

# ICT in Early Childhood Education

Abin Joshi  
CPIT  
Madras Street  
Christchurch  
+6439408000  
abinjoshi@gmail.com

Ravi Sanyal  
CPIT  
Madras Street  
Christchurch  
+6439408000  
ravi.sanyal@gmail.com

Alison Clear  
CPIT  
Madras Street  
Christchurch  
+6439408000  
alison.clear@cpit.ac.nz

## ABSTRACT

The introduction of ICT into Early childhood education has had a prominent impact on childhood learning. According to New Zealand Council for Educational Research, there are three reasons why ICT matters in early childhood education. First is that ICT has already has an impact on people and environment that form young children's learning. Second is that new technologies have given new opportunities for parents and teachers to strengthen many aspects of early childhood practice. Third is that there is a growing support and interest across the whole education sector for the continuous development and integration of ICT in education policy, curriculum, and practice. This project evaluated software available for early childhood education and recommends five products that meet the needs of the children and also of the early childhood educators.

## Categories and Subject Descriptors

K.3.1 [Computers and Education]: Computer Uses in Education

## General Terms

Management, Measurement, Human Factors,

## Keywords

Software evaluation, early childhood education

## 1. INTRODUCTION

The main focus of this project was to evaluate software suitable for early childhood education. We evaluated 12 software products and have recommended five of them which we believed are most closely suited to early childhood education. Our recommendations were based on practical observation of children using the software on tablet PC at the child care centre and also through academic research of journals, books and websites.

The first part of this paper contains the methodology we used for the project. The methodology contains the literature, frameworks used, the checklist that was developed and the observation. The second part of this paper describes the five recommended software products. The software products that were analysed were both free products and non-free products. We then describe the five chosen software products, why we choose the software, what it does, what parents and teachers should know about the software before allowing their children to use it and why children like the software.

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## 2. METHODOLOGY

### 2.1 Literature Review

A literature review was undertaken at the beginning of this project to discover what software products were available for pre-school children and the evaluation of the products. From the summaries of ten articles it was established that ICT has improved the quality of learning among children through the use of various software and hardware, children could see, touch, feel and listen to stories, recognizing numbers and pictures which proved to be an excellent way for them to learn.

### 2.2 Frameworks

As part of our project we researched into many frameworks for evaluation. The frameworks we finally considered were the Epic framework, Haugland scale [5] and Cole framework. After careful consideration and evaluation we finally chose the "Haugland Scale". It was chosen because it has the criteria for checking the functional and non functional aspects of the software. This framework includes the checklist and the survey.

### 2.3 Checklist

The checklist includes criteria to evaluate the software for children. They include the child features, teacher features, and technical features and each of these features have criteria and based on these criteria we have evaluated to see if this was the right framework to be used.

Sl	Child Features	✓	Teacher Features	✓	Technical Features	✓
1	Active Learning Emphasized		Can be Customized		Animation Other than Reward	
2	Age Appropriate Concepts		Childproof		Usability	
3	Child Controlled Interaction		Curriculum Based		Availability (IOS,Android,etc)	
4	Children can Stop anytime		High Educational concepts		Corresponding Sound effects	
5	Children can Set the pace		Price wise		Corresponding Music	
6	Child uses Independently		Mixed Gender/Rol		Digitized Human Speech used	

			<i>e Equity</i>		
7	Functionality		Multi. Language Availability		Easy Installation on PC,Laptop,Mobile phone and Tablet
8	Usability (Simple and precise)		Represents Differing Ability		Fast Installation and set up
9	Creativity		Represents Differing Ages		Max Utilization of device power
10	Engages student Interest				No coarse Music or sound
11	Intrinsically Motivating		Easy Understanding of features		Min Waiting
12	Logical levels of Learning		Universal Focus (all children)		Speech is clear and distinct

## 2.4 Observation

For the practical observation we attended the CPIT childcare centre and observed children between the ages of two and four using software we had chosen. The software was used on an android tablet. Permission was needed from the parents for us to observe their children. The observation included recording the children's comments and reactions. The children were shown the chosen software on the tablet and were asked to play with it. Our observation was based on the usability and the functionality of the software

## 3. RECOMMENDATIONS

After analysing the 12 software products and evaluating them according to the Haugland framework we recommend the following five products that are the best fit for children's learning:

- **Alpha Tots**
- **Kids Paint Free**
- **Kids Numbers and Math**
- **Table Tots**

- **Tally Tots**

The reasons we chose these applications are as follows.

- **Problem Solving:** Children will be able to think logically and process large amounts of data. The children liked interactive apps and not passive, this helps them with their problem solving skills. As the chosen apps are interactive in nature, it focuses the attention of the child hence increasing the sense of awareness and be intrinsically motivating.
- **Hand eye coordination:** Software such as kids paint is free, and an open ended software product that enables children to paint freely and interact with the software on their terms where by improving their hand eye coordination.
- **Strategic Thinking:** Applications such as kids numbers and maths helps children gauge their own performance and have a chance to self evaluate by understanding their strengths and weakness as the application gives them instant feedback.
- **Logical levels of learning:** These apps in general are also aimed to improve their logical levels of thinking.
- **Positive reinforcement:** It helps them find a solution to a question through trial and error, hence they do not have to feel discouraged if they do get the right answer immediately.
- **Affordable:** We have chosen these apps as they are cheap to download or free.

## 4. CONCLUSION

After the analysis of the software for early childhood education, it is clear that children need quality applications and software for them to stay focused and enjoy their learning. Hence through this project we chose five high quality software products which met all the criteria that proves they will be beneficial for children between the ages of two and five years.

## 5. ACKNOWLEDGMENTS

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## 6. REFERENCES

- 1 Haugland, S. (2000).Computers in the Early Childhood Classroom. Retrieved from [http://www.earlychildhoodnews.com/earlychildhood/article\\_view.aspx?ArticleID=239](http://www.earlychildhoodnews.com/earlychildhood/article_view.aspx?ArticleID=239)