# Introduction of folk musical intruments through different medium and their effectiveness

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# Approval Sheet

The Design Research Seminar report "Introduction of folk musical intruments through different medium and their effectiveness" by Supriya Dutta(Roll Number: 176330002) was made in partial fulfillment of Master in Design Degree in Interaction Design at IDC School of Design, Indian Institute of Technology, Bombay.

Guide: _____

# Declaration

I hereby declare that the project *"Introduction of folk musical intruments through different medium and their effectiveness"* was carried out by me under the guidance of Prof. Uday Athavankar, at IDC School of Design, Indian Institute of Technology, Bombay, India.

The interpretations made are based on my reading and understanding of the text, other resources are cited and acknowledged.

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## Abstract

Lack of awareness and practitioners of the folk musical instruments are identified as the major reasons for their decreasing popularity among the masses. From the insights received from the user interviews, we tried to look for opportunities of introduction of the same to a younger generation of audience. We took the help of three different mediums, a book, a slide presentation and a game and tried to check their effectiveness in introducing attributes, properties and the method of construction of these instruments. The aim of these prototypes was to help children identify various instruments and create a knowledge base about the same. We tested the learning outcomes of these prototypes with 4th standard students. Students tested with multimedia feedback(game and slide presentation) showed better learning outcomes. Engagement with the former resources was more than the later.


## Introduction

Folk music and instruments are an integral part of one's community. It is what binds the people together. However, over the years many of the traditional and folk musical instruments have gone extinct. There are various dedicated approaches going on to create awareness about different traditional and folk musical instruments of India. [3][4]One of the identified factors of extinction is the lack of awareness among the audience.

We can divide the audience into two categories: listeners, people who appreciate music but are not willing to learn, and performers, people who both appreciate and are willing to learn musical instruments. Any instrument for its revival will need performers who can carry the knowledge forward.

The aim of the project is the introduction of folk musical instruments, to help the users motivate and identify these instruments. In this project we are trying to look for better approaches of introducing these instruments to the audience.

Brahmaputra Cultural Foundation(BCF) is a non profit organization with an initiative to preserve and promote cultural traditions of North East India and showcase performing and visual art over the world. '*Katha Yatra*', is one of their projects is aimed at a research-based understanding of river Brahmaputra. The project involves documentation and re-imagination of the culture, identity and environmental landscape of the river. BCF has documented folk musical instruments in North Eastern states of India in the form of a documentary and book called '*Borluitor Barbhoirab*',authored by Mukunda Bora, published by Brahmaputra Cultural Foundation. The version of the book used is of November 2017, first version. For our research we worked together with BCF in obtaining the necessary information about different musical instruments[2].

As understood from the user research, the potential time to introduce any musical instrument to an individual would be around the age group of 4-13years old. The users in this age group tend to be adventurous and are more willing to experiment.

To target this group of audience three prototypes were designed and tested for their effectiveness in communicating proper identification of these instruments.

1. 1.A textual documentation of the same instruments used in the game. The data was taken from the book, '*Borloitor Borbhoirab*'. A simplified version of the data extracted from the book was added along with its hindi translation.(figure 1)
2. 2. A google slide presentation. It contains all of the instruments from the game. However, it had both visual and audio feedback. The visual feedback in terms of the images of the raw materials being used to create the musical instrument and audio feedback was in terms of the sound of those corresponding instruments. The data about these instruments were taken from the '*Barluitor Barbhoirab*'.(figure 2)
3. A game. The goal of the game is the construction of different musical instruments by assembling the required raw materials, sounds and the name of those instruments. The players are need to remember the components used in the assembly, in-case they are attacked by their opponent, thereby remembering the different components and attributes associated with an instruments.The data used here is collected from the book '*Barluitor Barbhoirob*'.

## Objective

The primary objective of the project is check the effectiveness of the three prototypes, game, book and presentation, in the introduction of folk musical instruments to people, in order to help them identify different attributes of the same.

## Research

### Insights from BCF

**Students**

In the interview with Mr. Mukunda Bora, he stated that Folk instruments such as Dhul attracts only seasonal audience. Students come to learn the same only during Bihu season. Children who come to learn from him are mostly brought by their parents. These parents are already aware of such instruments or have had former experience with it. Hence the student base is limited to these factors.

**Best time of introduction**

The best time of introduction of musical instruments to an individual as said by Mukunda Bora is during one's youth. Any individual, at the age of 5-13 years, are more adventurous and willing to adopt to new systems then when older. Individual who have had experiences with musical instruments at this age are more likely to learn new instruments when they are older.

**Workshops**

Wide range of workshops and performance are already been organized aimed towards adult audiences. They include

1. performances(dances and dramas) showcasing 25 tribes of the north East
2. Collection of 115 instruments
3. Lessons on folk songs, folk instruments and construction of those instruments

**Documentation**

Documentation in form of a book "Borluitor barbhoirab",authored by Mukunda Bora, published by Brahmaputra Cultural Foundation. The version of the book used is of November 2017, first version. Another produced documentation of these instruments is a documentary under the same name. It contains information about different tribes, their instruments, occasions and festivals where they are played, methods of constructions and different notes that can be played with the same.

**Class-room based activities:**

A set of game activities followed Before teaching any instruments, there are a set of classroom games followed. These games help students help develop a sense of rhythm[1].

figure 1: book

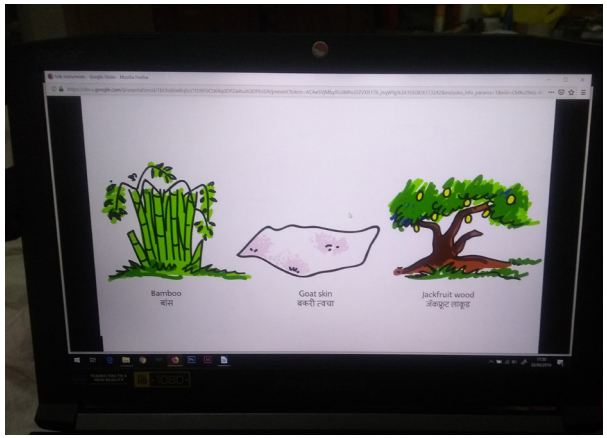



figure 2: presentation

# Prototype

Information about these instruments are currently available in two formats: a book, Barluitor Barbhoirab and a documentary with the same name. Both of these resources are very rich and dense in information, not accessible to the casual audiences. Moreover, other mediums of communicating the similar information, such as workshops and performances only cater to a limited audience.

With the insights received from the interview with BCF, we identified a scope of intervention. Individuals who have had prior experiences with musical instruments at an early age are more likely to learn new instruments as an adult. So can we target an younger audience base? Younger audiences will need an introducer for them to venture into any new field. What if we create a medium to do so?

The aim of the prototype was to communicate the manufacturing procedure of the musical instrument, its properties and the sound. In order to do so, three prototypes were made: A book, a presentation, and a puzzle based game. Three instruments, dhol, bahi and sutuli played during the Bihu Festival of Assam was chosen for the experiment.

### Book

The information about these three instruments were taken from the book named *Barluitor Barbhoirab*. In the book designed, both Hindi and English were used for proper understanding of the content. To match the structure of the information content of the book with 4th standard children, we verified its content with IIT Bombay Campus School teachers. Illustrations of the musical instruments were added. For the evaluation we were advised to teach the content of the book in a similar way practiced at IIT Bombay Campus School, by their teachers(figure 1).

### Slide presentation:

Information about these musical instruments were taken form the book Barluitor Barbhoirab. The textual information was converted into audio and visual form. The sound associated with each instruments were added to the slides. The raw materials were illustrated to help the viewers experience a visual feedback along with the text. The sequence of information displayed for each instruments were in this order:(figure 2)

1. Name and image of the instrument
2. Name and images of the raw materials required to construct the same
3. Sound associated with the instrument

### Game:

Information about these three instruments we taken and divided into three different parts. The raw materials, name of the instruments and its sound. The basic idea of the game was to assemble different raw materials. The players also have to identify the sound and the name of the instrument through the game play. These repeated assembly of the instruments were expected to help the players remember and identify the instruments.

For evaluation we made a paper prototype simulation, sounds and digital effects were added through 4 mobile devices. The game had 3 parts:

1. Assembling correct raw materials to construct the instrument.
2. Identification of correct sound of the instrument
3. A strategic race to determine the winner.

### Ideations and concepts:

**Ideation 1:**

For the first ideation we had five instruments that the players had to assemble. Printed cards were used:

- Raw materials cards
- Instruments cards

The player had to guess the correct combination of raw materials to construct an instrument.

If player A is able to assemble all the raw materials they were given the musical instrument card. They are celebrated by playing a soundtrack associated with the instrument they created. They are also “given a power of noise” to attack their opponent.

When a player is attacked with “noise” he/she has to listen to an annoying sound until he/she can construct his/her next musical instrument.

Winner: The one who is bale to construct all of the instruments first, wins the game

**Play-testing:** This prototype was tested with 4 students from K.V. School, IIT Bombay. They were made into two groups each consisting of one boy and one girl.

From the play testing we observed that players were able to assemble different instruments and had fun doing so. The sound of the instrument played after completion of each instrument gave them a sense of achievement. The noise introduced to their opponent however added to their excitement more. While the players were excited about the first round the excitement decreased with the subsequent rounds of play.

**Inference:** For a better experience more challenges have to be introduced into the game-play

Ideation 1 play testing

**Ideation 2:**

In this ideation we started with three instruments. Along with the two set of cards we added two more sets:

- Sound cards(simulated with devices)
- Name cards(name of the instruments)

It has a similar puzzle based gameplay similar to ideation 1, with added challenges. Now the player have to assemble three types of components: raw materials, sound cards and the name of the instrument.

When they are able to chose the correct raw material for any instrument they are given a cue, in the form of “correct” sound, and a “wrong” sound when wrong. They are allowed to try and assemble the cards, and given two strikes to make any errors. Once out of strikes, the other player plays their turn.

Mobile phones were used to play the audio associated with the sound card. When any sound card is chosen, the audio corresponding to that card was played. After that the player has to decide if he/she wants to use the same of pass.

When any player is able to assemble any one of his/her instruments as a reward they are given the musical instrument card, ans also offred with two options to attact his/her opponent.

1. They can place a hold on any component that their opponent possess, which can be acquired with chance(given on the rule book)
2. They can misplace all the cards assembled so far by their opponent.

The misplacing was introduced to help them memorize the combination of components needed for the instruments. This ideation was tested with the book and presentation with IIT Bombay Campus School, 4th standard children.

Ideation 2 testing and evaluation

**Rule book:**

**Elements of the game**

1. Raw material cards
2. Musical note cards
3. Instrument name cards

**Start the game:**
Roll the dice to start the game. The number on the dice will the number of cards you get to collect from the pouch. If the cards match to any of the instruments, assemble the correct instrument. When the assembly is correct, a feedback stating the correctness will be produced. If not you get a bad/wrong sound.

**After the first try:**

- Odd numbers in the dice: Player has to return at least one card from his unused stack of cards
- Even numbers in the dice: Collect number of cards equal to the score obtained.

**Benefits of assembly:**
After each assembly you will be offered with three choices:

- Rearrange your opponent's cards: the resulted assembly will produce noise
- Hold on cards: You either place a hold on your extra cards, or put a hold on Player B's cards. When Player A puts a hold on Player B's card, the next time Player B scores an odd number, he has to give his card to Player A. However, if Player A places a hold on his card, Player B's claim on the card vanishes.

**Hold on cards:**
On completing one instrument, if Player A chooses to place a hold on one of Player B's used cards, Player B gets two chances on the dice.

- To defend himself, if he scores an odd number, Player B gives back the card to Player A.If he/she scores an even, his/her card will be safe.
- To continue with his turn

**Rearrange your opponent's cards:**
On completing one instrument, Player A gets a chance to mismatch the arranged cards in Player B's collection. If Player B is not able to arrange them back together to their proper places within 20secs, he looses his mismatched cards.

**WINNER**
Player who is able to arrange all his instruments first wins the game.

# Evaluation plan

For evaluation we made a paper prototype simulation, sounds and digital effects were added through 4 mobile devices.

## Protocol

**Purpose**
To test the learning outcomes through three different artifacts: a game, a book and a power point presentation, about the folk and indigenous musical instruments of North Eastern states of India. The project deals with the introduction and identification of folk/indigenous musical instruments to children of age 8 years old and above.

The success of each artifacts will be tested based on the learning outcomes obtained through the prepared questionnaire. To identify the best medium of introduction for the same, three artifacts, namely, a game, a book(containing only textual information), and a presentation(containing both textual and audio/visual information) will be tested with three different groups of children.

1. A game play. A puzzle based game to understand the raw materials required for the construction of those instrument and the sound produced by those instruments.
2. A book. This contains textual information about the musical instruments.
3. A presentation. This contains both the textual information about the

musical instruments and the sound/musical notes that can be produced by the same.

After the testing, participants will be provided with a questionnaire. The questionnaire will consist of two sections:

section A( questions related to name of the instrument, graphical representation of the musical instrument, and materials involved with construction of instruments,)

section B(questions related to the musical tunes produced by these instruments)

**Instructions**

1. A brief introduction about the project work, and the game/book/ppt.
2. Introduction to the artifact being tested.
3. Participants will be informed about the test to be conducted after the testing. Each participants will be offered a compensation(in the form of sweets) after the test.

**Subject selection**

Participants recruited will be from IIT Bombay Campus School, IIT Bombay, Powai; 4th standard.

Total number of participants: 12

participants in each group: 4

Age group: 9-10 years.

Place: Classroom(4th standard), with four children at a time.

Gender: 2F, 2M

**Game play protocol**

Total participants: 4

The game play will be simulated through a paper prototype and three android devices(moto g5 s plus, galaxy s5, moto g5).

Participants will be introduced to the game rules though a pilot gameplay.

The game play will be tested with the same participants for 4 times.

At the end of the game play, participants will a given the questionnaire.

**Book protocol:**

Total participants: 4

The participants will be given a booklet(textual information). Participants will be taught verbally about these instruments, to help them understand better(Similar to the teaching environment the participants are familiar with).

Participants will be taught individually and will be allowed to chose their own individual study time.

Participants will be asked to inform the examiner when they were thorough with the material and ready for the test.

At the end of the session, they will be given a the questionnaire.

**Presentation protocol:**

Total participants: 4

Participants will be given a Google slide presentation. This will consist of both textual, and audio visual elements.

They will be assigned a time-period of 1.5 hours.

Participants will be allowed to discuss and explore the booklet in any way they prefer.

At the end of the session, they will be given a the questionnaire.

## Questionnaire

The questionnaire was prepared both in english and marathi language. This was advised by the campus school faculty as their medium of instruction includes both these languages.

**Section A**

Question: What are the raw materials used to make Dhol?

प्रश्न: ढोल बनविण्यासाठी वापरण्यात येणारी सामग्री कोणती?

a)Goat skin बकरी त्वचा

b)Bamboo बांस

c)Butterfly फुलपाखरू

e)Jackfruit wood जॅकफ्रूट लाकूड

f)Cowdung गाईचे शेण

d)Candy गोड

Question: Which of the following instrument(s) will need bamboo?

प्रश्न: खालीलपैकी कोणते वाद्य बांसपासून बनवले जाऊ शकते?

a) Dhol

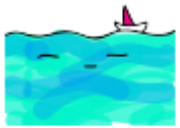
b) Bahi

c)Sutuli

Question: What are the raw materials used to make Sutuli?

प्रश्न: सुतली बनविण्यासाठी वापरण्यात येणारी सामग्री कोणती?

a)Cow dung गाईचे शेण



b)Water पाणी

c)Clay मिट्टी

d)Buffalo horn म्हशी हॉर्न

e)Fire आग

f)Copper तांबे

Question: Which of the following instruments can be prepared from clay?

प्रश्न: खालीलपैकी कोणते वाद्य मिट्टीपासून बनवले जाऊ शकते?

a) Dhol

b)Bahi

c) Sutuli

Question: Match the following to their respective images:

प्रश्न: खालील जुळवा

Dhul

Pepa

Sutuli

**Section B**

Question: Match the following sounds to their respective instruments:

प्रश्न: खालील जुळवा

| | |
|---|---|
| Sutuli | (audio11/audio22/audio33/audio44/audio55) |
| Pepa | (audio11/audio22/audio33/audio44/audio55) |
| Dhul | (audio11/audio22/audio33/audio44/audio55) |

Question: Match the following images to the sound:

प्रश्न: खालील जुळवा

(audio11)

(audio22)

(audio33)

## Pilot

Pilot study was conducted at Campus School IIT Bombay, with a total of twelve(12) children from 4th standard, four(4) children in each group. Each group was tested separately on three different days. The feedback received from the first two groups, game and presentation were quite similar whereas the book group showed different results. We concluded that the protocol made for the study was not standardized for the three groups and hence need to be worked on. The questionnaire prepared was also understood to be not of the required standard. The questionnaire will be improved for the later studies.

Pilot test with the presentation

## Future plans

In this project we explored game design as a medium of introducing folk musical instruments to the users of age group from 8 to 12 years. It dealt with identification of different properties associated with different musical instruments.

In future we would like to explore the possibilities of both identifying and motivating users towards the usage of folk musical instruments. Our future plans also includes creation of standardized protocol to test the existing artifacts related to similar work(documentaries and books) for the effectiveness of the product.

Pilot testing with the game

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