouth and feels lucky to have connections through Stanford

Satwik

Aspiring musician in his twenties
and student at IIT Delhi

Met on Zoom

Interviewed by Julia, notes taken by Aditi



Satwik



I want to perform my own songs

- Writes his own music, but tends to perform covers because he feels the audience will be more receptive
- Wishes he had the time to find and play at open mics and underground gigs
- Would love to collaborate with established or student artists



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POV from Studio



We met Lesley, a professional violist and music educator at Stanford

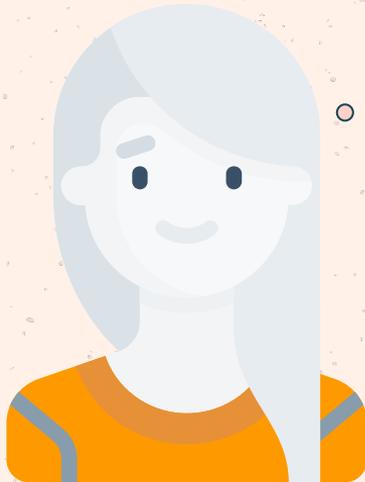
We were surprised to realize that, as a classical musician, she would often play in spaces such as women's prisons, nursing homes, etc

We wonder if even as someone with a lot of experience, she still finds value in engaging with nontraditional spaces and communities

It would be game-changing to connect musicians with people from nontraditional spaces



POV #1: Non-Traditional Spaces



Music brings us
together.





POV #1: Non-Traditional Spaces

We met...



Lesley, a professional
violinist and **music**
educator at Stanford



POV #1: Non-Traditional Spaces

**We were
surprised
to
realize...**

that as a classical musician with a **busy schedule**, she would often play in spaces such as **women's prisons, nursing homes**, etc. and **vividly remembers the audiences** from these performances





POV #1: Non-Traditional Spaces

We wonder
if...

she feels the **greater interaction** between her and the audience in **non-traditional performances** is an important part of her **identity as a musician**





POV #1: Non-Traditional Spaces

**It would be
game
changing...**

to make it easier for
her to experience these
**meaningful audience
performer interactions**



POV #2: Amateur Opportunities



Music makes
me me.



POV #2: Amateur Opportunities

We met...

Monica, 26-year-old
cellist working as a **SWE**
at **Big Tech**



POV #2: Amateur Opportunities

**We were
surprised
to
realize...**

that she said that she is
“**lucky**”, as an “**amateur**”,
to get the **opportunities**
she does have – despite
saying that she is
frustrated with the **amount**
and level of **opportunities**
that she gets to **perform**





POV #2: Amateur Opportunities

We wonder
if...

she feels **guilty** for
wanting **more**
opportunities to
perform as a
non-professional





POV #2: Amateur Opportunities

**It would be
game
changing...**

to find a way for her to
**get involved with
music** to the degree
that she wants without
making her feel
self-conscious



POV #3: Support Networks

Music is my
passion.





POV #3: Support Networks



We met...

Alex, a man in his
20s who works in a
bakery in Palo Alto
and plays in an
indie rock band





POV #3: Support Networks

**We were
surprised
to
realize...**

that even though he believes that **Palo Alto is a very supportive environment** for musicians, he **does not play much in Palo Alto** because he does not have many friends in the city





POV #3: Support Networks

**We wonder
if...**

he feels that the **music
community** in Palo Alto
is **supportive** but
insular





POV #3: Support Networks

**It would be
game
changing...**

to help young
musicians like Alex
**break into the existing
support network** and
music scene in places
like Palo Alto



pssst...six more POVs in the appendix!



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Top 3 HMWs

HMW connect
Lesley with
people in
non-traditional
spaces to
organize
performances?

The slide features a light pink background with a fine, dotted pattern. In the top left corner, there is a yellow abstract shape with blue dots and a red musical note. In the top right corner, there are three red vertical bars and a yellow treble clef. In the bottom right corner, there is a blue circular shape and a yellow musical note.

Top 3 HMWs

HMW connect Lesley with people in non-traditional spaces to organize performances?

HMW connect Monica with musicians she can work with and learn from?



Top 3 HMWs

HMW connect Lesley with people in non-traditional spaces to organize performances?

HMW connect Monica with musicians she can work with and learn from?

HMW leverage Alex's amateur status to create opportunities and foster new interactions?



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Solution #1

POV: It would be game changing to make it easier for Lesley to experience meaningful audience-performer interactions



HMW connect Lesley with people in non traditional spaces to organize performances?

A platform that connects musicians with non-traditional spaces to perform

Solution #2

POV: It would be game changing to find a way for her to get involved with music to the degree that she wants without making her feel self-conscious



HMW connect Monica with musicians she can work with and learn from?

A platform that connects people with complementary interests and skillsets so that they can learn from each other

Solution #3

POV: It would be game changing to help young musicians like Alex break into existing support networks in places like Palo Alto



HMW leverage Alex's amateur status to create opportunities and foster new interactions?

A platform to post your music for feedback from a network of other musicians



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Experience Prototype #1:



Solution: A platform that connects musicians with non-traditional spaces to perform

Assumption: Musicians want to play in non-traditional spaces

To test this assumption we presented ...



Experience Prototype #1:

Rank the following performance venues from 1 (most preferred) to 6 (least preferred)

1

Auditorium

2

Bar

3

University

4

Veterans
Community
Center

5

Elementary
Music School

6

Rehab Center



Experience Prototype #1:



Why did you rank these venues
in the way that you did?

What general factors go into
the way you choose a venue?



Have you ever thought about performing
in non-traditional spaces before this?





Our Participants:



Z.Flat

South Korean Rapper



Edmund

Violist in a String Quartet,
CS major at Santa Clara



Joe

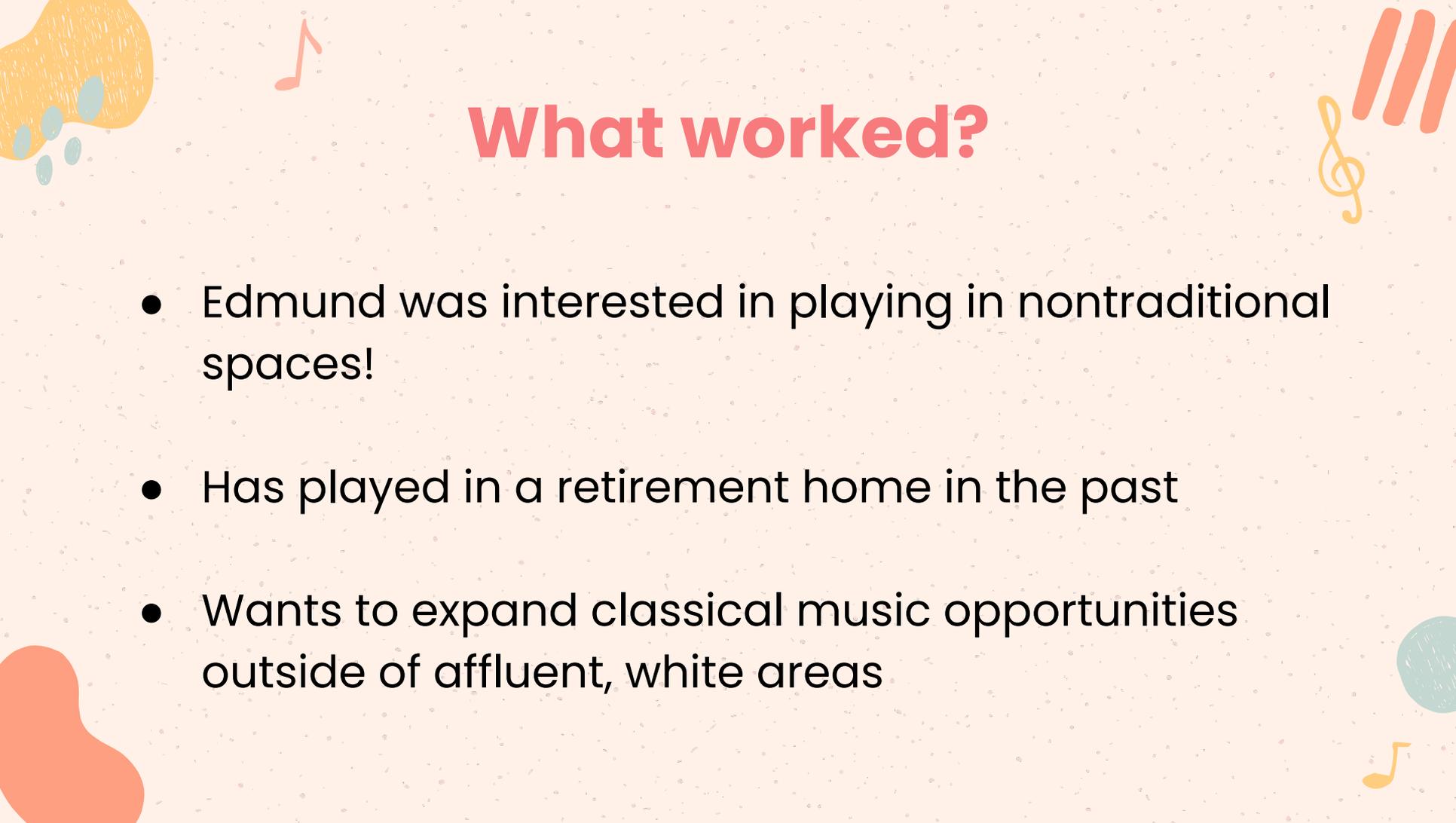
Guitarist at NYU



Participated via Zoom
Second-degree connection

Participated via Zoom
Third-degree connection

Participated via Zoom
Third-degree connection



What worked?

- Edmund was interested in playing in nontraditional spaces!
- Has played in a retirement home in the past
- Wants to expand classical music opportunities outside of affluent, white areas



What didn't?

- Z Flat and Joe seemed uninterested
- Thought their music did not fit audiences in non-traditional spaces
- Also thought these opportunities were not good for career advancement



Learnings!

Classical musicians feel that their music would be more appreciated in nontraditional spaces than non-classical musicians

Musicians with more support from teams may be less inclined towards non-traditional spaces



Experience Prototype #2:



Solution: A platform that connects people with complementary interests and skillsets so that they can learn from each other

Assumption: People would be willing to reach out to someone with a complimentary skillset as opposed to someone with a similar skillset

To test this assumption we presented



Experience Prototype #2:

Person A

Instrument: Cello

Experience level: 16 years

They are looking for someone to practice with; they want to learn and grow together

Person B

Instrument: Drums

Experience level: 10 years

They want to learn to play more string instruments and to share their percussion skills

Person C

Instrument: Bass

Experience level: 3 months

They are looking for a mentor to help them grow as a musician

Person D

Instrument: Guitar

Experience level: 13 years

To learn how to play a new instrument and to teach someone a song on the guitar. He specializes in tango and jazz

Person E

Instrument: Trumpet

Experience level: 12 years

They want to play and practice with another musician at a high level

Person F

Instrument: Xylophone

Experience level: 7 years

They want to collaborate on performing a song at a local music festival

Person G

Instrument: Synthesizer

Experience level: 10 years

They want to play and make new music with another experienced musician. Prefers to play with someone who has more than 3 years of experience.

Person H

Instrument: Keyboard, Cello

Experience level: 15 years keyboard, 1 year cello

They want to find someone that they can practice and learn new music with on a weekly or biweekly basis.

Our Participants:



Daniel

Percussion

Dinkelspiel Auditorium
Second-degree connection



Dylan

Classically-trained Cellist

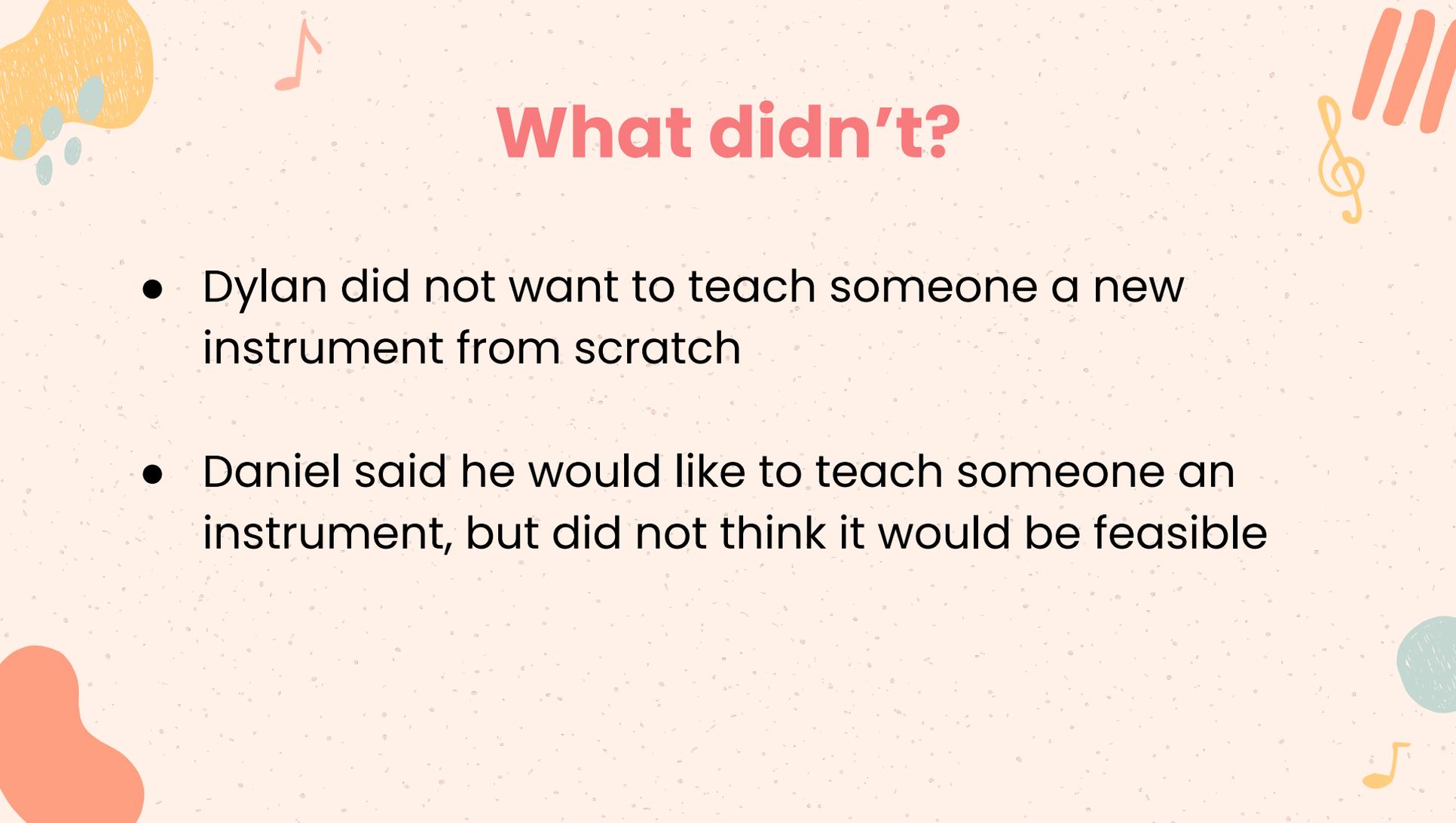
Participated via Zoom
Third-degree connection

What worked?

Both Dylan and Daniel said:

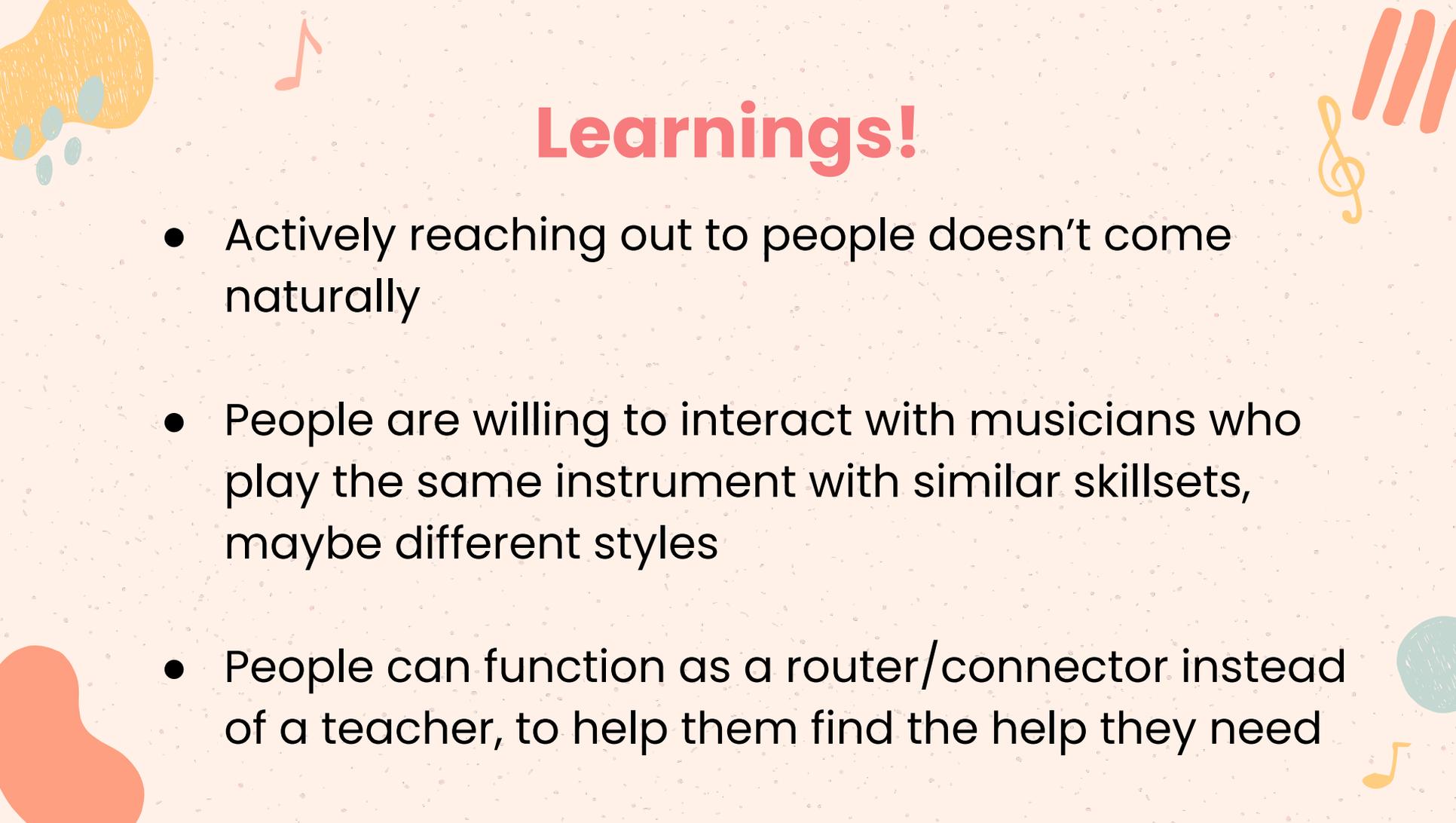
- They would be excited to collaborate with people playing their instrument at a similar level of experience to learn new genres and specialties
- They would be willing to mentor beginners in their instrument





What didn't?

- Dylan did not want to teach someone a new instrument from scratch
- Daniel said he would like to teach someone an instrument, but did not think it would be feasible



Learnings!

- Actively reaching out to people doesn't come naturally
- People are willing to interact with musicians who play the same instrument with similar skillsets, maybe different styles
- People can function as a router/connector instead of a teacher, to help them find the help they need



Experience Prototype #3:



Solution: A platform to post your music for feedback from a network of other musicians

Assumption: Amateur musicians would accept and feel encouraged by feedback from other amateurs that they do not already know

To test this assumption we presented ...





Experience Prototype #3:



1

Recruit 2 musicians who don't know each other

2

Ask each to play live or show a video clip of them playing while the other provides feedback

3

Break out and ask about how they felt giving and receiving feedback



Our Participants:



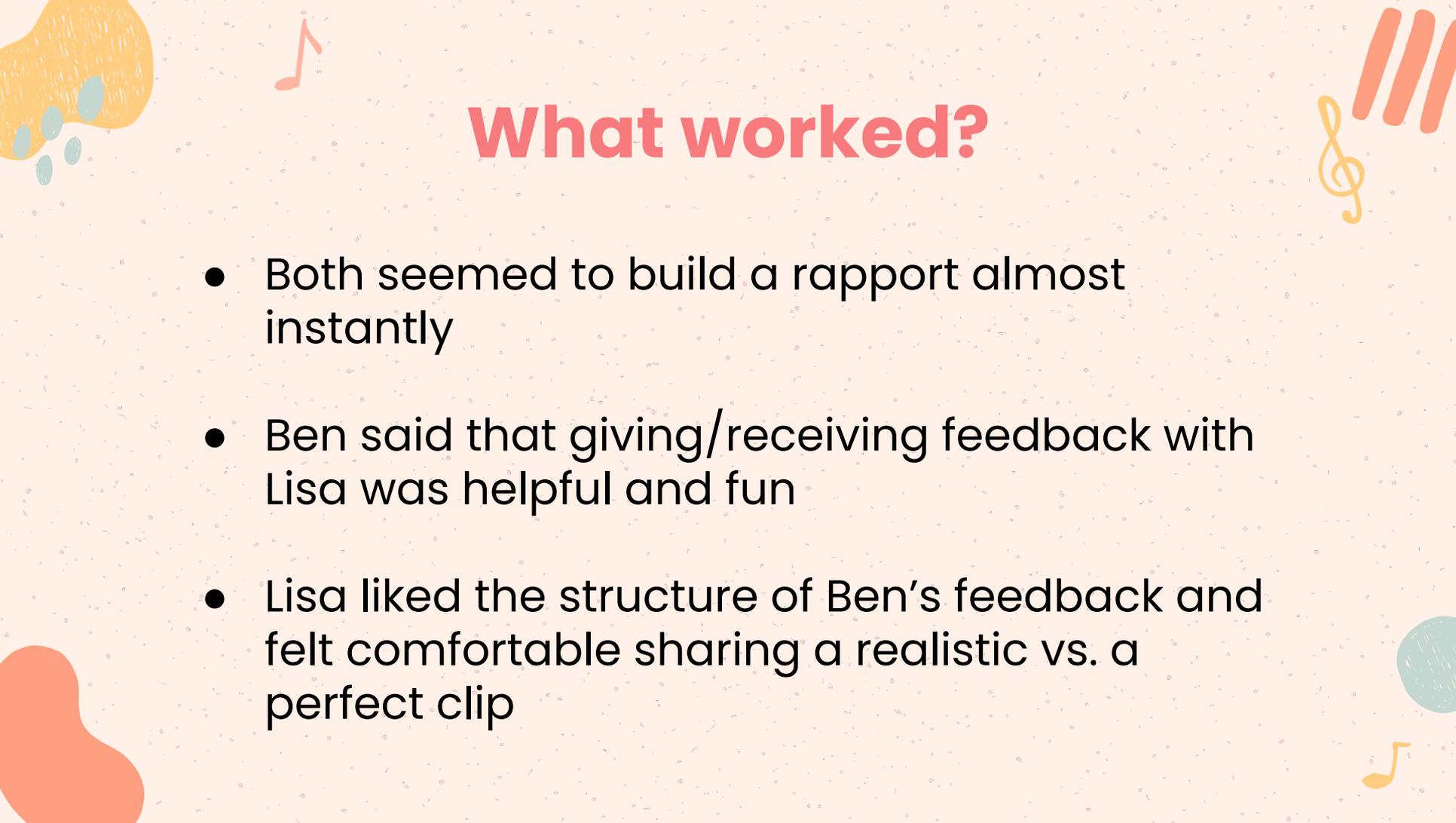
Ben

Violist, CS Major at Santa Clara
Participated via Zoom
Second-degree connection



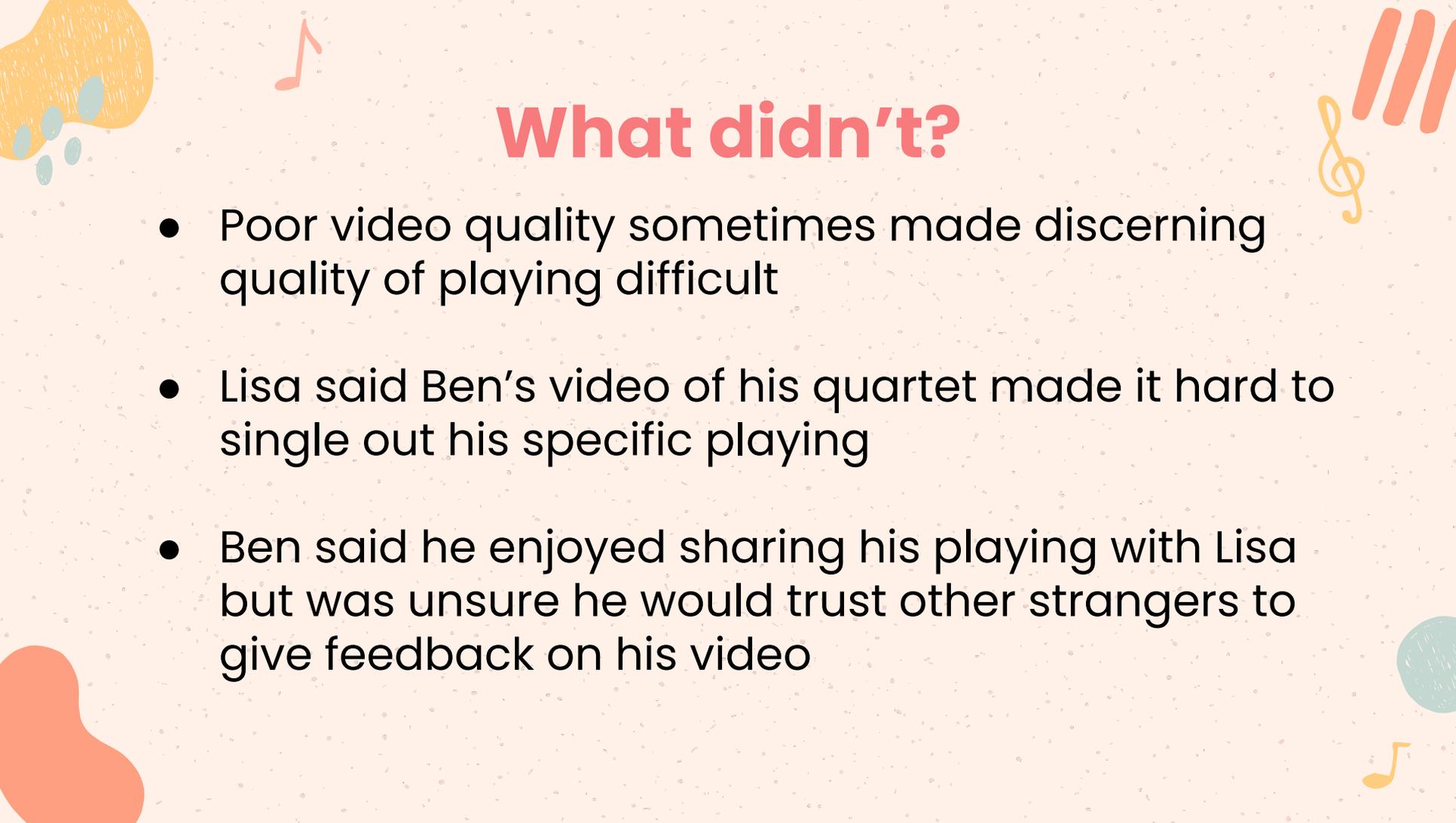
Lisa

Violin + Econ Major at Northwestern
Participated via Zoom
Third-degree connection



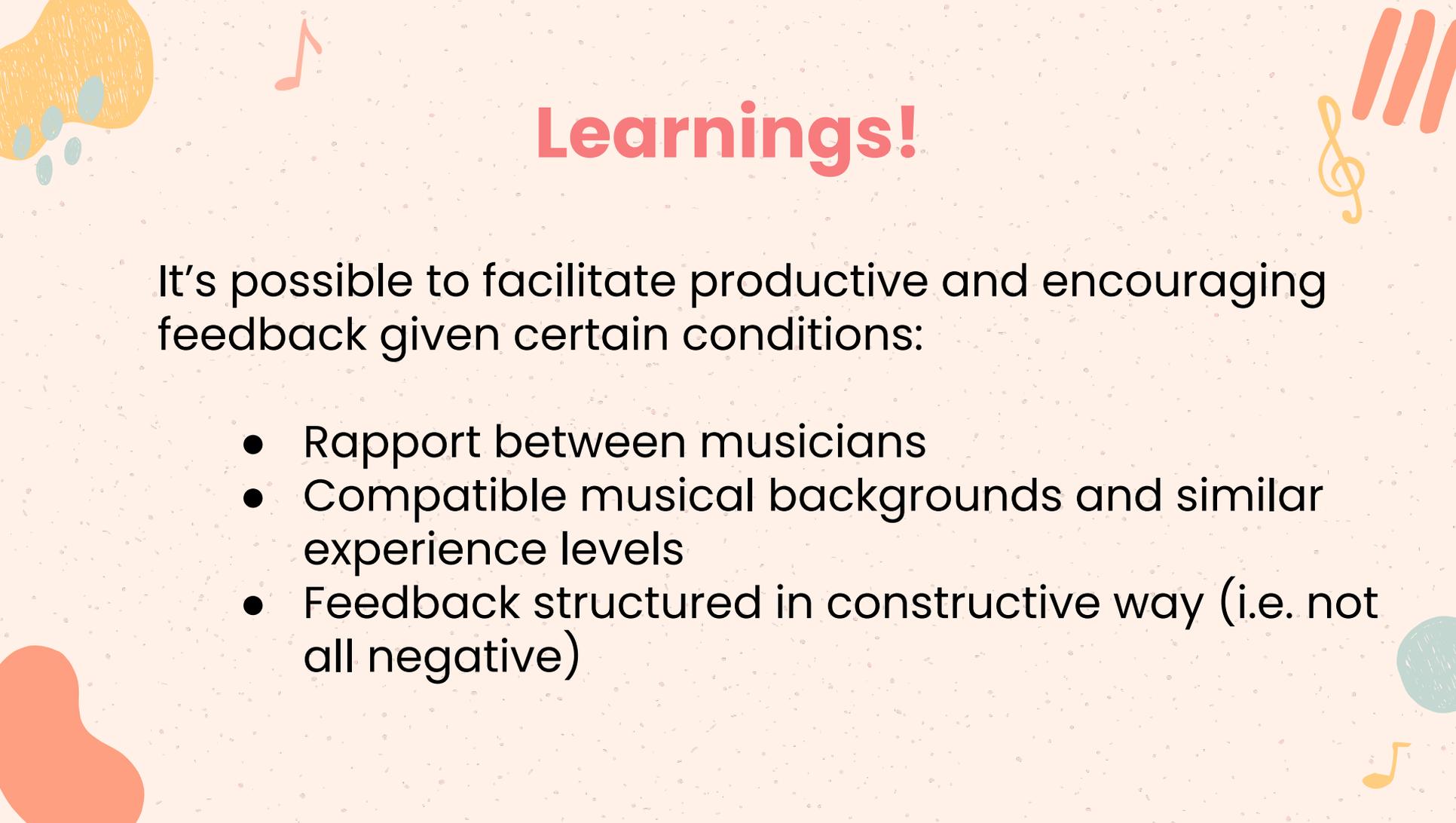
What worked?

- Both seemed to build a rapport almost instantly
- Ben said that giving/receiving feedback with Lisa was helpful and fun
- Lisa liked the structure of Ben's feedback and felt comfortable sharing a realistic vs. a perfect clip

The slide features a light beige background with a fine, dotted pattern. In the top-left corner, there is a yellow abstract shape with blue dots and a red musical note. In the top-right corner, there is a yellow treble clef and three red vertical bars. In the bottom-right corner, there is a yellow musical note and a blue circular shape. In the bottom-left corner, there is a red abstract shape.

What didn't?

- Poor video quality sometimes made discerning quality of playing difficult
- Lisa said Ben's video of his quartet made it hard to single out his specific playing
- Ben said he enjoyed sharing his playing with Lisa but was unsure he would trust other strangers to give feedback on his video



Learnings!

It's possible to facilitate productive and encouraging feedback given certain conditions:

- Rapport between musicians
- Compatible musical backgrounds and similar experience levels
- Feedback structured in constructive way (i.e. not all negative)



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Summary Stats

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HMWs

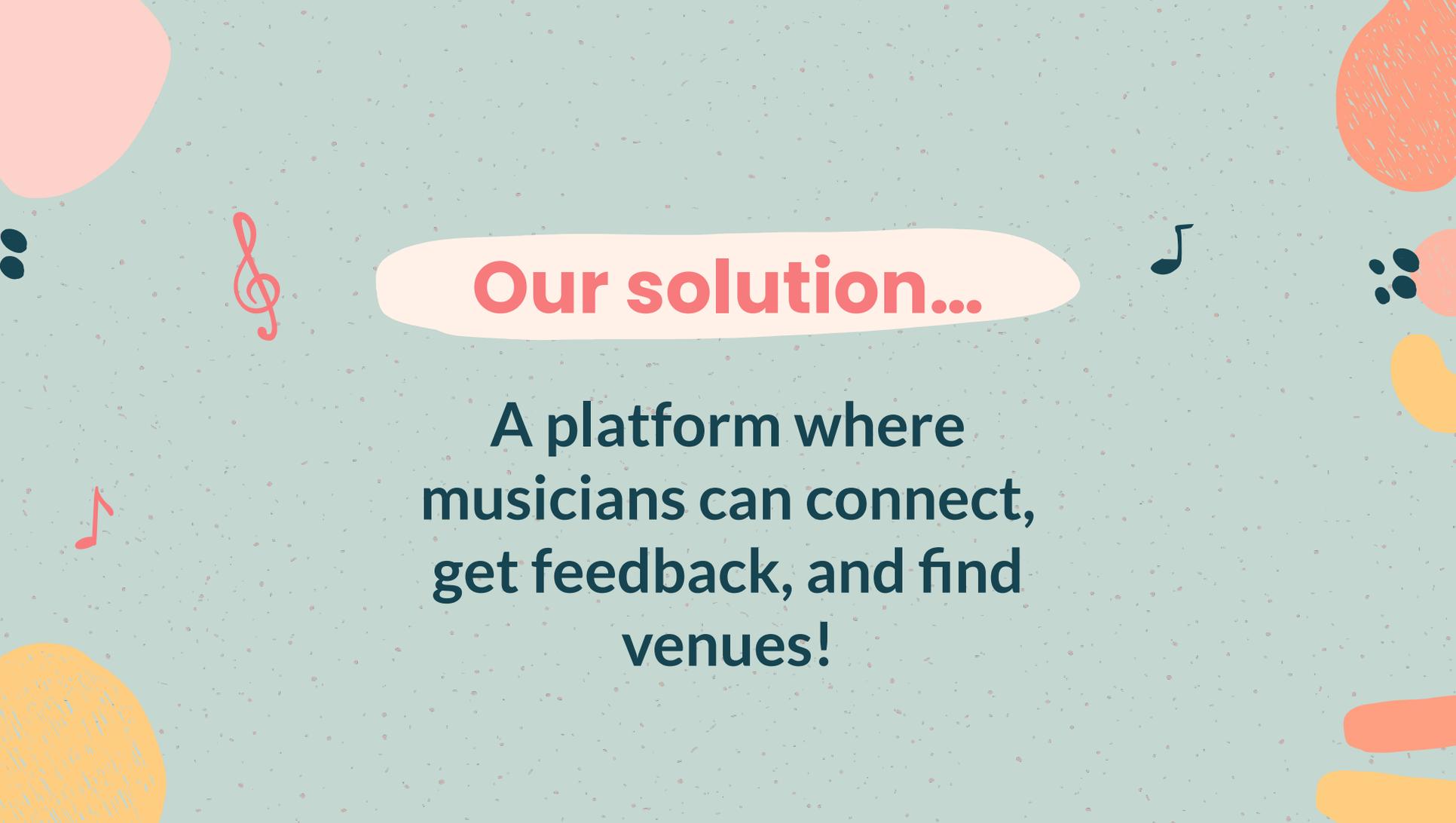
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Solution Ideas

7

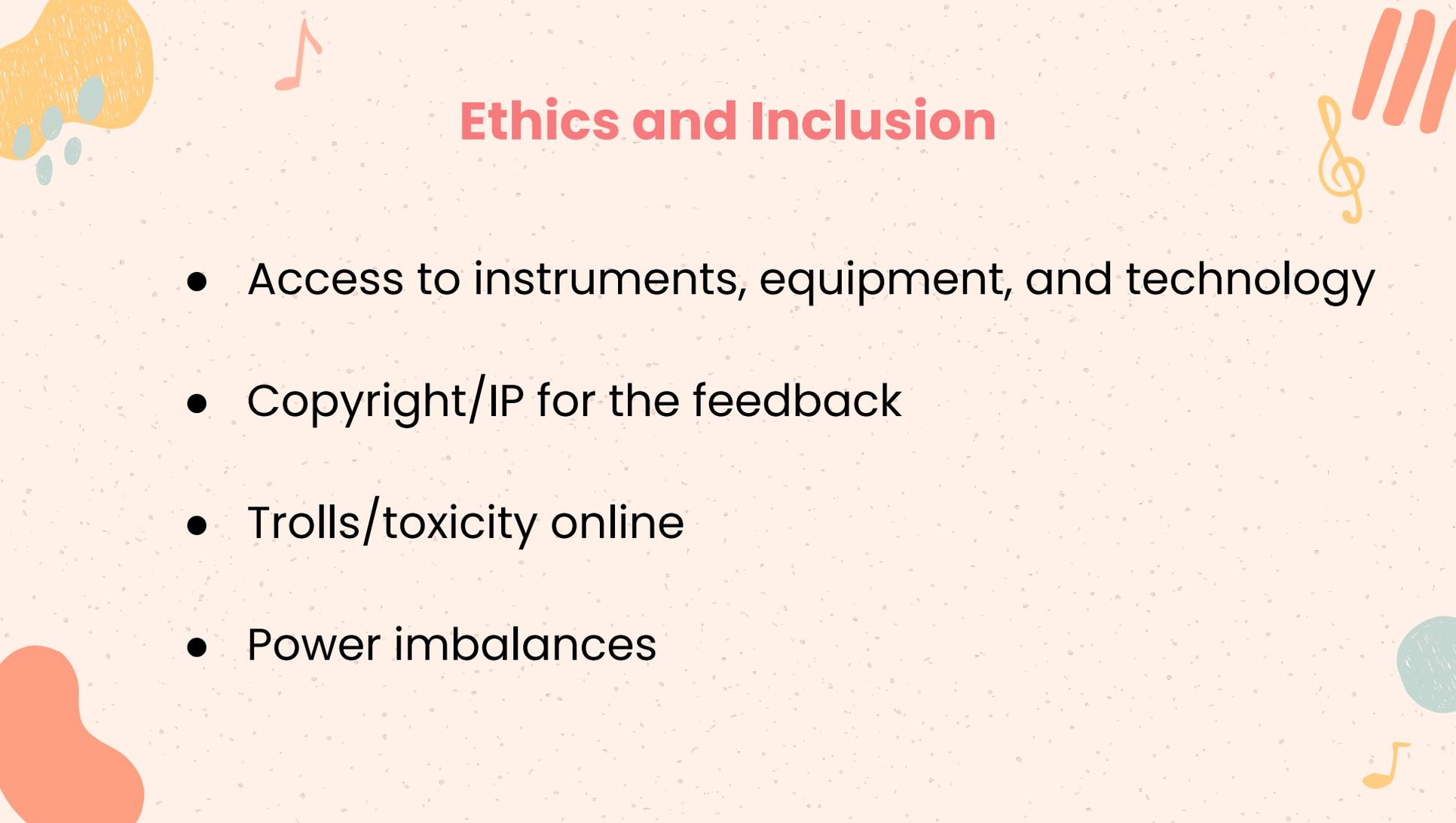
EP Testers

have led us to...

The background is a light teal color with a fine, speckled texture. It is decorated with various musical symbols and abstract shapes. On the left, there is a large orange circle at the top, a red treble clef, and a small red eighth note. On the right, there is a dark blue eighth note, a large orange circle with a textured pattern, and several other abstract shapes in orange and yellow. The text is centered on the page.

Our solution...

**A platform where
musicians can connect,
get feedback, and find
venues!**



Ethics and Inclusion

- Access to instruments, equipment, and technology
- Copyright/IP for the feedback
- Trolls/toxicity online
- Power imbalances



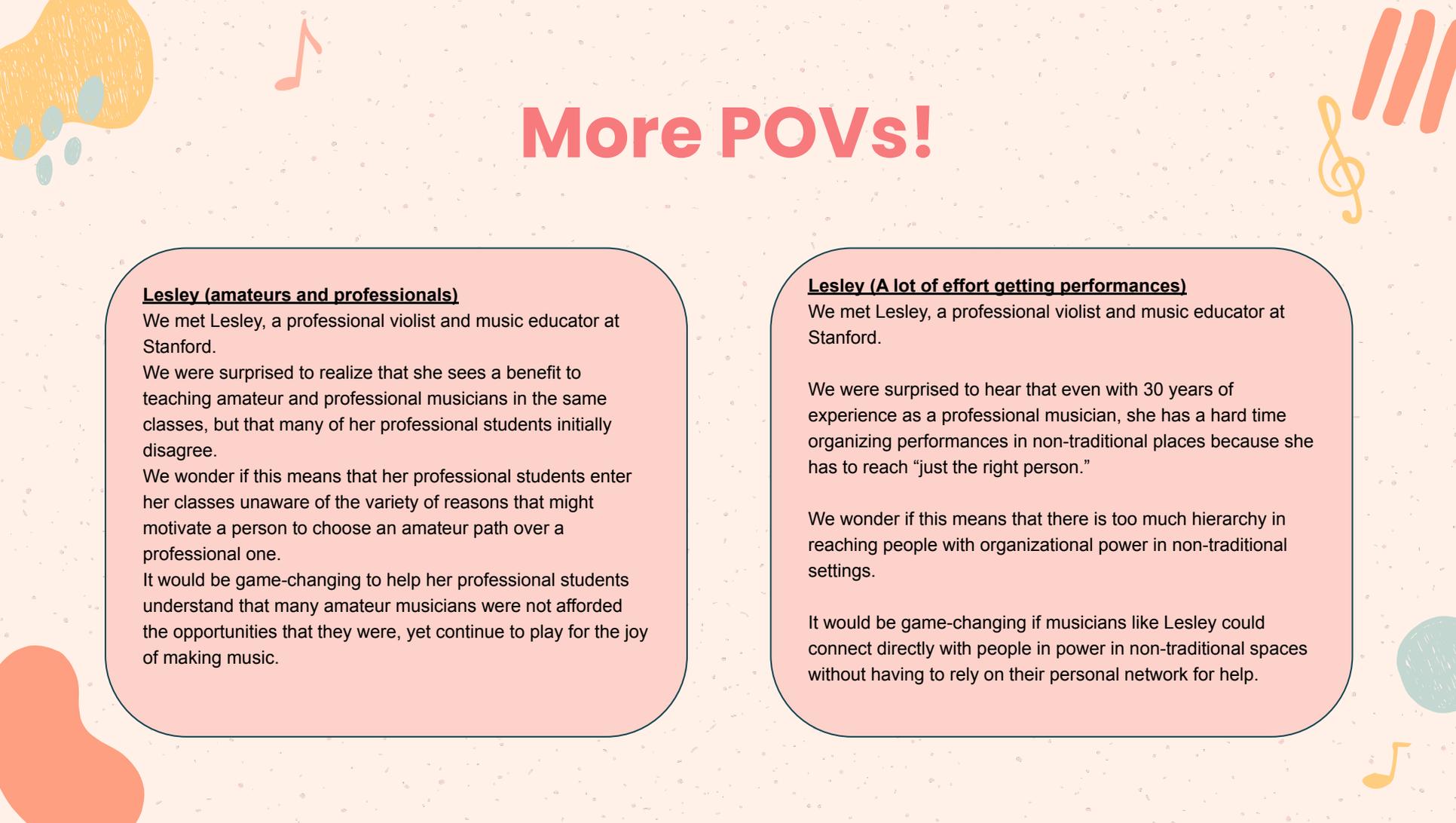
Thank you!

Questions? Comments?





APPENDIX



More POVs!

Lesley (amateurs and professionals)

We met Lesley, a professional violist and music educator at Stanford.

We were surprised to realize that she sees a benefit to teaching amateur and professional musicians in the same classes, but that many of her professional students initially disagree.

We wonder if this means that her professional students enter her classes unaware of the variety of reasons that might motivate a person to choose an amateur path over a professional one.

It would be game-changing to help her professional students understand that many amateur musicians were not afforded the opportunities that they were, yet continue to play for the joy of making music.

Lesley (A lot of effort getting performances)

We met Lesley, a professional violist and music educator at Stanford.

We were surprised to hear that even with 30 years of experience as a professional musician, she has a hard time organizing performances in non-traditional places because she has to reach “just the right person.”

We wonder if this means that there is too much hierarchy in reaching people with organizational power in non-traditional settings.

It would be game-changing if musicians like Lesley could connect directly with people in power in non-traditional spaces without having to rely on their personal network for help.

More POVs!

Monica (getting gigs)

We met Monica, a 26-year-old cellist working as a SWE and playing in an orchestra @ Big Tech.

We were surprised to hear that, even as someone still playing in an orchestra and in chamber groups, she was frustrated with the current (non-professional) opportunities for playing music, both with the level of playing and organization of gigs

We wonder if she thinks that she should be playing at a higher level and more often than she currently is

It would be game-changing if she could have a convenient way to find high-level playing opportunities at venues with other musicians

Na Young (doing everything herself)

We met Na Young, a current pop artist at Stanford from Korea who recently switched from doing EE to both majoring in and making music.

We were surprised to find that she has to mix, compose, and master her own music, all by herself because outsourced help is too expensive.

We wonder if this means that creating production-level music is inaccessible and unfair in who it allows to produce “stream-ready” music.

It would be game-changing if Na Young could produce mastered music in a way that is easily accessible, easy to navigate, and inexpensive

More POVs!

Na Young (pay)

We met Na Young, a current pop artist at Stanford from Korea who recently switched from doing EE to studying and making music.

We were surprised to find that she primarily publishes her music through streaming, but struggles with getting both exposure and income because platforms such as Spotify pay \$0.003/stream and algorithmically amplify already-established artists.

We wonder what alternatives there are for artists to get recognition other than streaming platforms, since they are monopolized and not likely to change.

It would be game-changing if Na Young could obtain exposure and income for the music that she makes in a way that does not depend on streaming platforms.

Satwik (original music)

We met Satwik, a 20 year old engineering student at IIT Delhi, who writes and releases his own music.

We were surprised to realize that, despite saying that he loves performing his original music, he mainly plays covers during his performances at college.

We wonder if he feels as though an audience of students wants to listen to familiar music, and may not be receptive to new music.

It would be game changing if he could find and perform for audiences who want to discover new music.

HMWs!

POV: Alex Performing in Palo Alto

HMW make Alex feel welcomed into the music community?

HMW connect Alex with established musicians in Palo Alto

HMW connect Alex with a mentor to guide him toward breaking into the music scene in the area

HMW change his perception of the PA music community

HMW connect Alex to other newcomers to the music scene?

HMW remove barriers to support network?

HMW connect musicians with performance venues in the area without religion or personal network

HMW make it so that Alex can just focus on having fun in music?

HMW segregate the local music scenes?

HMW make the process of finding perform enjoyable?

HMW connect him w/ other musicians to play casually?

HMW create opportunities for him to play outside PA?

HMW create a support network for Alex? (his own)

HMW involve new audiences in the Palo Alto music scene to make newer music like Alex's more relevant?

HMW make him more comfortable seeking out opportunities in PA

Pov: Lesley Non-traditional performances

HMW make non-trad. performances feel as much of an attraction as trad. perf.

HMW keep her connected w/ non-traditional audiences after performances?

HMW make Music performance more meaningful?

HMW reduce the labour required to find non-traditional spaces to perform?

HMW change what is considered a traditional performance

HMW make concert halls perform as more interactive!

HMW make people in non-traditional settings performers/part of the performance

HMW... expand music education and performance to more people?

HMW make performers in non-trad spaces feel less like volunteering and more like meaningful showcases

HMW make classical music popular in a general audience?

HMW make who goes to a performance more diverse

HMW make the concert hall more fun?

HMW make performances like conversations not speeches?

HMW connect her with people in non-trad spaces to organize performances?

HMW make performances easier to find for non-trad. audiences

HMW get music out of the concert hall?

HMW increase performance opportunities for amateurs?

HMW make amateurs more comfortable in the music scene?

HMW change people's perception of what it means to be an amateur?

HMW make finding opportunities fun and exciting

HMW connect her with professional musicians to perform w/ & learn from them?

HMW leverage tech resources in the music scene?

HMW leverage her network as a SWE to help her find performances?

HMW make getting opportunities more about growth and exploration and less judgement

HMW facilitate musician collabs across time and space?

HMW make people more confident in their abilities and willingness to perform

HMW make it easier to find more opportunities less guilt-inducing?

HMW make high level / "professional" performances more accepting of amateurs?

HMW separate the gig-finding process from the performing aspect?

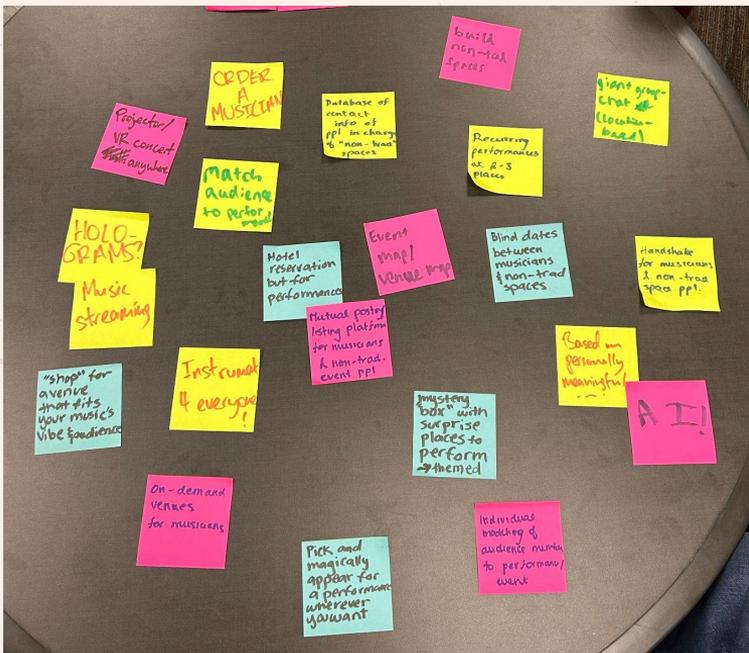
HMW connect amateurs who want to play music on their level

HMW make it so people who want to play music can without auditions?

HMW leverage being an amateur to create opportunities and foster new interactions

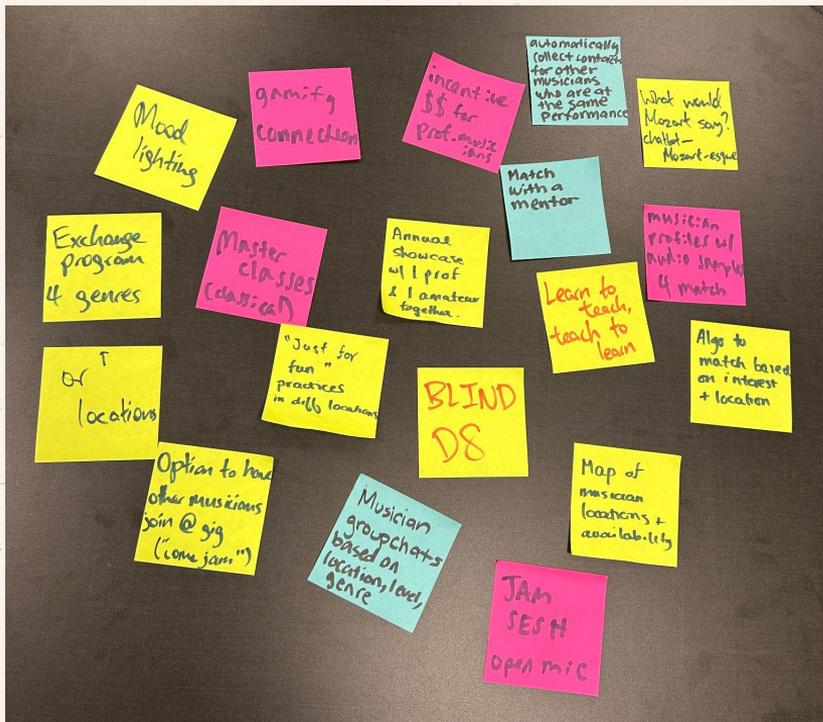
Pov: Monica amateur opportunities

Brainstorming solutions!



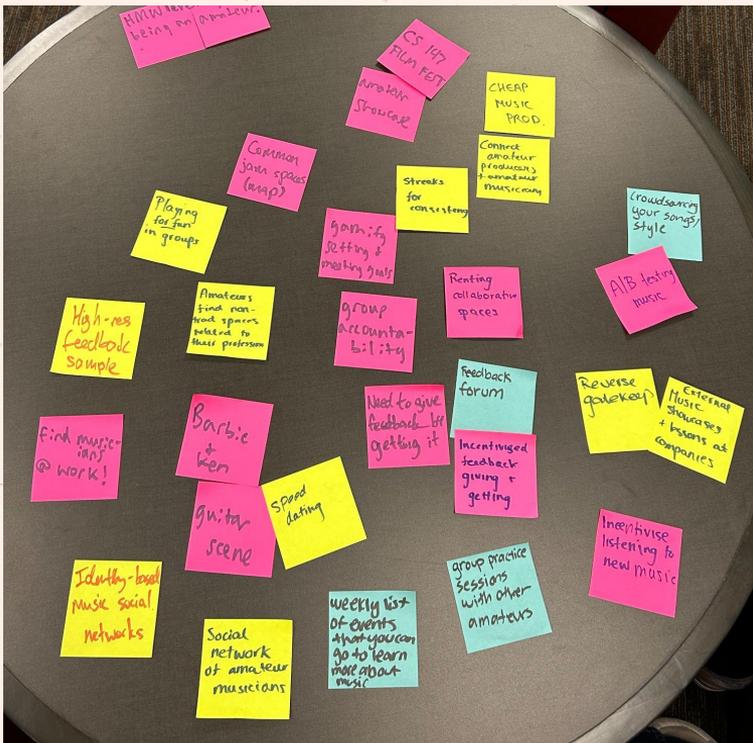
HMW connect Lesley with people in non-traditional spaces to organize performances?

Brainstorming solutions!



HMW connect Monica with musicians she can work with and learn from?

Brainstorming solutions!



HMW leverage Alex's amateur status to create opportunities and foster new interactions?

Experience Prototype #2

