



TransforMR

Transforming Education

Mixed Reality based Educational Solutions for Distant Learning

Date and Place: *31st May 2020 ,Pune ,MH India*

Team



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Title : **Freelance UX Designer**
Role in the Project : **Co-Founder**



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Role in the Project : **Co-Founder**



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Title : **Engineering Student**
Role in the Project : **Co-Founder**



MENTOR's Name : Probal Banerjee
Title : Design-led Innovator and Entrepreneur

Our Process



EMPATHISE

Discover user
problems and
goals

DEFINE

Setup
features

IDEATE

Brainstorm
solutions

PROTOTYPE

Product
Mockups

TEST

Validate,
iterate

The

WHY?

Due to COVID19 the
Universities and colleges are
closed.

Students are forced into
Online learning.

What about **Practicals?**

Could Online learning help
practical knowledge and
hands-on experience?

Who is suffering?



Students from all streams of
Science and Technology

Explorations: Students

76.07%

Students are interested in **e-learning**

77%

Students are interested in **combination** of traditional and online learning.

> 90%

Students agreed to major **advantages** of e-learning

But...



Students voted for **No interaction**
as biggest **disadvantage**

Who else is suffering?

Universities /Colleges

20%

Students could leave
Colleges

Education Systems

33%

High school seniors
say they would defer
admittance in case of
online-only classes

National Economies

>\$500M

More than \$500 M USD
loss for each Educational
Institution which is
adversely affecting
National Economies

Explorations: Possibilities

There are efforts made to **measure the impact** and provide the **possible solutions** with **funding support** for development of **new solutions**.

Students across the globe **need** a way to get **practical hands-on experience** while learning online.

And

Educational Institutions worldwide **need** a way to **retain and increase number of students** while providing best online learning experience.

Target Users

Students of Universities and Colleges
needing a practical experience in
e-learning

Target Customers

Universities and Colleges who need a
solution for their students

Qualitative Analysis

Insights from **Students'** Interviews

Atharva Moghe

Engineering
UNSW, Sydney
23 Yr., | Male

Feels : Missing out on practical hands on experience, Worried about career

Needs a way to get practical experience.

Apoorva Deodhar

Biotechnology
University of Melbourne
23 Yr., | Female

Feels : Frustrated due to the situation, Worried about career

Needs a way to get practical experience.

Avani Joglekar

Medical
Sinhagad University, Pune, IN
23 Yr., | Female

Feels :, Worried about career and unsure about future.

Needs a way to get practical experience.

Common Insights

from **Students'** Interviews

The fees for **on-campus education** and **distant education** attract the same amount for fees even if practical part is **missing**.

There are additional **expenses on living** for international students. In some cases, they even have to work for after hours.

Students moving to other countries for higher education get an edge because of **local experience** and visa extensions provisions.

Common Insights

from **University Members**

University Professors **want to deliver best of their practical knowledge** to the students but lack of facility in online based courses make them **feel helpless**.

Online learning is not so effective without **live interaction**.

Distant learning is way to go. Not preparing for the future may result in **huge losses for institutions and faculties**.

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User Journey Map

How a student experiences the Online learning process

Stages >	Initiation	Designing	Prototyping	Testing	Submission	Closure
Goals	Starts a course for Additive manufacturing	Starts working on designing software to develop 3D model for a hook.	He could design a 3D hook but actual prototype is not possible as University is closed due to COVID19.	Testing of the model is not possible as there is no physical prototype available.	He submits the soft copy of the model and is graded for design and not the prototype.	Atharva passes the test based on design
Emotions						
Touchpoints	Online learning module	Designing software	-	-	Online learning module	-
Pain Points	Needed to go through lot of text, audio and video lectures to understand the subject	Does not know if the design is correct and would be able to meet required standards.	No way to create a prototype	No way to test his design for creating a prototype.	Couldn't submit a prototype along with the design	Feels inadequate and unsure due to lack of practical experience.
Features	A way to easy learning through practicals	A way to emulate the design	A feature to create a prototype virtually	A feature to create and test a prototype online	A way to submit the prototype	A detailed report of strengths and weaknesses based on his submission

User Pain points

1. Lot of **text, audio and video** lectures to understand the subject
2. No way to **validate** the design
3. No way to create a **prototype**
4. Feels **inadequate and unsure** due to lack of practical experience.

User Needs

1. Easy and faster way to learn through **interactive and immersive** way.
2. Way to **emulate** the design
3. Feature to create a virtual **prototype**
4. A detailed report of **strengths and weaknesses** based on the submissions.

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How



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How might we help **students** with a way to help gaining **practical experience** while **staying home**?

And

How might we help **Educational Institutions** worldwide with a way to **retain and increase number of students** while providing best online learning experience?

What are our options?

A Website or Mobile app with “How-to” videos

PROS :

- ✓ Additional devices except mobiles or computers are not needed.
- ✓ Users can watch videos repeatedly.

CONS :

- ✗ This option does not give interactive or immersive experience.
- ✗ This does not suffice need of practical experience.

Modern problems, Modern Solutions

We cannot solve our problems with the same thinking we used when we created them.

- **Albert Einstein**

What are our options?

VR? / AR?

Virtual reality (VR) completely replaces the user's experience, putting them in a **virtual world**,

Augmented reality (AR), on the other hand, inserts virtual objects and information into the individual's real world, "using the *physical world as a canvas for adding digital content*,"

What are our options?

Virtual Reality

PROS :

- ✓ Immersive experience.
- ✓ Possibility of interaction with the object.
- ✓ Can be done remotely.

CONS :

- ✗ Heavy hardware and software support
- ✗ Extensive development efforts and time and thus the cost.
- ✗ VR headsets could be used for a limited time for health reasons and disconnects the user from the real world.
- ✗ Difficult for people with spectacles.

What are our options?

Augmented Reality

PROS :

- ✓ Browser based solution is possible.
- ✓ Additional devices except mobile/tablet device are not needed.
- ✓ Users can explore the model in his own space remotely.

CONS :

- ✗ Mobile devices with depth sensors and better pixel density is required.
- ✗ Good software support is required.
- ✗ A Model could be shown but **detailed interaction was not possible.**

Why not **Mixed Reality**

What is it by the way?

Mixed reality (MR) is the merging of **real and virtual worlds** to produce new environments and visualizations, where **physical and digital objects co-exist and interact in real time.**



What are our options?

Mixed Reality

PROS :

- ✓ **Immersive** experience.
- ✓ Possibility of **interaction** with the objects remotely.
- ✓ Possibility of importing 3D models and real time visualization **overlaid** in the user environment.
- ✓ **Live Data streaming** and integration with IOT.
- ✓ **Faster** learning curve and **easier** interaction.
- ✓ **Easy** software integration.

What are our options?

Mixed Reality

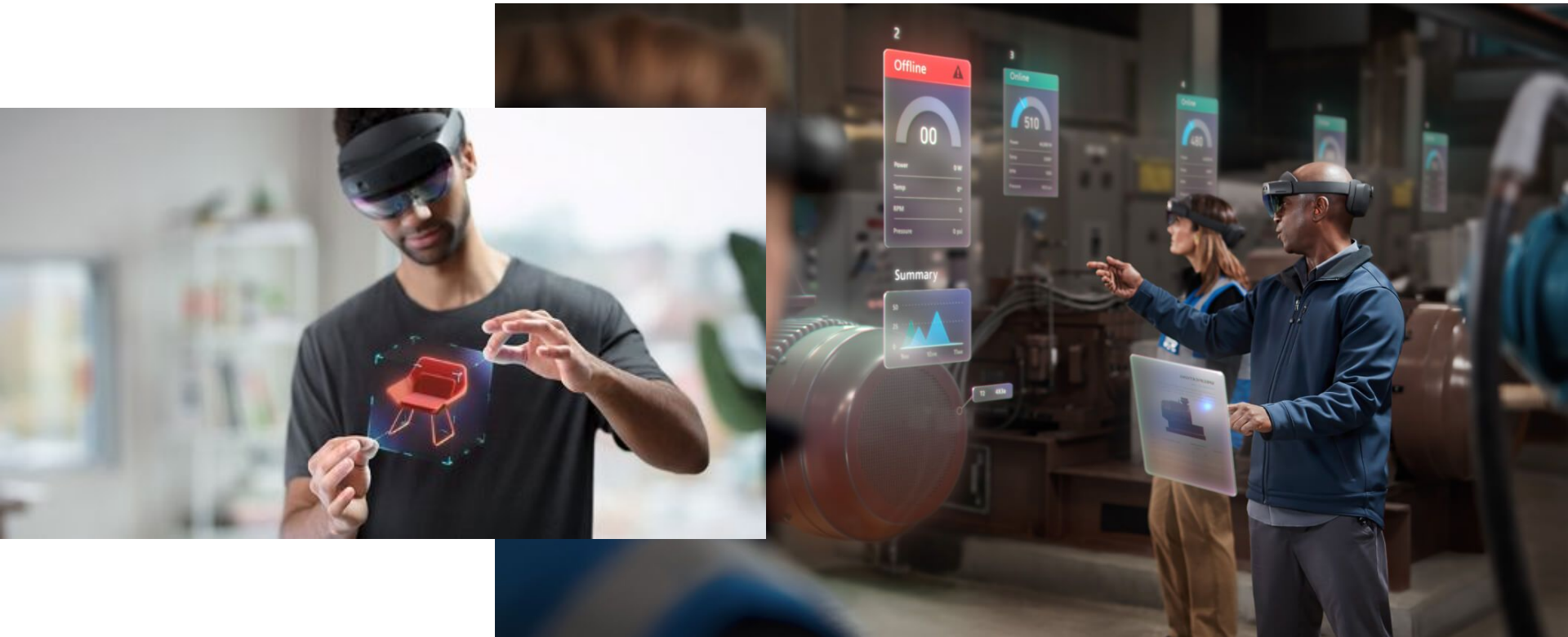
CONS :

- ✗ **Expensive** hardware and software.
- ✗ Team and **Expertise** requirements
- ✗ Lesser accessibility and **awareness**.

Is Mixed Reality a good idea?

S trengths	W eaknesses	O pportunities	T hreats
Can be applied to all Science and Tech streams in e-learning World-wide	Our solution is targeted towards people who are learning	Can be scaled to larger span from primary to higher education across the globe	<ul style="list-style-type: none">- Dev. Costs- Time- Expertise- Hardware Costs- Readiness

Merging of Real and Virtual Worlds



Hardware



 Microsoft HoloLens 2

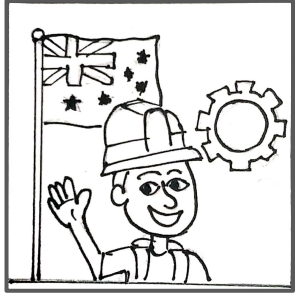
Our Role

We see ourselves preparing students for their future careers by providing them with **Practical Experience** based on **Mixed Reality tools and softwares**.

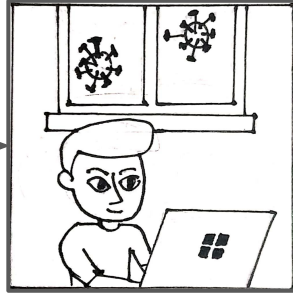
We would provide licensed versions of the **subscription based software** to learn more efficiently.

Need a story to understand this?

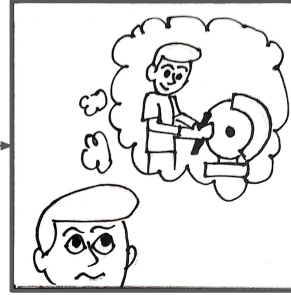
Storyboard



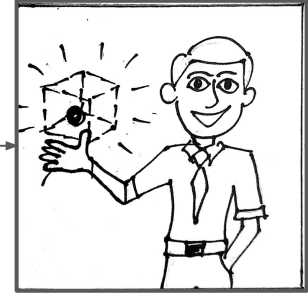
Atharva is an engineering student studying in Australia.



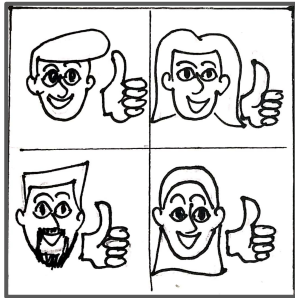
Due to Covid19 Lockdown, he is forced to complete his course online.



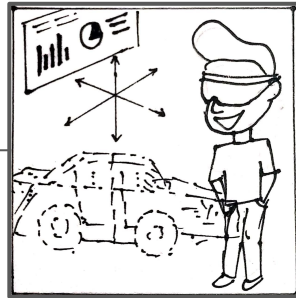
Atharva is not sure if Online learning can give him practical hands-on-experience.



The University comes up with an innovative solution via Mixed Reality based learning



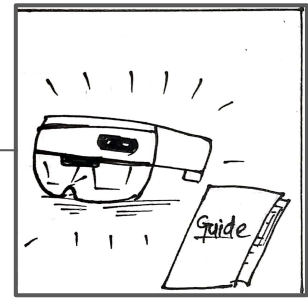
University could retain their students and their satisfaction.



He is happy with his learnings through MR



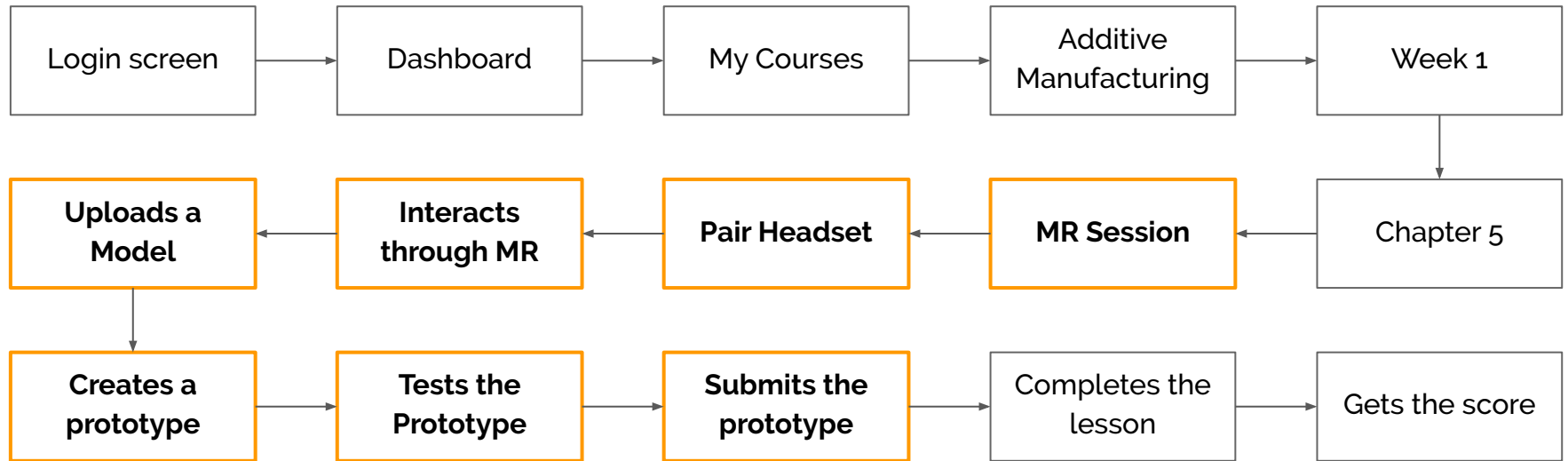
He starts a session and interacts with the machine.



Atharva gets a MR ready headset with easy to install and understand instructions.

User Flow in e-Learning application

With **new steps** added to traditional e-Learning



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**How will a typical
e-learning interface would
look like?**



CALENDAR

ACTIVITIES

MY COURSES

GSOE9510-5203_01660

MANF9472-5206_00206

MANF9400-5206_00205

MANF6860-5203_00781

General

Getting started

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Unit Lecture Slides File

592.1KB PDF document

New Unit File

213.7KB PDF document

Additional Readings Unit File

254.3KB PDF document

How it works Video

10 min watch

Interactive MR session

Mixed Reality experience



Wear HoloLens2 Headset



Sync it



Start experience

Traditional e-learning

A new and easy way to interact with Mixed Reality via TansforMR app



Mixed Reality can help all Science and Tech streams





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Impact of the solution

This solution can prove to be a milestone in **redefining Education systems** across the globe.

Students missing the **practical hands-on experience** would be benefitted to a large extent and they would be able to progress in their careers.

The solution would be applicable to **all areas** where practical hands-on training is needed on machines/ equipments.

	Return On Investments	Cost Savings	Efficiency	Productivity Improvements
University	Gains more students for distance learning programs, and can deliver the practical knowledge that has been promised to the existing students.	Less machines are needed and less wear and tear of existing machines.	University and faculty become more efficient.	Practical courses do not need fixed timings and tutoring can be done through TransfoMR app.
Students	Gets more practical hands on experience even with distant learning and students get more industry recognition too	Get more practical oriented course for distance learning for same fees.	More efficient and confident about the technology with hands on practical knowledge	Can use the TransfoMR app multiple times for different topics during the course.

Execution

How it works?

We develop
TransforMR solution
for respective
Educational stream.

University collaborates
with us to develop a
customized program and
shares development
costs.

Students buy Hololens2 from
Microsoft retailer and get
TransforMR subscription
from University.

Viability

Costs to University

Application Development

Benefits

- Student retention
- More enrollments
- More revenue

Costs to Students

1. Hardware
2. Subscription based software

Benefits

- Practical experience
- More clarity and knowledge
- More and better future opportunities

How much it would cost?

Students

A unit of
Hololens2

\$3500 USD

Subscription
for students:
**\$25 USD/
month**

Considering 5.3% addition to the existing fees structure for 2 years term is negligible compared to the benefits.

University

Administration, Development and Maintenance costs towards TransforMR application

Universities are bearing losses greater than \$500M USD and the projections may double within a year. Investment of around \$50,000 USD in this solution could result in profits in the future.

Why should they invest?

The solution would enable people to get distant learning without leaving their places **saving unnecessary expense on time, travel and living.**

This will also benefit the training institutions to **save expenses on manpower, equipment labs and maintenance.**

Maximum number of students could be catered with **minimum hardware and software requirements.**

In case of future pandemics and natural calamities or any scenarios of distance learning, the **solution mitigates the risk of further closure of Universities / Colleges.**

1975

**Computers made
Personal**

Early 2000

**Mobile phone for
everyone**

Now

**Mixed Reality for
every learner**

Thank you!

We are grateful to our Mentor Mr. Probal Banerjee for his valuable insights and UMO team for this opportunity and support.

-Team UX-men

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