

Teacher and Student Communication in Science Education at Schools

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Abstract—One of the crucial factors in carrying out education is building an educational environment. Many school environments are not yet integrated with students' learning needs and goals to be achieved. Building a school environment is not only done by teachers but also students and school support systems. It is important to see children being active in the schools which stimulated by teachers. Good communication ensures optimal interaction between students and teachers to create togetherness in the diversity of teaching and learning processes. This research is intended to develop teacher communication patterns with students in the educational process, particularly science education, at school. The method used is a case study. The object of this study is teacher's communication strategy and the research subject is teachers. Teacher's communication with children becomes a source of observation for this research. Teacher communication patterns in building students' involvement in science education are done through the stage of translating/interpreting science curriculum so that it can be communicated to children, mapping the way teachers communicate with students, developing appropriate communication strategies so that teachers can engage students in science education activities, and compiling teacher communication patterns with students in teaching science at school.

Keywords: *teacher, child education, communication*

I. INTRODUCTION

The success of the implementation of children's education in schools is determined by various important factors, two of which are a good educational environment and proper communication between teachers and students as two key actors in education. If both of them work together to build a good educational environment, the teaching and learning process will become optimal.

Many educational environments are not yet integrated with student learning needs and have not been able to support student learning needs as a whole either. So far, most of the attention goes only to students' cognitive aspects as the main goal of education. The learning process is often done one-way: a teacher conveys the materials and students receive them. Education that only focuses on the material presented will not be able to achieve the goals of education itself.

Building character is an important educational goal that can be achieved through good cooperation between teachers and students. This collaboration is realized through the interaction between these two important components in the implementation of teaching and learning activities. Good interaction between them is not only made educational material easily to be understood and absorbed well but even the creative and innovative approaches applied by teachers can build creative and innovative children's characters as well [1]. Schools have a duty to develop students' abilities including creativity in education. The involvement of actors in education in schools must be managed well [2].

Teachers and children play a role in building an educational environment through innovative and creative way of interactions at school. Good interaction will make the educational processes run smoothly and generate optimal results. Schools provide a balanced portion of education covering cultural aspects, mastery of knowledge, and encouraging students to have skills.

In this study, the researchers try to structure the communication between teacher and students, especially in learning activities at school. Proper communication will encourage students' creativity and innovation so that learning outcomes can provide more benefits and foster good understanding in the minds of students. This understanding can improve children's competitiveness in the future. Creativity and Innovation are highlighted in teaching science in schools. The innovations built, including social innovations, are aimed primarily at increasing benefits and creating values for society [3].

The basic characteristics mentioned will give strength as well as positive values to improve children's competitiveness in the future. They have a number of experiences that accumulate into a collection of knowledge used to interpret events to come [4].

Based on the results of research, teachers at SD (Elementary School) Tunas Unggul Bandung have a creative approach in the process of learning science in schools. They design creative and innovative learning through My Conference activities. In My Conference activities, the teacher designs science learning themes such as water cycle, photosynthesis, four seasons, waste management, etc. Students

are asked to create a project related to these themes. During the project-making, students discuss it with the teacher and are guided to explore themes that have been selected from various sources. After the project is completed in accordance with a predetermined deadline, students have to present it in front of the class. It is even more interesting because the teacher invites parents to watch students presentations.

II. RESEARCH METHODOLOGY

This paper is written based on a communication strategy research conducted by teachers at SD Tunas Unggul, Bandung, to their students in the science learning process. The study is carried out through direct observation of the communication process occurs between teachers and students in science learning by means of *My Conference* activities. This activity consists of stages of preparation, implementation, and evaluation. It is divided into 3 levels with different themes at each level. The first level with the theme of four seasons is carried out in grades 1 and 2; level 2 with the theme of fable/animal & plants is carried out in grades 3 and 4, while level 3 with the theme of water cycle is carried out in grades 5 and 6.

The study is conducted with a qualitative method and a symbolic interaction approach. The essence of symbolic interaction is an activity of humans' characteristic, namely communication or the exchange of symbols that are given meaning [5]. It studies the symbols used to communicate and the effects arising from the interpretation over these symbols on the behavior of parties involved in social interactions. Symbolic interactions occur in a series of events between individuals. This interaction takes place consciously and is related to gestures, vocals, sounds and bodily expressions, all of which have a specific purpose [6].

In this study, two important components in the education process, namely teachers and students, interact and work together to build a good educational environment so that the learning process becomes optimal. The teacher first interprets the science curriculum and translates it by means of communication that can be understood by students. The teacher engages students in science learning where he/she consciously communicates science learning with them which includes teacher approaches in teaching, teacher interaction with students in the preparation and development of a project, teacher communication in discussions with students for a science project, how the learning process is carrying out, and teacher evaluation on children's learning achievement. Physical attractiveness and personality make it easy for someone to appreciate the physical attraction of others. This is one of the considerations in building communication. Making more closeness so that it is easier for someone to build relationships with others [7].

The teacher communication is based on his/her understanding of the meaning of students' behavior in learning. On the basis of this meaning, the teacher realizes the importance of a creative and innovative approach in the learning process. Teachers and students work together in the process of learning science in schools. Then, through the interpretative process, students receive teacher communication

and form the understanding of the lessons being taught. physical and emotional closeness in communication were also the main attractions for communication. Gardner said that interpersonal communication skills allow someone to understand the feelings, habits and desires of others. These individuals are able to interact easily and can collaborate with others practically to produce benefits, welfare and motivation to others. Interpersonal skills are the ability to connect with other individuals; learn from criticism; can face ambiguity; remain calm in an uncomfortable and tense situation [8].

III. RESULTS AND DISCUSSION

SD Tunas Unggul seeks to educate the students optimally through proportional learning of either intelligence, emotional, and spiritual intelligence. Children's self-development is also shaped through various activities to strengthen their soft skills and hard skills. The teaching and learning process at SD Tunas Unggul looks very dynamic. The interaction between teacher and students is well established and there is closeness in every interaction between them in the learning process.

The teacher creatively translates the science curriculum determined by the school and communicates it well with students so that they can understand the material given and are able to present it in front of an audience of friends, teachers, and parents. Communication is believed to become a channel to build mutual understanding among actors in developing certain knowledge in order to have economic and social added value [9].

The curriculum applied at SD Tunas Unggul is not using a one-way system. Students' involvement in teaching and learning process is quite high, starting from finding the teaching materials, delivering the material in the form of presentations, testing the results, publishing the work result to communicating with parents and parties outside the school. The curriculum is translated into themes. For Science learning, the themes raised are very diverse. There are themes about water cycle, clouds, rain, fables, plants, etc.

The themes are adjusted to the ability of students at each level. Students in grade 6 and 4 will have different levels of complexity. But all levels require substantial student participation. Children's communication skills are varied: some are silent, some are active, some are ignorant. This is where various characters of students can be seen. The teacher will use this opportunity to motivate the students.

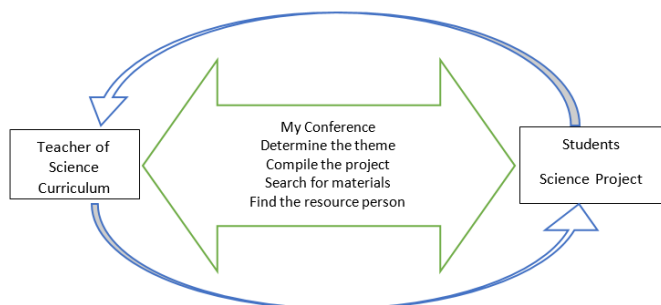
The water cycle is the theme for the fifth-grade students. Various materials are examined, for example, management of dirty waste, how to deal with flooding in the closest environment, and also how to produce clean water. The material is collected for one semester. Students conduct discussions, tests, make presentations, and create visuals. The climax is on *My Conference* activity. Students succeeded in presenting their studies very well. They do not forget to include props to make their presentations clear and interesting. The presence of parents adds the enthusiasm. Parents not only become supporters but at the same time testing and discussing the presentations so that exchanging knowledge becomes very interesting. And in the end, the parents contribute in the assessment for each student as a whole.

Upon entering the classroom, the atmosphere is very cheerful with green shades and various artificial flowers since the theme for level three of semester two are plants. To the left of the entrance, there are various kinds of processed food project results from various plants which they make at home with their parents. Each child wears a hat with a picture of vegetables or fruit suits to their project. The class decorations are made together by the teacher and students with the idea of class decorations from the children themselves. They prepare the project, decoration, and *My Conference* needs for that semester in 3 weeks.

Before they start their presentations to parents and family, each child discusses their portfolio of learning outcomes during the semester. They show their own portfolio with a decorative front cover of plants. They make their own words in the table of contents and preface by handwritings and in colorful decoration.

Learning science can be done in many ways. Learning does not have to be merely with the teacher, but it can involve competent people who are in accordance with the theme. Learning about the changing shape of hot and cold, for instance, the teacher can give an example through an ice maker. It would be much better if we can call Mr. ice maker himself because the children can see the process firsthand. Learning can be anywhere with anyone. Any profession will not be a problem as long as it supports what is learned. A pedicab driver was once called in when students learnt transportation themes. Learning can be done through interviews with people from various professions. Students can go to the village, learning from farmers who are working in the fields and ask them how to harvest the rice. That real experience is what teachers want the students to have. Learning is not only conducting in the classroom with books but can also be done through the environment or learning from observation.

The teacher helps children to design learning programs that beneficial, at least to those around them. Sometimes they carry out social activities, such as providing groceries to those in needs. This activity is related to the theme of nutrition, organize a bazaar, and making food packages given to the surrounding residents. The following is a chart of how teachers communicate with student in translating/interpreting curriculum of learning:



Source: Results of data processing

Fig. 1. Communication between teacher and student.

The chart above illustrates the interaction of teachers and children in translating the curriculum determined by the school.

The teacher always discusses with students in determining themes, choosing and developing projects to be made, looking for materials, and finding the resource person for the projects to be developed.

A. *Ways of Teachers to Build Communication with Children Through My Conference Activities*

My Conference activity is the teacher's creative way of learning science. The teacher knows that the children's ability to understand the material is different so that the teacher classifies the class into three different levels. To implement the plan that delivering maximum results, teachers need to build closeness and togetherness with children through communication. The teacher tries to get a good perception in the eyes of students with a variety of efforts because perception will affect what message we will absorb or what stimuli we will catch [10].

At the beginning of the semester, the teacher discusses with students the themes that could be developed into a project. The teacher also discusses the activity concept and guides the students in working on their project. In working the project, the teacher also asks children to discuss with their parents. In *My Conference* activities, the teacher also designs the involvement of parents, starting from working on the project to presenting the results. Unfortunately, not all relationships can be built properly. Problems can arise from individuals involved in communication because the communication process is very dynamic. Conditions can change and obstacles can arise that need efforts to overcome them so that communication can run effectively [11].

At *My Conference* first-level activity, after discussing with children, the theme of four seasons was chosen, namely summer, winter, spring and fall. The concept of activities is the bus stop. Just like at the bus stop, the students sit there ready with their work-results.

In this activity, the teacher invites parents to present at the project presentation starting with the portfolio session. In this session, students show the results of their activities in school for one year to their parents. Intense communication between parent and children also occurs so that the relationship between them is even closer.

The next session is the Q-A (Question and Answer). Parents go around and each student presents the results of his/her project to the parents who approach them. In this session, the students actively explain their four season-themed projects. They appear to master the material and learn to be confident in communicating. Children are assisted by parents at home to prepare their projects so that communication is established between children and parents. In this activity, the teacher acts as a facilitator so that communication occurs between parents and children regarding the projects made. At the end of the session, the teacher explains to parents and students about the day's activities as evaluations. The teacher asks each student how they feel during the presentation. Students respond differently. There are those who answered exciting, some said they were nervous, and there were also those who answered at their will only.

At level 2 intended for grades 3 and 4, *My Conference* activities have a theme of animals and plants. If at level 1 the project is made simple, at level 2 this project is made more challenging where each student is asked to write a story about animals or plants. Project results of classwork are compiled into a book which will be published by the school collaborating with a publisher.

My Conference activities at level two were also carried out in several sessions. The first session is a portfolio where children explain to their parents about the results of their activities in the class for that year. Parents ask their children about the portfolio and the children answer. Children as students communicate with their parents without teacher intervention.

The next session is the presentation. Children present their stories in front of the class of parents and other students. It is then followed by a question and answer session where several parents ask spontaneous questions or those that have been prepared at home before. The next session is an appreciation session, student dedication, and group photos. The appreciation is given not only to children who can present their projects well but also to the most enthusiastic parents in *My Conference* activities. The teacher acts as a facilitator in this activity.

My Conference activities at level 3 for grades 5 and 6 carry the theme of the water cycle. Projects are made more complicated by experimental methods. Students are given the task of presenting and demonstrating the water cycle. At the beginning of the session, the teacher explains in English about the rules of presentation. After that, the teacher then hands over *My Conference* activities by appointing one of the participants to be the MC and arranging the course of *My Conference* activities. The teacher acts as a facilitator and reminds the time when something is not right.

In the initial session, the MC introduces each participant who will present the project in front of their parents, followed by Tahfidz (reading The Holy Qur'an) together and music performance with the similar theme of water cycle. The next session is a portfolio where children explain the results of their learning development to their respective parents. In this session, the teacher facilitates communication between parents and children. After completing the portfolio session, the next thing to do is the presentation session and water cycle demonstration. After the presentation, parents are welcomed to ask questions about the material presented..

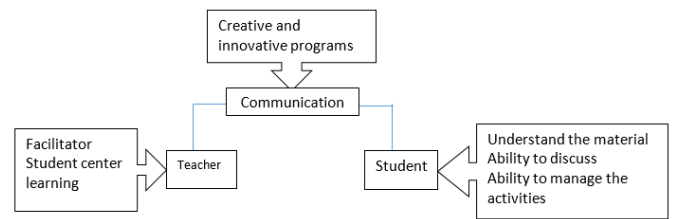
The activity ended with an appreciation session from parents to the children who have the most interesting ways to present it. Vice versa, the appreciation is also given by children to the most enthusiastic parents in *My Conference* activities.

Building and maintaining relationships between teachers and children is not easy. Continuous communication should always be maintained, responses from children should always be responded to, and ideas delivered should be well accommodated. The teacher and students dialogue must be carried out as often as possible. Communication with children should be done by taking into account their conditions. Children are unique individuals which mean each child is not the same as others. The teacher is even willing to communicate

personally to understand the conditions of children who are different from one another.

Communication built by the teacher also prioritizes comfort. The willingness to communicate comes from a comfortable atmosphere. It is also important to build communication that makes students happy and comfortable. Creating comfort in communication requires empathy. Willingness to be in the position of others makes communication more comfortable for the other person. The teacher should have all the information and understand the condition of students so that they are able to empathize and give a sense of comfort for the child to communicate.

Communication built by teachers in learning science through *My Conference* activities can be described in the following chart:



Source: Results of Data Processing

Fig. 2. Communication through my conference activities.

In *My Conference* activities, the teacher acts as a facilitator so that the learning process is truly child-centered. Children are given the freedom to express their knowledge into work in the form of pictures, stories, and props. In designing projects, communication takes place interactively. Students actively search for materials and the teacher gives direction. In addition, the teacher is also a facilitator for communication between parents and children. With the communication approach taken by the teacher as it is explained, the child's ability to understand the material, discuss, answer questions, and manage activity can be honed well. The appreciation of teachers, parents, and friends for students' work can foster confidence and be a motivation for them to be enthusiastic in learning.

IV. CONCLUSION AND RECOMMENDATION

Teachers and students are important elements in the education process where good communication between the two can support the success of learning process. In the process of learning science, teachers take a creative and innovative approach so that students can understand well the science material being studied. The teacher always engages students in every process, starting from designing the learning, choosing themes, collecting material, making projects, etc. The teacher acts as a facilitator and intentionally make the learning process truly child-centered. Children are given the freedom to express their knowledge into work in the form of pictures, stories, and props. The teacher also becomes a facilitator for good communication between parents and children by involving parents in the learning process from making the projects to giving an assessment.

Through teacher communication in the learning process, the ability of students to understand the material, discuss, answer questions, and even to manage activity can be honed well. The appreciation from teachers, parents, and friends to the work of students can foster confidence and be a motivation for them to be enthusiastic in learning.

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