Baaljyoti – Shiksha ke Nanhe Kadam
An android based E-learning for primary kids in India

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Abstract

Around the world, especially in mobile technologies, the creation of smart educational systems is constantly expanding. Mobile technology is now accessible to kids as well as adults. Every year, a growing number of children are using smartphones. This paper "Baaljyoti -Shiksha ke Nanhe Kadam" describes as an android application that teaches kids how to read and write numbers, recognize letters, recognize different names, and perform basic math operations with an appealing user interface. Kids can also practice these skills in a specially designed writing pad by writing on their own using the available finger touch screen. Benefits and novelty of this development boost children's capacity to write and recognize letters and numbers, and over time, they can learn more about a variety of subjects.

Keywords: mobile technology, smart education, e-learning, broods wisdom

1. Introduction

The playgroup in today's context refers to children whose ages range from 3 to 5 years. Today's preschoolers face a difficulty in keeping up with the rapidly evolving technology and global trends. The most crucial and lasting component of a person's life is their education. The parents of underprivileged villages, however, are unable to give their children such possibilities in today's cutthroat society. This exemplifies the necessity for an adequate teaching tool that is practical and efficient [17]. Various applications are being created for users in a wide range of fields as technology is advancing very quickly today due to the increased use of computers and mobile devices. One of those areas that has been observed is learning. Today, mobile devices and related technologies are being admired in every home in every town or hamlet. Software development for mobile devices is a rapidly expanding research subject. The fact that mobile touchscreens are also referred to as technologies that are revolutionizing young children's collaborative digital experiences means that flocks can explore and learn with mobile diplomacies in ways that are natural to them. It has also been observed that children are showing increased interest in interacting with electronic devices as compared to other aspects. This is because touchscreen devices are made in such a way that even very young users can use them without difficulty. This study looked into the best ways to sustain the preschoolers' self-learning as an open-source platform while also keeping their interest. There are many examples of excellent educational applications for kids available nowadays [14] [10]. The right app selection is crucial because it can mean the difference between a "digital babysitter" and a tool to support kids' learning and development. This is because many so-called educational apps are actually very entertainment-oriented for a variety of reasons, which means they have little educational value for kids' cognitive development. Additionally, research suggests that children learn best when they are engaged and intellectually active, and when learning experiences are meaningful and socially involved. It is known that there are only a few learning resources available for kids using Android software, including learning about animals, numbers, letters, and rudimentary math. Currently, different applications often just offer one learning resource, like an app for learning a letter or a number, etc. In light of these circumstances, we determined that it would be preferable if the teaching resources could be merged and used as a method of instruction for kids, making it simpler for them to learn letters, numbers, different names, and basic math. In order to help children learn letters, numbers, fruit and vegetable names, animal names, and other concepts in a pleasant fashion as well as perform basic mathematical operations (addition and subtraction), the "Baaljyoti" app—hence the name—offers this function with sound and animation. The advantages of this application include improving young children's letter and number recognition skills, broadening their knowledge of animal names, teaching young children how to spell letters and numbers, honing young children's simple counting skills, and introducing an electronic media learning approach [13].

2. Literature Review

Unique capabilities of computer applications for providing learning practice include: the combination of visual displays, animated graphics and speech; the ability to provide smart

learning and keep a variety of basic pillars; and the opportunity to explore a situation interactively.

Children can evolve learning and writing competence with developmentally appropriate learning software. One another longitudinal study examining the education is that technology shows a vigorous role in learning skill achievement for kindergartners. Modules are more planned, and there are new proofs to major. After acquiring the basic skills of Hindi and English alphabets, number recognition, counting is naturally taught the trend suggest that the pre-school and elementary-age children may soon be using smart devices seamlessly first at home and then perhaps in the classroom of 2028 as a normal part of growing up in a digital age. Therefore, we need to focus on designing useful and productive applications which not only educate children but are also fun to use (Starkey in 2004). The use of tablets and mobiles instead of netbooks or laptops concluded that features like portability, availability, instant-on devices, and longer battery time makes mobile a preferred medium over others for learning (Norris et.al in 2011). Children show an energetic guise in acquisition knowledge of the world as children progress through the stages of cognitive development, it is important to maintain a balance between applying previous knowledge assimilation and changing behavior to account for new understanding accommodation. With the behavioral theories of child development experience the shape comportment in children and then accordingly, expansion is consider a reaction towards rewards, punishments, stimuli and reinforcement. (Theorist Jean Piaget in 2013). The early relationships with caregivers play a major role in child development and continue to influence social relationships throughout life societal erudition notion which believes in intrinsic reinforcements such as sense of pride, satisfaction and accomplishment could also lead to learning. By observing the actions of others, including parents and peers, children develop new skills and acquire new information (Albert Bandura in 1989). A seminal learning theory is very influential in the field of education which progenies acquire actively and through hands-on experiences. Along with the socio-cultural theory which suggests that parents, caregivers, peers and the culture at large are responsible for the development of higher order functions (Priyankara in 2013).

3. Methodology

We conducted an assessment on broods in rural area's pre-school environment in order to obtain insights to the design of this product where kids were showing great interest in drawing, writing, listening, recognition and situations while using the application which invoked their logical thinking.

3.1 Modules

The deliberated application is designed in 3 modules which comprise of various sub-activities privileged within each module:

3.1.1 Hindi Module: Hindi is the second language spoken in almost the whole of the Indian Sub-Continent. This would be certainly accommodating for offspring to inaugurate communications with others in the province. And furthermore, the most of the individuals in India speak Hindi, so the toddlers can appreciate the different beliefs in India more deeply.

They could communicate with almost all people in India & nearby countries so they could understand them more broadly. As Hindi has a vast history with it so kids can enjoy that too. Also new education policy is supporting for teaching students in their regional language and hence passage from the policy also mentions that young children learn and grasp nontrivial concepts more quickly in their home language/mother-tongue [9]. The policy also states that wherever possible, the medium of instruction until at least Grade 5 should be in the mother-tongue. So Baaljyoti enhance the kids in building and developing their basic hindi knowledge pillars resembling writing and reading hindi alphabets, knowing fruits/vegetables name, day's and month's name, identification of body parts, etc. with consisting of various sub-categories with each pillar. The module is based on PSLD rule (Padho, Samjho, Likho, Dohraao) which broaden kid's understanding and empathetic skills easily and quickly. In Baaljyoti application Hindi module is consisting following segments:

i. Hindi alphabets – In this segment a child can read and write the entire 52 Hindi alphabet one by one.
ii. Hindi Fruits and Vegetables – This segment consist of various bounties and vegetables name with the realistic visual so that a kid can easily learn and identify the fruits/vegetable in their surroundings.
iii. Day's – In this fragment a kid can explore the week days name and also learn how to write them.
iv. Month's – In this section brood acquire all Hindi month's name.
v. Body Parts – This segment shows a body parts name of a human being in a chromatic show.

3.1.2 English Module: English plays an important role in our daily life. English is extensively used in the contemporary domain. Therefore, the use of English should continue along with Hindi and other regional languages. It is important for higher education and specialized training. Most of the books on any subjects are written in English only also it is the medium of instruction in education in most universities and higher education institutes of the world. The abolition of English adversely affects the kid. Most children from urban area learn English very soon, but many of former do not know other languages besides their mother-tongue or regional language and thus, they so need to communicate with each other in English for their everyday work, so english is being a widely spoken language these days [4] [5].Similarly to PSLD rule this module is also following the implementation of RWUR rule which means read, write, understand and revise.

English module comprises of following fragments:

i. English alphabets – In this part a child can read and write all 26 English alphabets one by one.
ii. Fruits and Vegetables – This segment consist of various fruits and vegetables name with the representative chromatic so that a kid can easily cram and identify them in their atmosphere.
iii. Day's – In this section a kid can explore the week days name and also learn how to write them.
iv. Month's – In this slice brood acquire and learn month's name.
v. Body Parts – This display involves human body showing individually every part's name in a chromatic show.

3.1.3 Math's Module: Mathematics plays a major role in a child's development and helps offspring in making the sense of the world around them. Baaljyoti provides brace in children's problem solving and reasoning processes as well as representing, communicating, and connecting mathematical ideas. This module facilitates child learning numbers through illustration of pictures, number sense, tables, categorizing geometrical shapes, etc. In Baaljyoti application numbers are represented with entities or depictions as a way to make the perception more real and less abstract to young learners which will allow children to make acquaintances amongst the tangible monarchy and the math skills that are vital for speculative accomplishment.

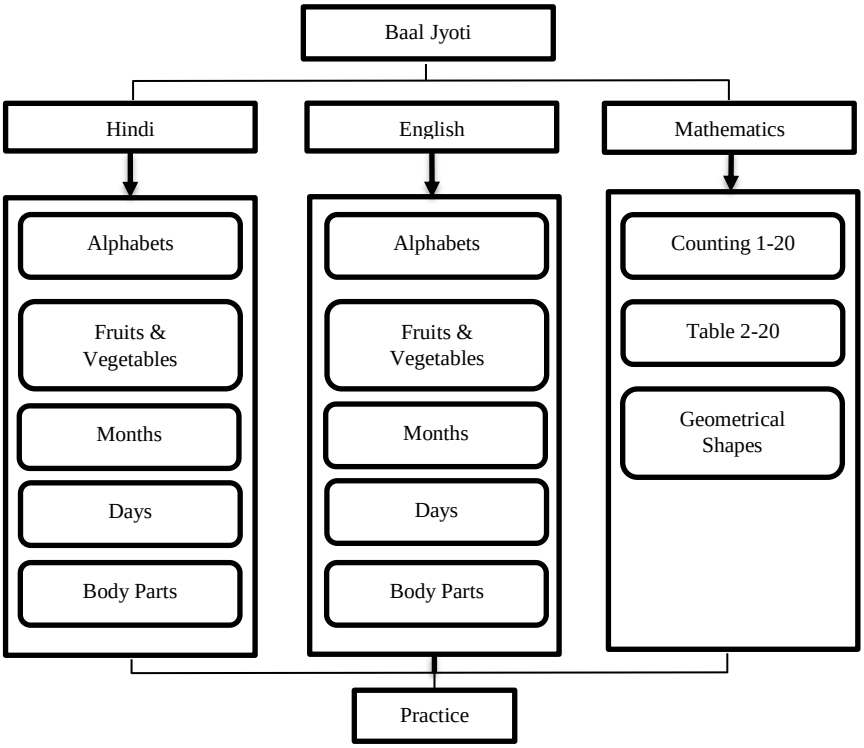

Figure 1: Block diagram of proposed application

3.2 Key Features

3.2.1 Drawing - Beyond what we feel and believe, there is much factual information about why art is important in children's development. Creating art expands a child's ability to interact with the world around them, and provides a new set of skills for self-expression. Not only does sculpture help to mature the veracious side of the brain, it also encourages important skills that benefit a child's development. Drawing can become a pivotal mode of uninhibited self-expression and amazement for a child. Art matters the same way language matters. It is an essential constituent of pardon marks us outstandingly human. Drawing also improves writing skills of the children. Writing letters correctly can be hard for the kids. The difficulty of writing can be minimized allowing the child to draw whatever he likes before moving for writing. Drawing helps the kid to familiar with shapes and improves the abilities of creativity and thinking [15] [16].

3.2.2 Shapes Recognition - From buildings to blocks, shapes are put together to create another shapes. Once kids learn shapes, they will begin to see them everywhere. There are ways in which you can teach a child to recognize shapes: they learn the shapes by watching it, do actions using the outlines, questioning on figures, etc. can be used to teach shapes for the kids. Baaljyoti has used those features to teach shapes for the kids. The recommended shapes to teach for the kids in this group of age are circle, triangle, square, rectangle, pentagon and hexagon. Also as we know that shapes are very useful now-a-days in the various inventions as well in designing the 3-D models and also helps in making objects attractive [7].

3.2.3 Letter Writing - Writing is tiring for younger kids. It takes time to build the necessary muscle strength to do a lot of writing. This is why many children will balk at the thought of writing more than a few words. Most of the parents struggle to teach their kids how to write letters correctly. Holding the pen, approaches take to write the letter, etc. are complicated concerns to be considered about. Therefore, improving the writing skills of kids is very important and hard part to deal with for the parents. Baaljyoti identified the need to teach the child the correct way of writing a particular letter. It was recognized that the child should be allowed to write the letter on a writing pad area designed attractively in the app. When he can write that letter well, he is given a free surface to write the letter he knows in the learnt way in a practice test part [3].

3.2.4 Mathematical numbers - At the preschool glassy, the practicalities of mathematical understanding are formed out of children's tangible proficiencies. Progenies can also make connections between mathematics and musical experiences or art when they explore rhythmic, visual patterns or symmetry. Preschool broods can learn to recite numbers in order, compare quantity, comprehend position, and match objects in one-to-one correspondence. Numeral impressions become significant to progenies when they ripen out of proficiencies that are purposeful in their sphere. Activities can build their understanding of number concepts, and also build foundations to draw and understand the numerical values. Baaljyoti has a special section for learning numbers. As the recommended limit of numbers to be taught for kids is ten, the tool includes number 1 to 10 counting. Also as we know that approx two days are generally taken to teach one number for a particular kid. The number section of the application has a separated environment with music and voice commands to motivate and impress the kid to learn the numbers.

4. Results

The application proved to be a tool that contributes to fostering collaboration among kids. In addition, it is also clear through the kid’s experience as well from the guardians of the village kids that Baaljyoti accomplished to generate greater children motivation, as it is perceived as interesting and entertaining. Below these are the some of the developed modules of application:

4.1 English Module

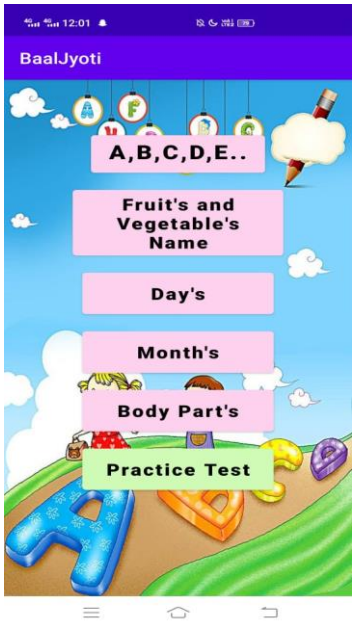

Figure 4.3: English Homepage

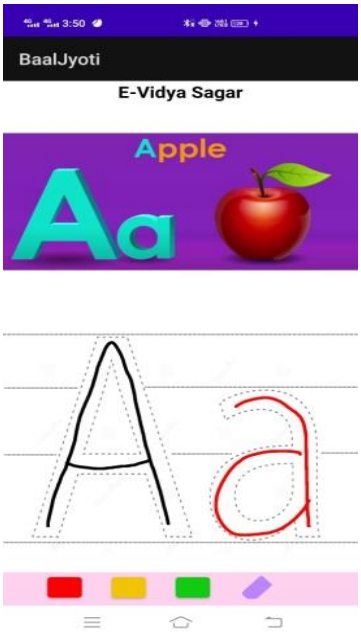

Figure 4.4: Alphabets Screen

Figure 4.5: Fruit's/Vegetable

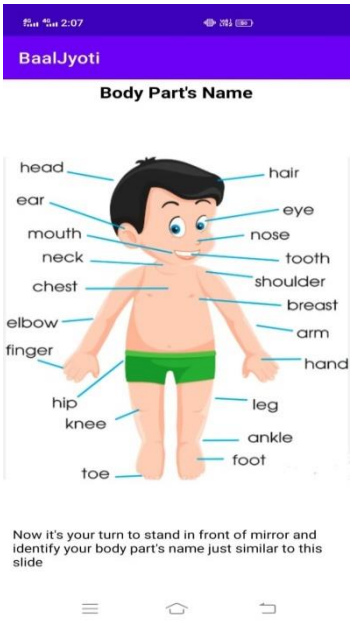

Figure 4.6: Body Parts Name

Figure 4.7: Week Days

Figure 4.8: Months Name

4.2 Hindi Module

Figure 4.9: Hindi Homepage

Figure 4.10: Hindi Alphabet

Figure 4.11: Week day's name

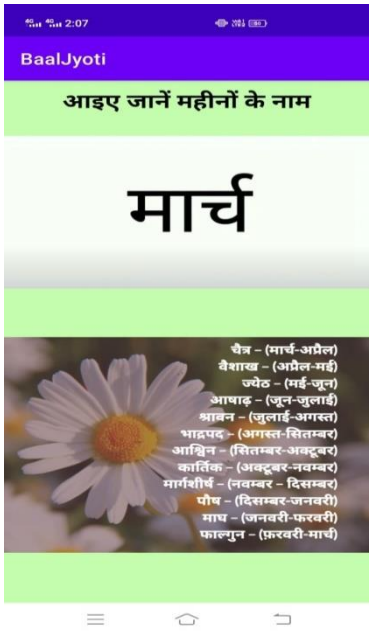

Figure 4.12: Hindi Month's

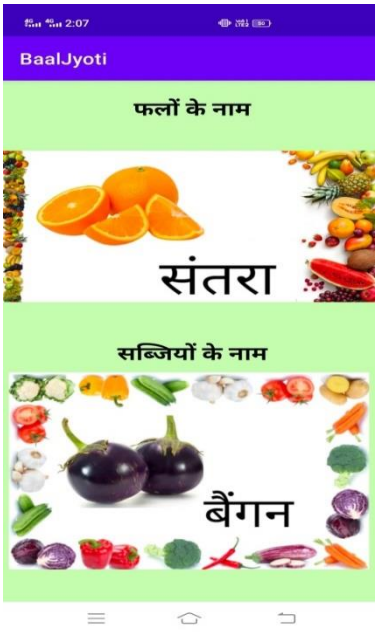

Figure 4.13: Fruits Name

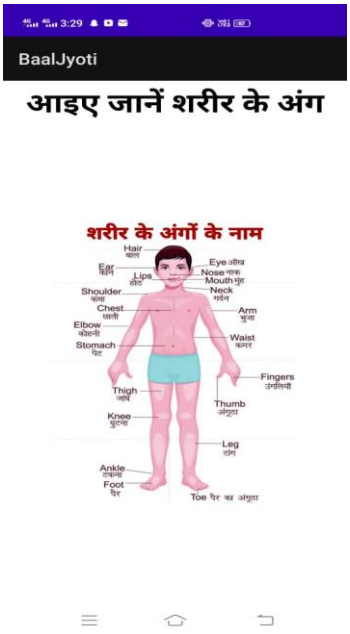

Figure 4.14: Body parts name

4.3 Math's Module

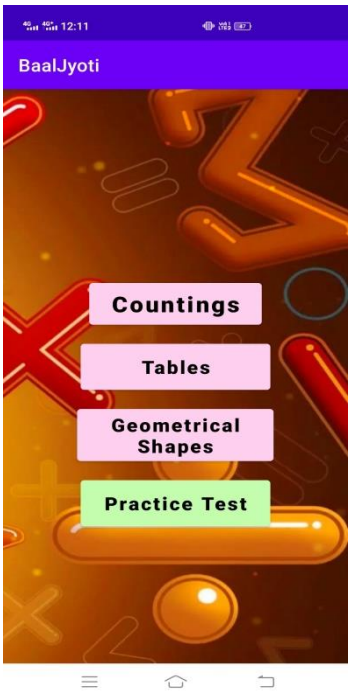

Figure 4.15: Math homepage

Figure 4.16: Numeric Page

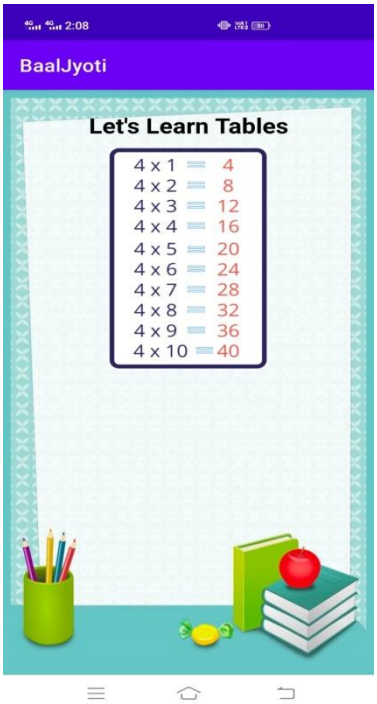

Figure 4.17: Mathematical Table

5. Conclusion

Future learning may depend heavily on touch-based mobile devices and appealing/engaging applications, according to shifting trends in technology and education. Children are using these devices more frequently than ever before. However, the study and creation of instructional software that is both interesting and useful for learning purposes is still in its early stages. Overall, our project is an effort to produce interactive educational software for use by urban and rural children alike, as well as to prepare them to be future digital natives. In this application, which is intended to be used by children 5 and older in the future, the extension of mathematical operations can be an auxiliary. Additionally, the application can be expanded to accommodate additional regional tongues like Telugu, Tamil, Santali, etc.

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