Roamer Robot in Portugal

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Abstract

In Portugal, CNOTINFOR team is training teachers and other professionals to use the Roamer robot on their classes or therapy groups.

But this work had started some years ago, when the Education Ministry of Portugal begun a project called MINERVA that had train many teachers to used ICT in their classrooms. All software was Logo based, with a turtle. One of the ICT available tools was Roamer robot.

Today CNOTINFOR sells Roamer Robot in Portugal, but all the training and support projects that involve the use of this robot in an innovative way. In this document we will show examples of what have been done with Roamer Robot in Portugal and what many people think about it.

It is important to mention that many schools are at the moment buying Roamer Robot because the Ministry of Education had certificate it as an important tool to educational use.

Keywords

Logo, Roamer Robot, Basic skills, Teachers training, ICT, Early education.

1. Introduction

Life is not about "knowing the right answer" – or at least it should not be – it is about getting things to work! (Papert, 1999)

Learning with a Roamer robot is like this idea, we have to understand and program it to do things like we want. To achieve this, we will have to start from the beginning many times, but in every time we will learn something new!

Roamer is a very friendly robot made to use in the classroom in early education. This robot is programmed with Logo Language basic concepts, like: forward, back, right and left. *With the robot, the children can, in a playful way, turn abstract concepts into reality. Example include: measuring, comparing lengths: moving in a specific space a drawing a path diagram; expressing these concepts in words.* (Cruz, et all 2003b).

In Portugal there are some projects and places were Roamer robot has been used for some time. At the present moment, many schools are receiving a Roamer trough a governmental project where Ministry of Education has recognised Roamer like an important tool to be used in a classroom. So forth, the use of Roamer is increasing in Portuguese schools and the need of training is also growing.

In this paper, we will explain how the use of Roamer is being made in Portugal by showing important projects that are taking place at this moment. We will also show some work done in the trainings that had taken place in CNOTINFOR Training Centre.

2. Using Roamer in Portugal

The first appearance of Roamer robot in Portugal has occurred in the early 90s, when a governmental project was developed: the Minerva Project. This project wanted to put new technologies in all schools and most of the software used was Logo based.

Many teachers that had participated in this project remember the black screen with a turtle in the middle that could do many things. They remember the curiosity of the children that have never seen a computer in their life, and the joy when they saw they could interact with a machine, play games, draw and write.

Many Roamers were introduced by the Ministry of Education in some schools and train to use them. Many teachers of that time remember the work done with joy, because it was something very important to the learning process of the children.

But as the years went by, the teachers that had this training left schools and the new teachers did not know how to use Roamer, so in some places they are still locked in rooms.

However in other schools the Roamer is used frequently. There are some projects well documented. We will present three of them bellow. The first two have finished as a project but the Roamers are still being used. The last one is in the very beginning at the moment.

2.1. Computers in Early Childhood Contexts

It was developed as a subproject of Trás-os-Montes Digital project, by Trás-os-Montes e Alto Douro University and was named *Computers in Early Childhood Contexts*. The aim was to promote the use of ICT in playful educational ways and integrate them on usually activities. The Roamer was one of several ICT available tools.

The activities developed with the children were similar to the ones already done before, but using this new tool. So, working stories like Little Red Riding Hood were more fun and children could learn to express themselves at the same time they learned concepts of space orientation by programming Roamer to do the path though the forest like the Little Red Riding Hood. Other stories were worked, songs were composed, games were played and many other things.[1]

With this project, many teachers had the opportunity to see and experience to learning by doing and the results of this in children. Who worked in this project had the proof that Roamer is a powerful tool that introduces mathematic concepts to early children in an easy way. (Cruz, et all 2003a; Cruz, et all 2003b)

2.2. Roamer Microworld

The second project was implemented by a team of researchers of Paula Frassinetti Educational Training School in Porto named *Linha de Investigação*.[2]

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[1] To know more about this project you can look for Cruz, Monteiro, Morgado & Morgado (2003a). A Robot in Kindergaten in *Proceddings Eurologo2003: be creative… re-inventing technology on education*. pp 382-387. Porto: CNOTINFOR; or Cruz, Monteiro, Morgado & Morgado (2003b). A Robot in Kindergaten in http://home.utad.pt/~leonelm/papers/RobotinKindergarten/RobotinKindergarten.html

[2] To know more about this Project you can look for Correia, Secundino; et all (2004). *Micromundos AIA*. pp 134 – 156. Porto: ESE Paula Frassinetti.

The researchers involved knew Roamer and their results in the learning process. For so, they have drawn a project that intended to introduce Roamer in the classroom by giving guidelines to teachers and building a collaborative community to exchange experiences, results and suggestions.

This project was implemented with groups of children with six to eight years-old. Three schools in Porto, five teachers and six students of the Training School were involved.

Using a web platform, it was possible to give guidelines to the teachers and encourage them to exchange experiences. After some time, it was possible to see suggestions of the use of the Roamer made by the teachers.

The results of the use of Roamer were very good. All children and teachers had enjoyed working with it, and both of them have learned a lot. The evaluation made by all the people involved has shown that this project was very important to learning and it was a very powerful tool.

After the end of the project, it was important to verify that one of the schools continued to explore Roamer autonomously.

2.3. Pyramid Project

In Abrantes, a Portuguese city, the *Pyramid Project,* whose partners are the Superior School of Technologies (*ESTA – Escola Superior de Tecnologias de Abrantes*) and the City Hall of Abrantes, has begun.

The aim of this project is to create a technology space were every child of Abrantes can see and used it.

This is a room in Pyramid Building, a building recovered by the City Hall to be a space where everyone can attain to every technology available.

Figure 1. Computers on Pyramid room.

Figure 2. Space on Pyramid room to play with Roamer.

The project has begun with a training course for teachers about technologies. They had made a big assignment about driving prevention during this time, it was taken to an exhibition of technologies that occurred in Abrantes in November of 2004. The 3rd prize was give to this project, it was very important because it was the only education technology expose.

Figure 3. Outdoor presenting the assignment in the exhibition.

Figure 4. Assignment presented in the technologies exhibition

This prize gave to Pyramid Project a big importance in Abrantes and showed how Roamer could be used and some teachers have looked for more information about it.

Today the project is growing, groups of children from Abrantes schools are arriving to the room in Pyramid Building to work with technologies. But the Pyramid Project team is also arriving to schools to work with the available technologies and to help teachers. Roamer is one of the technologies available, but was the one that gave to this project the impact needed to begin.

3. Training teachers to use Roamer

Since the early 90's that CNOTINFOR team has shown and trained many teachers and other professionals on the use of Roamer in their daily activities in schools or in therapy.

Today this training is more frequently and the assignments fulfilled during these are excellent.

At this point of the paper, we will show three interesting assignments developed during Roamer trainings.

3.1. The Turtle and the Rabbit fairy tale

This was a training that CNOTINFOR organised in 2003 to the team of the project *Computers in Early Childhood Contexts* that we have mentioned.

Figure 5. Sequence of an activity dun by one of the groups

The group began to draw what they wanted to do; they decided to perform the Turtle and Rabbit story using the Roamer. They begun with the characterisation of the Roamer: as a rabbit and as a turtle. After this, they had to build the scenario; they draw a path in the floor and put some trees and other things in it. At the end they had to program the Roamer. The performance had begun with an "Action" order, like in the movies! The narrator explained what was happening and sometimes had to interact with the Roamers. At the end, one of the turns of the turtle was to the wrong side, so one person of the group catch the Roamer before they crash with each other!

The aim of this project was to work a story inside an early childhood classroom. Many skills could be developed by this activity; like expression, art, space orientation, directions and sequences.

3.2. The illusionist man

This was a training that took place in Abrantes, with a group of teachers of that city. Some were involved in the Pyramid project. In this assignment the Roamer had sensors, motors and lights.

Figure 6. The illusionist man activity

This was an activity developed to be used to introduce the addition process with children of key stage 1. Roamer was an illusionist man that responds to a number of hand claps. A person takes a number from an envelop, the teacher claps his hands the same times as the number taken. The illusionist counts the claps of the hand and puts his arm up the number of times and goes forward this number of steps. All the children have to say witch is the number in floor where the Roamer will stop. At the end of the path the illusionist turns back and returns to the beginning place.

This Roamer program was difficult. The Roamer uses a sound sensor. When the hands are clapped, Roamer begins a sensor proceeding. At the end of each sensor proceeding, the Roamer is ordered to do another sensor proceeding when other sound will be heard. The result of this Roamer program was incredible; nobody was able to guess how the group could do this. But this information was in the book given to them!

An activity like this could be very motivational to children in the learning of addition process.

3.3. ET Cnoti came to Coimbra

This was a training with a group of people that work with autistic children in Coimbra. They have drawn activities to be developed in their daily work.

Figure 7. ET Cnoti Activity

For this activity three Roamers were needed: ET Cnoti, a Coimbra Student and a car. A scenario of a city was built. The story was that ET Cnoti arrived to Coimbra and wanted directions to go to a specific place. He finds a student, but the directions he gave him were not enough. He goes to a restaurant nearby and they told him all the directions. But being an ET, he did not know how to walk in the streets. He tries to go to the other side of the road but a car is passing, so he had to sound the horn for the ET to go back. He had to wait to cross the road went the sign was green to walk.

This activity is important in a group of autistic children; they see themselves like an ET, someone that is different from all kind of people. So they identify themselves with ET. This is also a way to work the traffic and social rules.

4. Opinions about Roamer

All people that had done a training about Roamer liked this tool and recognised the importance of its use in education. They gave importance to the improvement of some skills by using Roamer, like: space orientation, logical sequence, moving in a specific space, measuring, comparing lengths, express these concepts in words and art.

All these skills can be development in a classroom or in a museum, library or in a space were children can learn by playing.

Roamer is characterised like a tool that can introduce children in early years in maths concepts; some of those are very abstract, but with the help of a Roamer, children can see these concepts like something tangible and easy.

But Roamer is not a perfect tool. Some limitations are pointed to this robot:

1. Complex to program; it is needed to press many buttons to do something,

2. Cannot do two or more things simultaneously,
3. Cannot memorize programs after we have turned it off,
4. Memory has low capacity,
5. It is expensive and so it is almost impossible to have one in every school,
6. The sound is low; if we try to work with a Roamer in a classroom, we probably cannot hear it.

These were the major problems detected by the persons who made a training course about Roamer robot. For some of them, the software Roamer World could improve the Roamer in some of those limitations. Roamer World is a software that simulates a Roamer. We can program paths, music and all things like a real Roamer and we see the results of the program in the screen. After this we can send this program to the robot, our we can get the program in the Roamer to the computer and save it there.

This software improves the use of Roamer robot. For some teachers it is even better than the Roamer itself, when used with specific children, like autistic ones. Autistic children do not like things that do not work like they want, they need routines. With Roamer they do not achieve routines, they have to try many times to do something and they do not like it. With Roamer World, they can modify what is wrong on the program and save it in the disk to see it every time they want.

But this is the opinion of those who work with this specific group of children. For this opinion, they have not tried to use a Roamer with the children, for so, we are not certain about this effect on autistic children.

5. Final Words

In Portugal, Roamer robot has a long past with positive results that are like seeds. The seeds of the present appearing, but the future depends on the conditions.

Portugal is known for the low literacy that has been reported in many international studies. This is something that Portuguese government wants to change. One of the ways is to put ICT in schools and give training to teachers. This is something that is happening now.

Logo language and its methodology of learning are present in some of the software and also in Roamer robot. Some projects using those had been taken place and the satisfaction of who is involved is high. All people realised that the learning made by children during activities with Roamer has improved theirs skills more easily than in traditional lessons. The knowledge acquired with these activities is the basic skills that they need to understand other concepts afterwards in life.

6. References

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