



# **Interactive musical environment for children**

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## Part 1



exploring...

## **“design for fun”**

- Fun for kids
- The play environment and interactivity
- The power of play and musical interactions



# the process

## STAGE I

AUG - SEP '07

### RESEARCHING THE SUBJECT

Readings and data collection on:

Children- age group characteristics, child psychology

Play for children, play environments

Music, meaning and structuring.

Music and play and learning

Case studies

Visualizations of music through various arts

Technology and the changing play environment

## STAGE II

SEP - MID OCT '07

### USER STUDIES

Interactions with children, parents teachers

### BRAINSTORMING AND USER MAPPING

Analysing the inter relationships between the users, play and music.

### NEED IDENTIFICATION AND USER GROUP SELECTION

The user group and concerns

### FORMULATING DESIGN GOALS

### INITIAL IDEATION

## STAGE III

MID OCT - DEC '07

### CONCEPT GENERATION

### TESTING THE CONCEPT WITH THE USER GROUP

### FINAL CONCEPT AND DETAILING



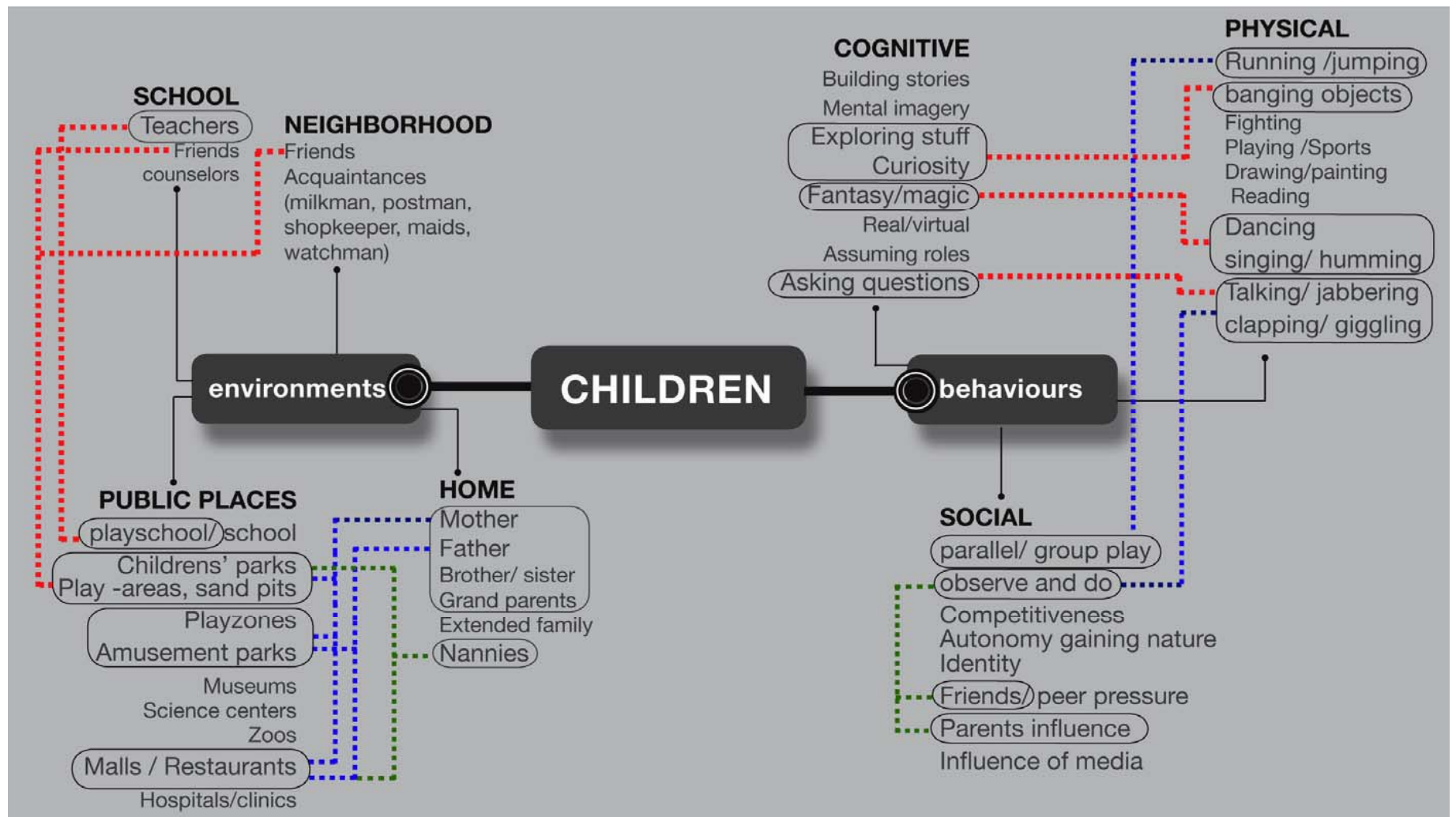
# children

- INFANCY (0-1 yrs)

- TODDLERHOOD (1-4 yrs)

- CHILDHOOD (5 yrs above)



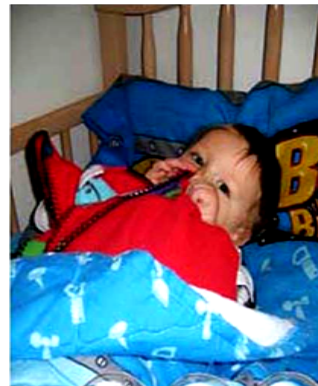
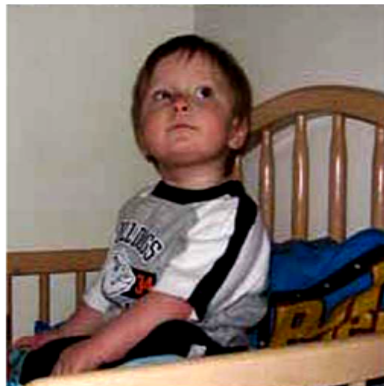
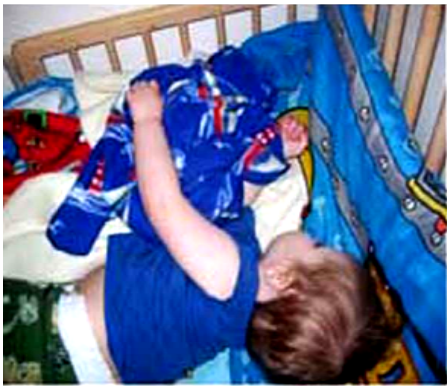






# the toddler

- Movement
- Learning and exploration
- First lessons in social behaviour
- Safety concerns





## the toddler - development stages

AGE	PHYSICAL	COGNITIVE	SOCIAL
12–15 Months	<ul style="list-style-type: none"> <li>- Stand alone well.</li> <li>- Drink from a cup (poorly).</li> <li>- Turn pages in a book (a few at a time).</li> <li>- Play ball by rolling or tossing it.</li> </ul>	<ul style="list-style-type: none"> <li>- Uses four to six letter words such as "ball", "house".</li> <li>- Can follow a simple command with an associated gesture.</li> <li>- Object Permanence: Realizes things still exist when they are out of sight.</li> </ul>	<ul style="list-style-type: none"> <li>- Use gestures or words to convey desires.</li> <li>- Mimic actions such as covering eyes while playing Peekaboo.</li> </ul>
15–18 Months	<ul style="list-style-type: none"> <li>- Walk well alone.</li> <li>- May be able to bend down and stand up without help.</li> <li>- Hold a crayon well enough to scribble.</li> <li>- Climb onto furniture.</li> </ul>	<ul style="list-style-type: none"> <li>- Uses 10–20 words.</li> <li>- May be able to follow a command without a gesture.</li> <li>- Stack two blocks.</li> </ul>	<ul style="list-style-type: none"> <li>- Greet people with "hi".</li> <li>- Mimic parental activities such as cleaning up or talking on a telephone.</li> </ul>
18–24 Months	<ul style="list-style-type: none"> <li>- Feed self with a spoon.</li> <li>- Run.</li> <li>- Climb into a small chair.</li> <li>- Walk up steps.</li> </ul>	<ul style="list-style-type: none"> <li>- Speaks 20–50 words; understands more.</li> <li>- Understands non-physical relationships: turning on lights or pushing buttons.</li> <li>- Sorting toys. Searching for hidden objects.</li> <li>- Problem solving through experimentation.</li> </ul>	<ul style="list-style-type: none"> <li>- Wants to be independent at times. Will throw a tantrum or possibly say no.</li> <li>- Mimics social behavior.</li> <li>- Self recognition. Self reference.</li> <li>- Displays attachment and separation anxiety.</li> <li>- Can play turn-taking games.</li> </ul>
24–36 Months	<ul style="list-style-type: none"> <li>- Advanced mobility and climbing skills.</li> <li>- Increased dexterity with small objects, puzzles.</li> <li>- Able to dress oneself.</li> </ul>	<ul style="list-style-type: none"> <li>- Speaking in sentences.</li> <li>- Easily learns new words, places and people's names.</li> <li>- Plays with toys in imaginative ways.</li> <li>- Attempts to sing in-time with songs.</li> </ul>	<ul style="list-style-type: none"> <li>- Knows boys from girls.</li> <li>- Shows preferences, such as clothes and entertainment.</li> </ul>

Source: [http:// en.wikipedia.org/wiki/toddler](http://en.wikipedia.org/wiki/toddler)



## Toddlers - 'tee a tee'

### **PRIYA [ 3 YRS OLD ]**

- Loves to play with daddy's laptop.
- Fascination for cell phones and car keys.
- Dancing to bollywood songs.
- Likes to play the casio.

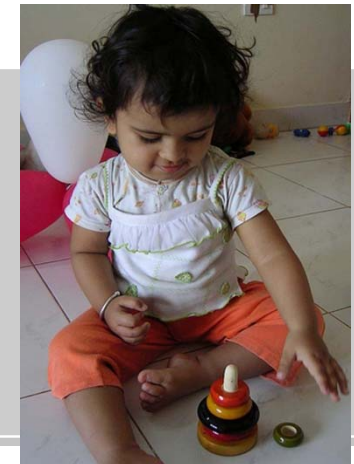
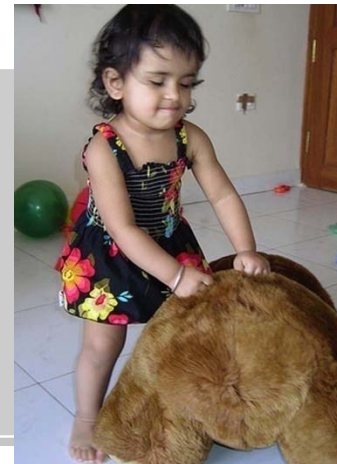
PARENTS: " she's the little devil."



### **GAYATRI [ 2 1/2 YRS OLD ]**

- Loves her large teddy bear.
- Would normally beat up all her toys.
- Likes to play on her own.
- Recently bought a play drum set .

PARENTS: "She's a quiet child. "







## Toddlers - 'tee a tee'

### **ARYAN [ 2 YRS OLD ]**

- Loves animals.
- Fascination for toy cars.
- His favourite super hero is super man.
- Hates singing nursery rhymes.

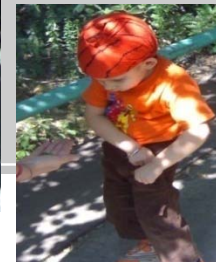
PARENTS: " He has to do what he has to do."



### **HANMANT [ 2 YRS OLD ]**

- Loves talking, narrating incidents,telling stories.
- Extremely possessive of his belongings.
- Has a collections of motor bikes for toys
- Likes dancing.

PARENTS: "He is always wants to be on his own. "





## Toddlers and parents...

- Extremely protective.
- Attempt to keep abreast with the growing needs of the child.
- Literally govern the kids' lives.
- Constant concern for safety.
- Constantly teaching about surroundings, manners.
- Distracting them from mischief.
- Temper tantrums and fulfilling their demands.





## Interesting toddler characteristics

- Engagement in fantasy land - the make believe world
- Learning their impact on surroundings.
- Enthusiasm and curiosity to learn.
- Making scale errors.
- Mimicking adult actions.



**What do they do for fun ?**



# **FUN and PLAY**

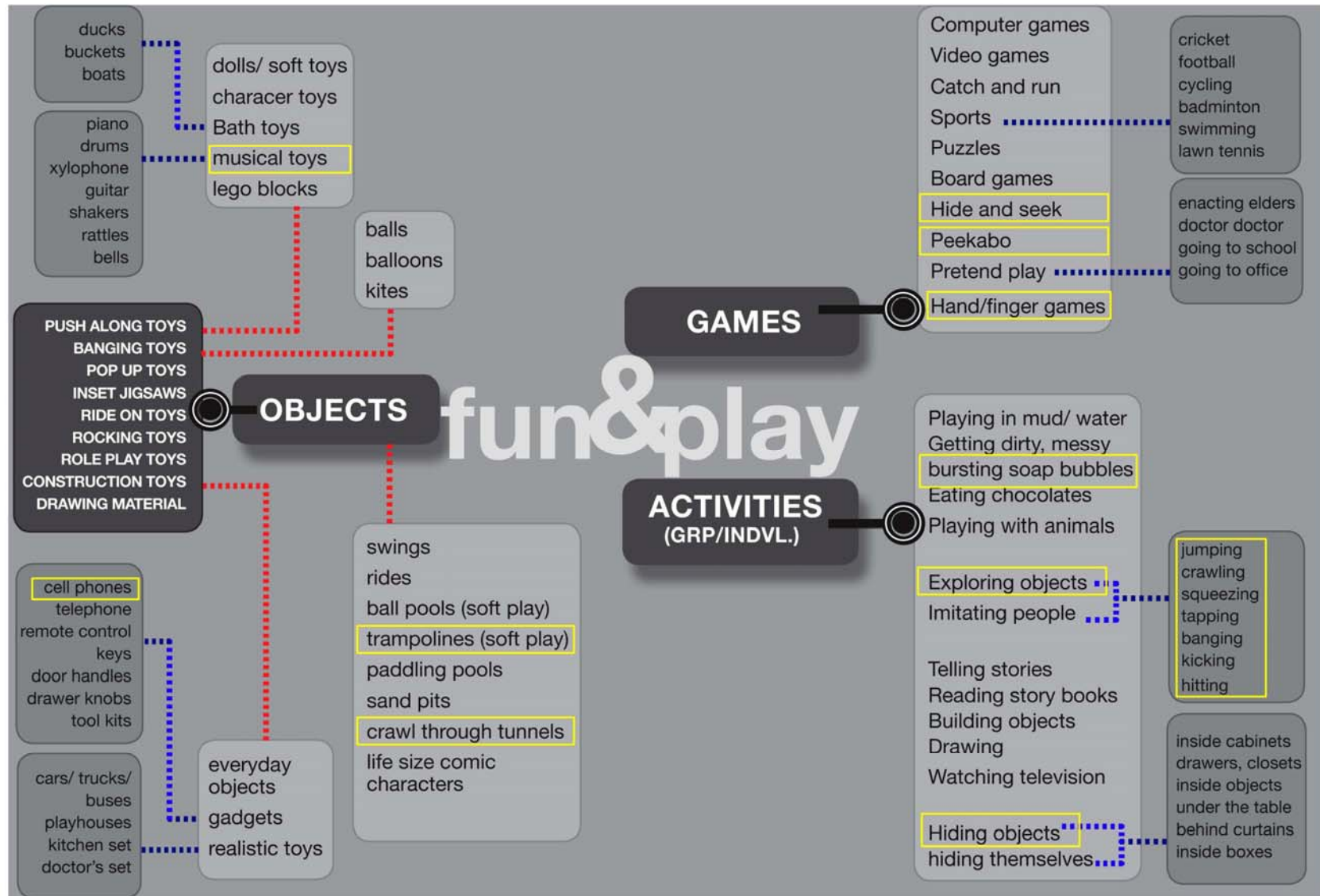
**"The creative mind plays with the objects it loves."**

*- C. G. Jung*





# Understanding fun and play





# Understanding fun and play



## STAGES OF PLAY

- Sensorimotor play
- Symbolic play
- Mastery
- Games

## FORMS OF PLAY

- Parallel play
- Solitary play
- Group play



# **play environments**



## Play environments



- public parks
- playscapes
- amusement parks, museums, science centres



# Play environments



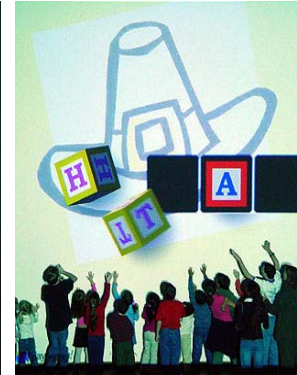
## - playschools

Learning environment  
Social behaviour  
Discipline  
Self confidence  
Becoming independent  
Fighting separation anxiety





## “interactive” play environments



- Response to user's activity.
- Web based installations, gallery based installations, digital and electronic installations.
- Use of cross media - sensors and real time computer programming.
- Virtual reality



**What is lacking?**



## Need identification

Various concerns emerge, from the above studies about how toddlers, their play environments and the process of learning, growth and development.

The following need gaps have to be addressed.

- **Lack of exclusive, SAFE toddler play environments.**
- **Lack of unique experiences for kids, for rich sensory development.**
- **Lack of freedom to enjoy and explore on their own,for kids.**
- **Lack of children friendly spaces as integral parts of public spaces.**



fitting in **music!**



## **the musical ‘experience’**

“ the distinctiveness, or uniqueness, of music is its use of sounds to accomplish its task of “making special.” In music, sounds, so constant and useful in human contact with the ordinary world, become “special,” extraordinary, and significant, transforming the commonplace into what is remarkable.”

Source: “Why Do Humans value music?” by Bennett Reimer (John W. Beattie Professor of Music Emeritus at Northwestern University in Evanston, Illinois.)  
<http://www.menc.org/publication/vision2020/reimer.html>





# Music and children

## 0 - 18 MONTH

### At birth

- can hear high-pitched noises.
- may be calmed by lower sounds
- can locate sound in front of them.
- startled by a loud or sudden sound.

### By four weeks

- prefer high-pitched sounds .
- start responding to the sound of your voice.
- recognise where sound is coming from (front/ behind)

### From 3 month

- may respond actively to music.
- sway and turn towards the sound .
- vocalize vowel sounds ("Aaah", "Eee", "Ooo")

### At 20 weeks

- begin to recognise familiar voices .
- respond differently to the sound of strange voices.

### By 6 months

- imitate sounds e.g. Boo! La!.

### At 28 weeks

- tell tunes apart.

### By 9 months

- they respond to familiar songs.
- singing might follow a familiar melodic pattern.

## 18 MONTHS - 3 YEARS

### By 18 months



- may start responding to music in coordinated way.
- Language skills can develop further through singing and imitation.
- learn to differ loud and quiet, fast and slow.
- begin to be aware of a beat in the music.
- recognise different rhythms.
- learn the words to simple songs.
- develop the coordination needed to play simple instruments i.e. simple drums or bells.
- begin to find out how to cooperate with other children.

### 3 - 5 YEARS



- may become more aware of pitch and rhythm.
- learn to sing more complex songs.
- vocal chords develop.
- cope with more sophisticated movement to music
- take pleasure in playing and exploring new sounds and instruments

## 5 - 7 YEARS



- acquire new vocal strengths and increase their range.
- develop a better memory of music though repetition of songs and patterns understand simple musical concepts.
- able to play simple percussion instruments.
- can pick out tunes on instruments such as keyboards or xylophones.

## 7 - 11 YEARS



- perform and compose with greater confidence.
- want to learn an instrument.
- become more computer literate and discover music technology.
- taste in music will develop.
- learn to improvise.
- start to discuss and evaluate music.



# Music and toddlers

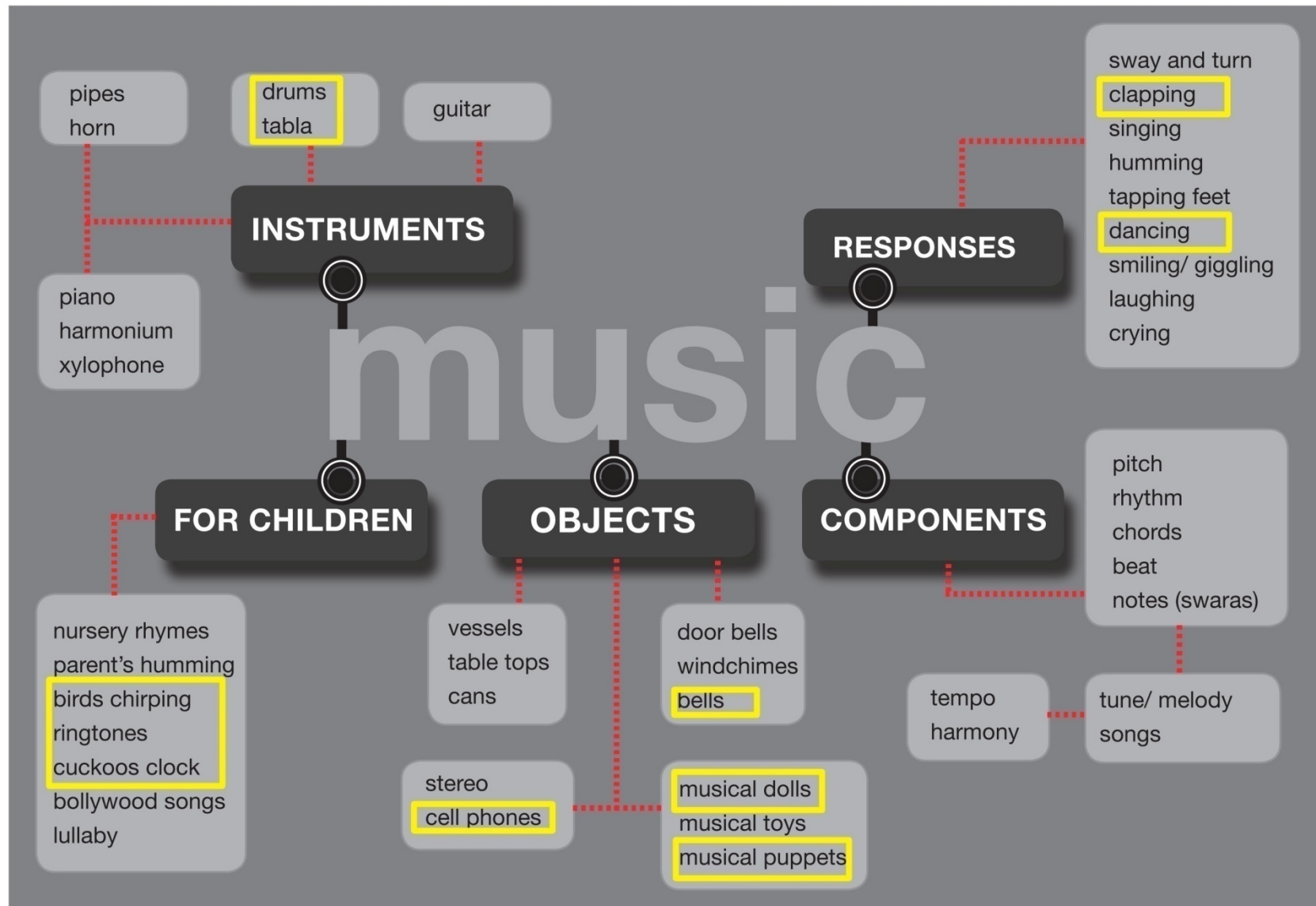
A musical experience for toddlers, offers:

- Fun and enjoyment
- Can kick-start learning
- Serve as an important cue in the child's routine
- Fostering a love of music, and understanding it
- Rhythm
- Self-expression
- Exploring how different instruments sound
- Learning music





# Music and toddlers

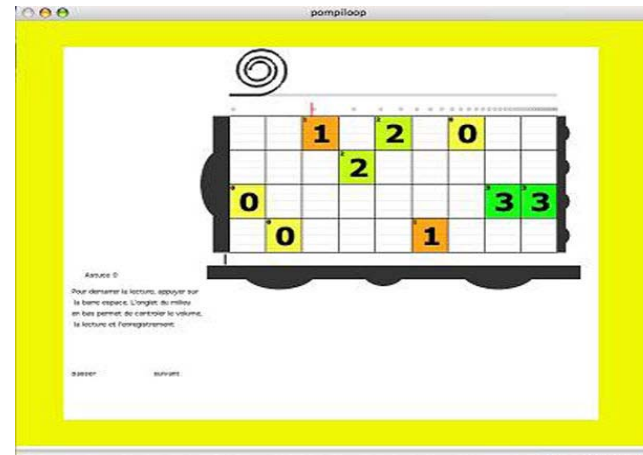




# Musical toys











# Inferences

- Toddlers **enjoy varied sounds**, be it cell phone ring tones, their parents' humming or specific instruments such as drums, piano etc.
- They even enjoy noise, as long as they are creating it. The act of **producing sound** is exciting.
- They are eager **explorers of instruments** and new sounds.
- If they enjoy particular sounds, they wish to hear them repetitively.
- Responses to music for kids are generally **exaggerated movements**. They often break into a jig, or start clapping or giggling.
- Music acts as a great **medium for social interaction**.



Laying out the **goals**



# Design goals

To create the **“experience”** through

## 1. A PLAYFUL MUSICAL ENVIRONMENT

Users of the environment interacting musically with the environment by

LISTENING

PERFORMING

COMPOSING

## 2. INTERACTIONS AND EXPERIENCES

PHYSICAL : run, push, crawl, climb, squeeze (with the playscape) .  
tactile ( with objects).

EMOTIONAL : surprise, delight, fun.

SOCIAL : with parents, with other children.

# The power of music and play

