

Available online at www.sciencedirect.com

Procedia Social and Behavioral Sciences 11 (2011),32–36

Procedia
Social and Behavioral Sciences

Teachers for the Knowledge Society

Origami art as a means of facilitating learning

Boruga Andreass, MA*

Grup Scolar “Serban Voda”, Slanic, Prahova

Abstract

This paper briefs on the role of origami art as an optional course. Herein, the paper is based on my experience of teaching origami as an extracurricular activity to students in the lower and upper secondary. It enlarges on the ramifications of origami in the teaching-learning process, based on workshops organized in some of the schools where I have taught.

The research aims at revealing the impact that this art can have within the educational process at two levels: behaviour (significant improvement in the teacher-student relation) and learning (origami really helps children to develop *sense and sensibility*).

© 2011 Published by Elsevier Ltd . Open access under [CC BY-NC-ND license](http://creativecommons.org/licenses/by-nc-nd/3.0/).
Selection and peer-review under responsibility of *Masterprof* team.

Keywords: Origami; Education; Art; Learning partnership; Communication process; Teaching, Logic; Esthetic.

1. Introduction

The idea of making this research first emerged when I discovered origami and saw the changes that this form of art effected on myself, both in my behavior, and in my style of learning. My teaching experience has taught me that some of the most important issues in the educational system are the relation between students and teachers; motivation and the methodology of teaching/learning. As such, an innovative way of dealing with these issues was required and after realizing my students' interest towards origami I decided that it might be favorable towards making some changes.

Origami is an art the ramifications of which are practically unexplored in the Romanian educational system, as compared to other countries. In fact, so new and innovative is this technique that, in the beginning when I first started experimenting it at school, students as well as teachers were absolutely astonished by seeing what could be achieved from something as simple as a piece of paper. This is significant firstly because origami can function as a stimulus for students – it represents something new that is attractive and challenging. Secondly, it can improve the student-teacher communication if seen as an extracurricular activity where the atmosphere is far less formal than during a regular class. Its game-like quality conceals uses that are more important – origami facilitates the learning process by helping students to develop logic, artistic and esthetic sensibility, as well as patience, perseverance and mental discipline.

* Tel.: +40(0)721526547.

E-mail address: Andreass96@yahoo.com.

Bearing in mind these aspects, I have decided to research the impact of origami on some of the students in the schools where I have taught. My aim was to change my students' attitude towards the English classes by improving our relationship as well as educating the student-teacher communication in a more informal environment.

2. Teaching origami: an innovative approach to improving communication and learning

As curious as it may seem, origami is more than a form of art. On his internet site, Robert Lang, a well-known origami master, states that origami is actually an interesting blend of art and science. Because so much logic is involved in deciphering a diagram and so much mathematical principles are comprised in the creation and folding of a model, origami clearly has the characteristics of science. Taking into consideration that Lang has created a computer program called *Treemaker*, which is able to transform any model into a CP (crease pattern – the multitude of creases required to fold a certain model printed on a sheet of paper) it only stands to prove that origami is governed by mathematical principles. Moreover, the assembly of certain models requires sticking to a certain geometrical pattern. This ensures that every folder must make use of logical principles if s/he is to succeed in finishing his work of art.

However, on the same internet site, Lang acknowledges that *origami, like music, permits both composition and performance as expressions of the art*. He also notes that origami is a unique sculptural art and that each model must be folded individually, thus acquiring uniqueness. Taking into consideration the issue of shaping and adding final touches to a model, as well as choosing the paper or combination of colors, we can safely admit that origami helps develop artistic and esthetic sense. Last but not least, there are the cultural elements and historical background surrounding this art. Any learner that assimilates this art comes to admit that it stands for discipline, order, patience, perseverance, calm and reflection, and that these values are part of the art and the technique of paper folding.

The idea of teaching origami first came to me at a point when I had no information whatsoever about what teaching origami really implied. However, I was certain that an origami course could effect great changes in my school if it proved to be successful. This latter experience could shape the bases of a 'learning partnership' between teacher and students, in which both parties could benefit from its outcome. Therefore, the learning acquisitions could reflect a reciprocal transfer: student learning from teacher and teacher learning from student and thus reshaping the teaching methodology.

My studying the impact of origami on secondary and high school students started some two years ago and has comprised three target groups so far, the third of which reaches the present time. It began at a time when at school I encountered problems like the lack of interest and motivation, poor communication in class, both between myself and my pupils, but also among pupils, as well as verbal and even physical violence. It is hard to succeed in teaching children anything if they regard the teacher as a potential unwanted entity to which they go so far as to manifest hostility. As such, the formal atmosphere to which they were used during the classes had to give way to a more pleasant atmosphere.

One of the first problems that I came across was the lack of faith in one's capability of replicating such "complex and difficult" works of art. As I was teaching in the rural area, many people regarded this activity as rather incompatible with the social background that the children came from. Teaching a Japanese art in a rural area school was mostly viewed as pointless, not to mention that no one really believed that these children could do it. Being conscious of the fact that motivating the students was essential in a process that required discipline and patience, my first objective was to stir their interest, and with origami, this is generally achieved simply by showing them a few creations. The unusual shapes, as well as attractive, even spectacular looks, draw anyone's attention. Once they are convinced at least to try, the rest comes by itself. My secondary objective was to have the students help each other during the workshop and to practice folding the models at home by themselves (consolidation). Thirdly, I was interested in convincing them to evolve by self-discovery (finding and learning other models by themselves), and presenting their new acquisitions to the others during the workshops. This last objective was to ensure their independence by helping them evolve without my assistance.

My first target group consisted of my own students, aged 12 to 15, mostly girls, which I knew quite well as I was their English teacher. The second group consisted of children aged 11-13 from another school, where I had not taught but where one of my former colleagues, had introduced me. The third target group is still under formation, as it comprises the students in the school where I presently teach. In this case, I have succeeded in mixing secondary

school and high school students in an attempt to form a small and united community in our school, to which more and more pupils aspire.

As far as teaching origami is concerned, I admit that at first I was not fully aware of all the implications that this art had on my relation to the children and on their behavior or how it would affect their learning, mostly because I was not very familiar with the art myself, having only recently discovered it. As this area is practically unexplored in Romania, any literary reference is practically inexistent. Though a considerable amount of origami books exist, especially in an electronic format, one quickly realizes that most of them contain only diagrams of various models, i.e. step-by-step instructions on how to fold a certain model. Some of them are not even translated in English as the symbols can be regarded as universal language, exactly like numbers. Those few books that have more than just diagrams, such as Robert Lang's *The Complete Book of Origami* or Rick Beech's *A Practical Guide to the Art of Paper Folding* only contain information related to the history of the art and the term's origins. They do not contain any information regarding ways to teach origami. As far as methodology is concerned, I admit that I had none and since the origami books do not contain any tips on how to teach the art, I had to rely on my own intuition. It was to be an experiment where I would figure out and adapt things as I went along.

Teaching origami does not involve only presenting the steps to folding a certain model. One also teaches the characteristics of the model, its history, its creator and its symbolic significance. In addition, it means developing and encouraging self-discipline and moral values.

The first steps in teaching origami

I set up my first origami workshop while I was teaching in a school in Puchenii Moşneni, Prahova County. At first, it was an ambition – I wanted to prove myself that I could teach origami to others – but it continued from the desire to bring about changes in the students' way of thought, to have them discover new horizons of knowledge and help them learn how to achieve mental and physical discipline. Since I had chosen to organize the courses on Saturday mornings, the first rule was that the activity was not compulsory. It is a rule to which I have stuck to this day, as I strongly believe that efficient learning comes along with passion and not because someone is obliged to do it.

The actual teaching consisted of a live, step-by-step-demonstration of how to fold a model. This is how each figure is generally taught. From all the alternative ways of learning origami (i.e. diagrams, photos, CPs, videos) live step-by-step demonstration is the best and the most appropriate for beginners. Following the live demonstration, during which each student folds his own replica, comes the consolidation part – retracing the steps one by one with the help of the teacher, until every child masters the whole process. As a means of assessing their work, we decided that we would display all the works in front of the class at the end of every encounter so that they would be photographed and admired. In addition to this, towards the end of the school year an exhibition was organized containing the students' works and some of my own. After only five meetings, I started noticing changes in my relation with the children, in the sense that they became friendlier and more receptive during classes and during the breaks. The impact on my English classes was quite stunning – they became more attentive, and even more tranquil. I can safely say that the atmosphere in my origami classes influenced the one in the English classes. Later on, I began observing changes in the aspect of their works, as they perfected their folding techniques and came up with more and more combinations of colors. Last but not least, I noticed that some of them, especially those who had access to the internet, came up with other models which they brought to the workshop. The surprise was that during one of the meetings some of my children came up with a model that I was not familiar with, giving me the chance of learning from them. I also noticed changes in their free time activities. During the breaks, instead of running and screaming on the corridors, they would practice making origami, or would even teach others the respective models.

Experientia docet

The second part of my research revolved around the students in the school at Pietroşani, Prahova County where I did not work as a teacher. I only knew the children from what one of my former colleagues had told me. Naturally, they were different, but they seemed to be more agitated and they seemed to lack discipline, as well as the ability to communicate in a proper way. During this stage, I also had a few pupils, seen as 'problem children' by the other teachers. As such, I tried to observe the changes brought about by learning origami, on a different group from the first. Clearly, a new and different approach was required, as the purpose had changed. I no longer sought to improve my relation with the children, but to improve their behavior as well as attention and communication ability.

Firstly, there was the issue of experience, which I had gained during the previous workshop. If the first workshop had been an experiment, this time I had the certainty of success. As such, I was able to change the issues that needed change, such as the theoretical data, the models, and even the size of the paper. Secondly, seeing the problems these children had when communicating to the teacher and among themselves, I felt they needed to be reminded that origami implies, most of all, mental and physical discipline, and thus, a changing of the way in which they communicate. In other words, they had to learn to take turns in speaking, to respect both the teacher and themselves, to learn not to interrupt the person speaking, and to help each other if they came across problems.

The number of workshops was of about fifteen, also on Saturday mornings, during which a greater number of models were taught, the difficulty of which increased as compared to the previous series. The teaching style did not change dramatically, except for the theoretical introduction, which preceded the practical stage. In addition, certain models, which presented similarities, would be taught together, or following one another. This helped the students to observe the similarities between the figures, and the logic they implied, especially with the models that contained more than one piece of paper and which required assembly. Another new element in the learning process was the presence of other paper folders (one of my ex-students, some friends of mine) during the classes. This facilitated the students' contact with other styles and their being acquainted to other methods as far as the folding process is concerned. Assessment was the same, except for the final exhibition, which contained only the students' models, and not my own. However, this second exhibition would contain a far greater number of models and of far greater difficulty.

Since at first I did not know the students, I relied on my ex-colleague to present the feedback consisting of the changes in the children's behavior. I quickly learned that they had become quieter and more attentive in class. In time, I began to notice changes myself, especially in the way they addressed me, i.e. in a more orderly fashion, as well as in the attitude towards each other. They became more respectful and more eager to learn new things from me or from their desk mates. Another interesting thing was the change brought by the origami classes on the so-called "problem-children". Not only did they show interest in origami, leaving aside other disturbing activities, but they also showed great talent and skill in folding, and even in teaching other children. This is perhaps one of the most eloquent examples of the effects that origami has on a person's character and behavior: once a person realizes or is being shown that she is also capable of achieving good results, her mentality, her self-esteem, as well as her attitude to those around her changes. Not only does she become self confident, but she is also more likely to improve her skill in what she is doing.



Fig 1 – Children in the first group working together



Fig. 2 – Children in the second group, showing their works

Looking towards the future

The next part of my research consists of creating a new group, which is already taking shape at a high school in Slănic, Prahova, a group that includes lower secondary and high school pupils, mixed together in an attempt to bridge the age gap and form a small community within the school. As the children in this school do not present as many behavior problems, I can now focus on other aspects, such as teaching and learning methodology (more

information about the models, their creators, what symbols the respective models represent in various parts of the world), as well as observing the bonds which are created within the group. Moreover, I intend to investigate the impact of origami art on high school children who have a more developed sense of logic and see things in a different way from secondary school children. As they develop their skills, some of them will be encouraged to step up and perform the role of teacher within the workshop. This will help them to understand how it feels like to be in the teacher's shoes, as well as to learn how to overcome their emotions. Having the chance to teach others, it will also help consolidate their knowledge, as they will have to explain step-by-step how to fold a model, as well as how to assemble the models made up of more than one module.

In addition to this, I will have the opportunity of studying the reactions of both the would-be teachers, and the other students, as far as attitude towards learning from others is concerned, as well as the respect they will show to their younger teachers.

Another necessary action for promoting origami as an extracurricular activity or even as an optional course is to organize various competitions between schools where this art is taught. In time, more and more schools will become interested in joining, especially due to the children's attraction towards this form of art.

3. Conclusions

Teaching origami in Romania is far from becoming an everyday activity in schools, mostly because this art has not been properly promoted and, as most people are not aware of all its implications, they tend to regard it as 'child's play'. Even so, as childish as it may seem, it still helps develop self-confidence and dexterity, not to mention the pleasure of having built something yourself. By teaching origami, I can safely say that I have evolved to a better understanding of my pupils' needs, as well as my own. I have discovered that this activity helps create a more pleasant atmosphere in and outside the classroom, a more efficient communication in the teacher-student 'learning partnership', which in the end leads to better results in class. As far as attitudes are concerned, it is clear that the children have changed. They have become calmer, friendlier, they have learnt to develop their patience and channel their energies into achieving good things. I have also discovered that their power of logic has increased due to working with certain figures which require a great amount of thinking when they are built (assembled), and at the same time they have consolidated mathematical notions (especially geometrical) because of the close connection between origami and Mathematics. Additionally, students come to a better understanding of some concepts (fractions, shapes, angles) because they have the opportunity to use them in a new context, which is both meaningful and pleasurable. This practical learning context lacks in the actual Math class.

As far as the artistic part of origami is concerned, it seems that the combination of shapes and colors has helped them to develop their esthetic sense, creativity, and artistic sensibility. Their style has improved in time, as well as the innovative elements with which they came up. In the end, they have learnt how to appreciate the amount of work required in creating something, i.e. the value of art.

Introducing origami in schools means, above all, an alternative of spending time in a pleasant and constructive manner. At the same time, it encourages communication, teamwork, and it develops competition in a positive way. I would encourage anyone to look beyond appearances and try to exploit the numerous advantages that this activity offers in education and in life.

References

- Beech, R. (2001). *The Practical Illustrated Encyclopedia of Origami. The Complete Guide to the art of paper folding*. Lorenz Books.
 Lang, R. J. (1988). *The Complete Book of Origami. Step by step Instructions in Over 1000 Diagrams*. New York: Dover Publications Inc.,
<http://www.langorigami.com/art/science/science.php4>
<http://www.langorigami.com/art/artmain/artmain.php4>