

Creative environment for the actualization of children.

**(As we have used TRIZ in developing
television game for children)**

**Author
Karl Rautio
Creavit Media Osk (Finland)**

2013

Training materials created during Latvian, Estonian and Finnish adult educators' cooperation project "Let's Find and Use Your Creativity".



Project supported by Nordplus Adult Programme.

Content

Introduction	3
Task 1. The organization of the game "Space Baby"	3
Task 2. What should Space Baby look like and how can we communicate with it	7
Professor-Inventor (laboratory) and many others.	9
Examples of multimedia use	9
Space Baby's Image	9
Headphones and game controls	10
Video recording of the game.....	10
Afterword	10

Introduction

Any projects are for those who can develop many tasks. Our projects are not an exception. There are problems and we try to solve them. TRIZ (Theory of Inventive Problem Solving) helps us to find solutions faster. We are not a virtuoso in implementing TRIZ, but we aim to be them. In this article we would like to tell you about some of their attempts in implementing the elements of this theory for our needs. In short, it will reflect our experience. We hope that it will be useful for you.

In our enterprise there are various activities, for instance, one of them is creating games. Games are different in form and in content. Further we are going to you about one of our projects - series of television children's games "Space Baby" (another name will be given, a project is under development).

We clarify goals that can be achieved through the game by focusing on the particular age of participants and by viewing challenges in the near future. While thinking about structure and details of the game we have identified a number of tasks and found possible solutions. One of the problems was related to the organization of the game.

Task 1. The organization of the game "Space Baby"

The proposed game is designed mainly for children that are 7-10 years old. Age limits are given for orientation. They are not absolute and they depend on individual characteristics of the particular child. In our case, preparedness to act is considered to be very important that provided for in the game. It is associated with the capabilities, limitations, and needs of children of this age.

Next we are going to describe very briefly the points about age differences, which we will need to address the problem described below. It is important for us that in primary school children still have an interest in the role-playing games, that was originated in the preschool years and we can take advantage of it. It is also important that at this age due to improved functioning of the nervous system children are able to concentrate for a longer period of time than in the preschool years. During this period, children are also ready to more effectively apply their intelligence, they better understand what skills they have, what limitations do they have, and that organizes and directs their behavior. They improve motor skills and coordination of movements. And finally, at this age they have a growing interest in interaction with their peers.

We would like to try to formulate a task connected with the organization of the game while focusing on the peculiarities of this age.

In overall, the general purpose of the organization of the game is that children should have benefits: through those game children should gain important skills good for this age, receive a momentum and direction of development. The main question we must answer now is what is needed in order to ensure that the process of learning will occur?

In order to do it at least, there should be the subject who strives to learn something. If he is passive than the perception will not be effective. He should be involved into the process, in which he has the opportunity to interact with the object of development. This process requires the active initiative of the perceiver. The more aspects the process of development will have, than it will bring more results. The subject must step up the numerous aspects of perception and lead in line with the perceived phenomenon. It is important to note that the perception is developed through training, and at

different times, it is associated with different activities, for example, the setting of a sight of a child in the age of two months is going through the sense of touch and feeling. In six months, the development of long-range space is done through crawling. In our case - it should be active, diversified performance of each player in the game. We are talking about the individual processes that have their own tempo and intensity. These processes are internal and the exposure on them can be only indirectly (at least according to known data). In any case, strict regulation of activities may negate the process of development.

However, the game itself as a whole (this applies not only to the entire series, but to the certain games as well as their parts) can not last forever, and there is no opportunity to "adapt" to the individual rhythms of each participant. In addition, the subject of development should be represented and activities must be organized. Within the framework of performance individual processes should be initiated and intensified through the coordination of individual rhythms. In other words, it is necessary to regulate the process.

By referring to the standard statement of contradiction in TRIZ we obtain a paradoxical situation in which **the game should be controlled** so that the activity of children should be directed to the **achievement of objectives and must be uncontrolled**, that will mean that the independent natural activity can appear in the natural own tempo. In order to solve this problem in the beginning, we use of one of the standard methods of solving the contradictions offered by TRIZ. So, in order to solve the contradiction it is necessary to divide the conflicting demands according to time. It means that in some period of time the process will be regulated, and in another period children will be given freedom to express themselves at their own tempo and to perform independent actions.

This challenge is not unique. There are almost ready analogue solutions, which also can be used as a prototype, for instance, in sports games the regulation of the process is done by the rules. In rules it is specified how players should behave, what is possible and what is not. However, rules do not regulate everything: independent spontaneous or deliberate action within limits also take place. If the limitations are violated, then something or someone "reminds" about the rules. In other moments the game goes on. In many games the role of reminder can belong to judges who follow the game with the help of whistle, flags, gestures and other means of regulating the process. Usually acquaintance with the rules is done outside of the process of the game. Players should be familiar with rules before the actual game.

Which benefits does the information about this method of organization of the game bring us?

Firstly, acquaintance with the rules is done outside the period of the actual game, during which rules will be used for regulation of individual actions based on the own initiative. Actually, this is the technique that we want to apply. In one period rules will be reported. In another period rules direct free expression of children.

Secondly, there are labels that regulate the process. In sports games it is the direct use of gestures or use of speech by judges, different sounds and light signals. In our case, we can suggest our own regulative labels that would naturally fit into this action (see "Examples of application of multimedia").

Still, in this prototype restrictions are quite harsh. After all, even in prison there is the relative degree of freedom to do things based on own initiative, but within the rules. Only these features are clearly not enough. So, let's try to convert the prototype in a way to strengthen the creative manifestations

of participants in the game. Firstly we should select the type of separation of contradictory properties in time. In our model of the prototype rules are ready and they need to be mastered before playing. The letter "A" means the moment of mastering of regulations, and "B" - the use of rules. The division has the following form: A → BBB (previously one, in main time – something else), but we do not have time for separate temporal resource for practicing rules. In contrast to the well-known sports game, our game is not known for certain players. Therefore it is better that rules should be mastered gradually, step by step, in small portions according to the scheme: when there is a need – the rule will be clarified. To begin to game without rules is impossible. So in the beginning there is the first portion of rules, and after that - the game and the need for a new portion of rules, and then alternation will look like this: A → B → A₁ → B₁ → A₂ → B₂ → (first one, then another one alternately). This tactic improves the situation, however, breaks in the game and especially the long-term ones highly undesirable. Let's try to make part A (information about rules) as short as possible, then we will get the alternation, in which event "a" passes so quickly that almost does not stop the action of the game.

This ratio can be expressed by the following formula: $\textcircled{a} \rightarrow \text{BBB} \rightarrow$ (all formula applied here are taken from the book S. Murashkovsky Biography Art, Part 1, pp. 170).

Then one question emerges: "is it possible to make so that the function of the" A "will be performed, and it would not stop the game?" If we will try to find the answer to this question with the help of "common sense", then most likely we receive a negative response, but in TRIZ there is the notion of IFR (ideal final result). It is the model of ideal outcome, and we have to approach it. In order to achieve this goal it is necessary to use available resources.

In respect that the plot-role game is interesting for children at early school years we will try to use this resource (story and role) to create the conditions in which control and spontaneity harmoniously co-exist almost simultaneity. We will do so that instead of learning already ready rules children will reveal them during the game in circumstances and conditions. It is the same as it is in real life, when we face something new we learn about it, find out what it is how to handle with it and continue the interaction. Now the control function, expressed through clarification of the conditions, becomes a part of the game. And identification is also the part of the game. In order to start all the work, we need more guiding force, stimulus that will trigger this effect. And the impetus for the research is the main goal, which is also clarified during the game. This main goal is associated with the "main character" of the game – Space Baby.

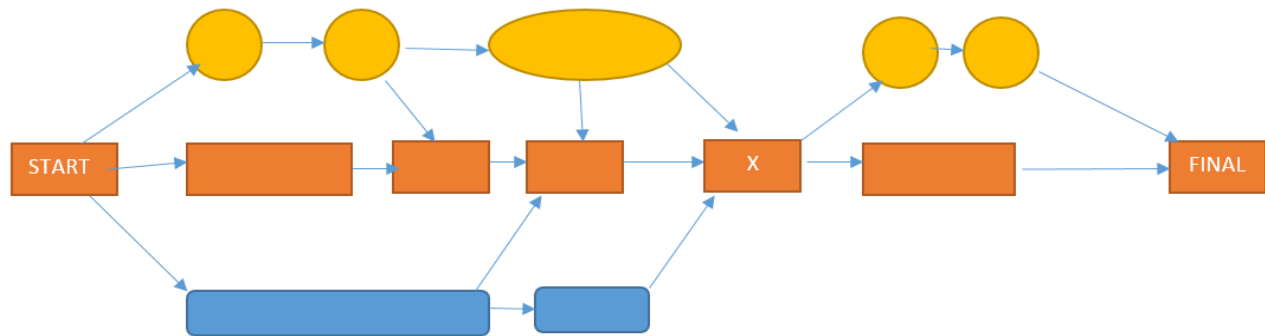
Already at the first meeting children will be familiar with the "cause", why they are invited. It is found out that according to eyewitnesses in the city in which they live strangeness happens. And these strange things remind antics of a baby who has fantastic power: after all, what he does is not possible for the average person. On the first meeting there will be a Professor (one of the announcers of the game) who has done a quick survey of the observed phenomena. He shows facts and leads everyone to his hypothesis, according to which "a little bully" may be a representative of young highly developed civilization. And most likely it is a baby, who came here, most likely, by chance (or guardians are not detected) and he does not know what kind of life we have. A baby is really curious and he plays with everything that comes on his way. He likes children and it seems he is ready to be in contact only with them. Nothing serious has happened yet, but we do not know with whom he will play in the near future. So, there is an urgent need to make friendship with him and to protect him from dangerous actions.

According to the conditions identified in the initial moment of the game, it is known that the most likely only children can perform an "important mission." "Most likely" is because it is a hypothesis and everything needs to be checked. In addition, in the hypothesis it is not said that children will "save the world" by themselves. These conditions do not exclude adults from the game and the participants will be lead to this thought, so there will not be feeling of abandonment. Further it will be clarified that parents and adults can perform similar to Space Operation Center and will help with competent advices, emotional support, and will express their love and faith to persuade children that they will cope. But the main work that is to have direct contact, like the astronauts in orbit, should be fulfilled by the children themselves. Nothing will work without their independent creative action, their ability to navigate quickly and make decisions.

The tasks are taken intentionally not easy ones. As a result, in order to solve them each participant has to show his best performance. At first, something can be done using old knowledge and skills, but in future many new things will be learned, especially participants should learn how to work together and support each other, where the weakness of one can be compensated by the power of another one. And if they will manage to succeed in this direction, than drawbacks and weaknesses with right approach can be turned into strengths. Participants must learn to have an attention to each other, to accept each other considering not only advantages, but also disadvantages. During the game will emphasize the uniqueness of each participant, but at the same time create conditions under which the result can only be achieved through effective cooperation and common efforts.

It is obvious that different teams will have different games, because their willingness to overcome obstacles and challenges will be different. We cannot allow the absolute loss of the team, because it may badly affect the self-esteem of players. But on the other hand, "easy" game is not effective, so there is a need to balance success and failure, work and rest, seriousness, concentration, humor and carelessness. Content of action within the game should also correspond the capabilities, needs of team members and opportunities that, by the way, will be changed dynamically during the game. In the context of these requirements, it is clear that as the game as the system cannot remain static or constant. Naturally it must become dynamic. Therefore, we have decided that tough, unchanging rules of the prototype should be dynamic and turned into the circumstances in which the action takes place and these circumstances are changing during the game. Dynamism is a way to achieve the flexibility that allows varying accordingly to changes in requirements. What can help to maintain the dynamism of the system called "The Game"? One of the means is modularity.

As a rule, a reconstruction of a system from scratch is very costly, for example, it is time-consuming. The situation in our game may vary, but the reaction should be almost instantaneous. If we think about events of the game as scenarios, than we would need a lot of ready-made scripts or it might be a modular "polistsenary," in which the nodal function points will be saved and the rest will vary. It is reflected in a scheme below



This scheme is very conditional and truncated, and it shows the idea of the game with replacement of parts (modules). START-means the beginning of the process, FINAL is the completion of the process, and X is a node (in real version there must be more). By arrows possible transitions to the replacement part (unit) are shown. Modules may be of different size in regards to time and load. In the initial part (s) in particular, as well as periodically during the game there should be a testing of the level of participants' capabilities, which will allow to choose the right module to which to move. "Node" synchronizes branched processes. The nodes are also key common moments, independent from the level of players.

In our case, even with fantastic opportunities of the reconstruction of module system we do not get the desired effect, if there will be no control of the process. We need at least one item through which we can control the process. In our game it is a Space Baby itself, since the main task is to protect baby from dangerous actions and for this we need to establish contact with him and to find the "answer" to the paradoxical questions of alien. There are two obvious ways to control the situation through reactions of baby. First, it depends on his reaction will communication flow in right direction; whether it is active or maybe it will stop. Secondly, the degree of complexity of questions and tasks also depends on the baby. He is in contact with the participants and what he will ask depends on the team leading the game; they are focused on the situation related to the peculiarities of the players and the game today. As long as the image of Space baby and chat with him is so important, we need to answer two questions:

1. How Space Baby will look like and
2. how to communicate with him.

Task 2. What should Space Baby look like and how can we communicate with it

To answer these questions we must consider what goals we have in using this image of Space Baby.

It cannot create a feeling of fear of rejection. The baby-like image is selected for several reasons. First, an image of a child does not incur fear. It is hard to suspect that it has a plan, especially an evil one. Secondly, Space Baby is seen as a younger and less mature creature than the participants themselves and makes them feel obliged to provide assistance to the one in need (this may come from the team and, at times, from individuals). The Space Baby actions should appear harmless and funny. All these features are needed to create a favorable impression, an image that does not create fear. At the same time, Space Baby is a representative of a distant highly advanced civilization. It is an alien.

Different and strange are the features that give us a chance to position the players outside conventions and teach them to think and see different points of view. But, simultaneously, anything strange (especially, radically different from the usual) naturally put people on guard. What should Space Baby look like in this case? And should it "look" like anything at all?

Television and cinema make us look for standardized solutions. Extraterrestrial creatures invariably look like humans and get their looks from distorted images of humans with the help of makeup and costumes. It is a tradition. Intelligence is strongly associated with human-like appearance. In mythology dolphins that bear no resemblance to humans are claimed to be intelligent due to their common origin with humans. Children might also expect Space Baby to bear some resemblance to humans.

It seems like the problem is solved. We use an actor, a good improviser, able of interacting with children. We put on a makeup, design a costume and ... And create a huge baby. Maybe not as big as a baby in *Solaris* by Stanislaw Lem but big enough to take a risk of creating unwanted associations. Using a child actor may be just as unsuccessful. This role is extremely complex for an immature actor. An adult of such a small size, close to a size of a preschooler, could impersonate a space baby with more success. But even in this case, authenticity is still a problem. Besides, it is not easy to attract an talented actor of such height, capable of interacting with children and understanding the language used in action (languages in different groups are planned to be different). And do we really need this masquerade?

In theatrical circles it is well known that the king's part is often played by the royal court. The king may even not appear but his presences is obvious. We cannot probably use it directly here. Children need more than the feeling presence they need interaction and communication (preferably in real time).

Within the context we have to answer the question what the Space Baby should look like. The answer is: it will not look like anything, its presence will be provided by the systemic resource.

The systemic approach is an important part of TRIZ. "System" is a "such a combination of elements that creates a new quality" (Murashkovsky, 2007) Elements the system is comprised of will be called subsystems, the system itself may turn out to be an element in a super-system. Space Baby as a character is included into the super system of all the participants: other characters, roles, supporting personnel and the players themselves because they all play their parts.

But this is not all that can be made use of. Our game is a television game. Even if it is not going to be broadcast, it is being recorded. All the equipment: cameras, lights, sound, monitors, sound mixer, headphones, sets and props and many other things may be included into the resource base.

Thus, our "court" compensates the missing character by its performance and creates:

1. Feeling presence
2. Real time communication

The full description of the "Court" is too extensive. We just touch upon a few aspects without focusing on details.

Professor-Inventor (laboratory) and many others.

The name "Professor" will refer to the complex functions that can be implemented by a single person of any gender or by a group of people. Any option has advantages and disadvantages. If the functions are implemented by two people, the duo in any composition (same-sex or different sexes) provides an opportunity for dialogue, they can see the phenomenon from both sides. Opposite-sex participants may bring additional aspects: feminine and masculine aspects in communication with children of both genders (many aspects, including embarrassment). In addition, observing real relationships children can see that success can be achieved by finding the right solutions regardless of gender. Each participant of the duo makes mistakes, recognizes them and enjoys finding solutions regardless of the fact who came up with the wrong idea first place. By expanding the group of participants children have more chances to learn from experience. The downside of the success here is the complexity of coordination, the need for more advanced skills among the participants. The children and the professor in his laboratory are becoming one fulfilling an extremely important and complex mission.

One of the functions of the "professor" is to bring into a group of playing children "findings" that are made in the absence of children, demonstrating collected and classified data about Space Baby's actions. It uses a variety of tools: from storytelling to demonstrating a "documentary" video. In addition, the "professor" - is an expert on the accumulated knowledge of the mankind.

Another function of the "professor" is to provide tools for the contact: "various types of equipment". The contact with Space Baby is not direct – it is implemented by the "equipment" it "receives" signals from Space Baby, who, at the time of the "contact" happens to be far away (sometimes in the area of Jupiter or Venus, in Antarctica or Africa). Why do we choose such locations for Space Baby? This method of "controlled distance" is necessary for two reasons.

First of all, the strange object at the other side of the wall, like a lion in the zoo, is not so scary as puzzling. If the wall is removed, these feelings will change dramatically. If we control the wall, the level of safety is perceived as being high. We can open the door at will, when we are convinced of being safe.

Secondly, the multimedia technologies that "indirectly connect" the players with Space Baby provide us with a wide variety of opportunities of visual representations, creative involvement of players, flexible game control than conventional "theatrical" solutions might do. Virtual environments are easy to transform. Real relationships are established between players and judges.

Examples of multimedia use

Here are a few examples of how multimedia tools can be used.

Space Baby's Image

For example, at some point children get to know that Space Baby does not have a body like humans and it does not look like anything at all. Creatures where Space Bay is from can assume any shape they like. But so far it does not have sufficient skills for transformation. It likes to communicate with the children and it seems the communication will benefit if they can see its own shape. It wants the children to help in finding an appearance or maybe even several shapes that could make their interaction pleasant. It is explained to the children how, with the help of different tools, including technical ones, Space Baby might obtain a desired appearance. Working on the image, the children

can create a model they can later use to create an image together with Space Baby, working in reality with the operator.

Headphones and game controls

It is very important to feel personal involvement in team work. It is also important to see good things in others. Multichannel functionality and headphones can distribute important information and hereby keep the situation under control. For example, there may be one player who is neither quick nor skillful. The player's personal failures keep down her self-esteem. Other team members may also underestimate her. It may bring the player's self-esteem even lower. If one leaves everything at that level, personal inefficiency might even increase. And that is why in the episode of "listening in" for important signals, these signals are sent directly to the "loser's" headphones. She has the essential information, she sends signals to others and they find correct positions and frequency, receives the signal and amplify it. In this case the controlled success can change the relationship: the team is grateful for her accuracy, the ex-loser begins to feel that she is a part of the team and so on. The cycles are reversed. The self-esteem is growing, the team spirit is strong. Gradually, they obtain experience and feel equally important.

Video recording of the game

The camera team can openly make a video recording of the events. All its members belong to the "professor's laboratory", simultaneously, friends and colleagues of the children in this important activities of establishing contact with Space Babe. Video recording can help with reviewing actions, correcting mistakes and adjusting the tactics. The children should also take part in the analysis. "Errors" may be made by adults and the "professor" on purpose. All comments are listened to and grownups set examples of how comments and criticism should be received. The adults and the children should jointly decide how to avoid further errors.

Afterword

Concluding our remarks of TRIZ usage in our practice, I would like to say a few words about what good it did to us and what difficulties we experienced while learning and using TRIZ.

TRIZ is not a single method but a complex system including procedures, devices, laws of system development, information funds and more. Besides, it is a constantly developing system. It is clear that a more effective use of TRIZ one needs to fully master it. However, from our experience we know that even using a few of the methods could be quite effective. In this case it is not important whether we solve technical, social or esthetic problems. Naturally, one needs to spend time on learning how to use TRIZ. Something is learned easily, for example, IER (Ideal End Result), contradiction and their standard solutions. The "System Administrator" is easily adopted but in practice one can easily get entangled in definitions of functions, subsystems, sub-subsystems and anti-systems. Learning this part obviously will require more time. The main thing is, like in math, after learning arithmetic one can learn arithmetic problems without waiting when one reaches the point of learning differential equation calculations. Nobody insists on remaining within the limits of arithmetic. While creating an environment for self-actualization we integrate it with "talent thinking", which could be obtained by learning TRIZ.

Murashkovsky, Yu. (2007) Biography of arts, Part 1. Petrozavodsk: Scandinavia.