COLLABORATIVE DESIGN TO ENHANCE POSITIVE COMMUNICATION

BY

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Abstract

This thesis aims to study the role of design in enhancing and creating interaction and communication among people. As communicative skills should be instilled in people when they are still young, the researcher designed a prototype set of wooden blocks for children, aged 8 to 12 years old, causing them to collaborate and create products according to their imagination. Then, the researcher conducted a fieldwork with a group of forty students in Sakon Nakhon Province. Moreover, the researcher created an application to help them work as well as provided them with questionnaires for their opinions and suggestions. The results of the fieldwork revealed that most of the students were enthusiastic in collaborating to assemble the wooden blocks into different forms, and they also suggested what to do to develop the products and the application to improve their quality. They ensure the importance of positive communication that will lead to collaboration to gain success in whatever is done. It can be concluded that positive communication is involved with four components: 1) the source, which refers to the students who communicated and collaborated to create final products; 2) the message or the image which the students were trying to communicate and show to the public; 3) the channel which is an attempt to communicate what the students co-created through five senses; and 4) the receiver who receives the message from the source through the channel.

(Total 66 Pages)

Keywords: Collaborative Design, Positive Communication, Technological Design

Student's Signature……..……Thesis Advisor's Signature……...……

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Chapter 1

Introduction

1.1 General Overview and Significance of the Problem

In an era when people tend to talk to each other less and focus more on the use of electronic devices like mobile phones and computers for their communication, or they only focus on themselves until they do not care much about their surroundings - human or non-human, how can face-to-face communication and collaboration happen in such situations?

We think that today's technology is able to connect more people more rapidly and allow them to talk and communicate at anywhere and anytime they want. Technology has created a borderless world where communication and conversations are much more accessible. However, I would like to argue that though communication via technological devices is faster and more convenient, these means of communication do not promote quality communication. This can easily be seen in families where children would focus on their mobile phone and games or activities on the phone without caring about their family members doing. This may cause a gap between them, especially between the parents and the children who belong to different generations. Though they may be physically close to one another, they do not really communicate and share their experience because face-to-face communication is disrupted by their focusing on technological devices in front of them.

However, I would like to remind that we cannot blame it all on technology because technology can be beneficial if we use it at appropriate time, with appropriate people and for appropriate purposes; in that case, we have to separate good effects from bad effects. (Turkle, 2015) We should think of technology as a means to make meeting

and communicating more easily and quickly rather considering it as the absolute means of communication. In fact, the best way of communication is effortless and does not cost anything. We can simply talk or engage in a face-to-face communication which will make us concentrate on what we are talking about or what we are doing, that should lead to interaction with the people we are talking to and collaboration with them (in case where we have to work together).

As Simon Young once stated, "Humans are social by nature" (Young, 2008) Humans should communicate and interact in person rather than doing it online or through technological devices. Communication and interaction are essential parts of collaboration, which means that we will not work alone; two or more people will work together for maximum efficiency. When we collaborate, we have to talk, comment, exchange ideas and interact, all of which are means of communication. At present, collaborative efficiency has significantly decreased due to the changing behavior of people and the environment because face-to-face- communication or direct human contact is replaced by communication through technology. Technology has helped people work more conveniently and quickly but it has removed the social element from human beings. However, we cannot blame technology for causing this problem because time has changed and nothing can stop the influx of technology that undeniably facilitates human lives, and we cannot blame ourselves for relying on technology either. What we should do is that we should use technology and technological devices in the way that they do not take away the social element from us. As social creatures, we have to communicate and interact. We should think about natural ways of communication that enable us to communicate, exchange ideas and share as well as do activities with other people. All of these are involved with collective efforts, which contribute to efficient and good collaboration.

This thesis aims to study the importance of communication, interaction and collaboration. In looking for a way to increase collaboration without forcing or making people sit together but being willing to communicate and interact to create effective collaboration, I will make use of design to stimulate their communicative and interactive

collaboration, I will make use of design to stimulate their communicative and interactive skills to yield collaborative results. Together with the design, I will create an App to accompany the creation of the design into different forms or products. This is to prove that appropriate use of technology can enhance communicative and collaborative skills. As it is better to instill the communicative and interactive skills in people when they are very young, I have chosen to use the design that is appropriate for school children, aged 8 -12 years old.

1.2 Objectives

1.2.1 To design a set of wooden blocks that require communicative, interactive and collaborative skills in assembling them into different models, then pulling them down and reassembling them into other models;

1.2.2 To design an App as a venue where users can contact each other and the creator of the App when they assemble, pull down and reassemble the wooden blocks into models or products of their imagination;

1.2.3 To instill communicative and collaborative skills into younger people through the use of design.

1.3 Scope of Research

This research will be involved with a set of wooden blocks, created from my study to look for a prototype model, for 40 elementary school students, aged 8 -12 years old, to work on. These wooden blocks are created in different geometrical forms and they are painted in vivid colors to attract the attention of the children. Next, through their communication, interaction and collaboration, they will be encouraged to assemble those blocks to form models or products, based on their imagination. They are free to pull down the models they have created in order to reassemble the wooden blocks into the models or products they wish. The children will be provided with an App to help them work on assembling the wooden blocks, communicate with other students and with the App creator (the researcher or I, the writer of this thesis).

Through this App they can also ask questions when they have problems or give suggestions of how the design can be changed and improved.

Together with a set of the wooden blocks, the students are requested to answer the questionnaires so that I will obtain the information about this target group of the research and analyze it in connection with their activities when they communicate, interact and collaborate to create the models or products from a set of wooden blocks.

It should also be noted that these questionnaires were given to the students who did not belong to the target group, the teachers and parents who were interested in finding a way to promote communication, interaction and collaboration in order to make their children spend time less with technological devices, thus having less time communicating and interacting with other children or people in their circle.

From research scope described above, I will present this thesis in 5 chapters; namely,

1) Chapter 1- Introduction,
2) Chapter 2 - Literature Review,
3) Chapter 3 - Research Methodology,
4) Chapter 4 - Research Results,
5) Chapter 5 - Conclusion and Suggestion

1.4 Benefits Expected to Obtain from the Research

1.4.1 Children of very young age are instilled with an ability to communicate, interact and work in a group, instead of spending time, in isolation, playing games on technological devices or talking on the phone;

1.4.2 Children, with the collaboration of their group, will be able to use their creative capacity or imagination to create the forms or objects from a set of wooden blocks in different designs and colors. These blocks can be assembled, pulled down and reassembled to create the forms or objects they wish;

1.4.3 Children will be able to use technology, in the form of an App, in a constructive way to help them create the forms or objects they want, to communicate with other users of this set of wooden blocks as well as to communicate with the researcher who has designed the prototype of the wooden blocks and the App to request for advice or their suggestions to improve the App, which has been left with room for adjustment and improvement.

1.5 Collecting Information and Research Process

My research process is divided into two stages—the initial stage before I could decide what kind of prototype model that I should create to prove my point that collaborative design could contribute to positive communication, and the second stage which involves with my design of the prototype model that should enhance communication and interaction that results in collaboration.

As my interest is involved with how to boost positive communication in today's world where people tend to isolate from one another and face-to-face communication is disrupted by the use of high technological devices; people are not aware that relying too much on technology takes the social aspect from human beings. As a student in Design, I wish to do something to prove that design can help people to communicate, interact and collaborate. During the early stage of my thesis, I was planning to work on culture probes and I began by interviewing five middle-class families which consisted of twenty people in total. After the interviews of those twenty informants and my discussion with my first research advisor, I found that the topic that I had in mind, culture probes, would not work because of many reasons. The first reason was time limitation because in order to conduct research on this topic, I had to be knowledgeable in psychology and talked to a psychologist in order to get the information. Without background in psychology, it would take me a long time to research into the subject. The second reason was involved with the people I interviewed. The fact that they belonged to different age groups made them focus on different things, thus their interests were different. Different families tended to be interested in different things and being middle-class families, they had to

focus on earning their living so that they would not have time to take part in my research. All these elements were considered and after the suggestion from my advisor I decided to change the type of my design and my target group.

I chose to work with a specific group of people; my target group this time consisted of school children, aged 8 -12 years old. This age range would be easier to manage as the children in this group would share some interests. I also chose the ones who attended the same school because the school environment would make it easy for me to observe the performance of these students while they took part in my research. Another reason why my target group consisted of very young children because I believed that positive communication should be emphasized and introduced to these children when they were very young and when they were not much affected by the influx of technology.

After having the target group in mind, I began the design of model prototype that I was going to experiment with the children. My design consisted of geometric wooden blocks painted in bright colors to attract the attention of the students. These wooden blocks could be assembled into different forms—pieces of furniture, objects and forms as far as the creators' imagination would go. The requirement was that these children would be encouraged to do groupwork while they assembled the blocks. And this made them communicate by means of talking, expressing their opinions, touching the blocks and their co-workers, listening to what their co-workers suggested and agreeing upon what form they would create as it was a groupwork, not an individual's work.

To emphasize the significant role of technology when appropriately used, I also designed an App to accompany the creation of the wooden blocks into forms and objects. The users of the App could use it to communicate with me when there was any problem or when they wanted to give suggestions.

After I finished the design of the model prototype, I conducted a fieldwork by trying the prototype model with a group of 40 students, aged 8 -12 years old at Municipality 1 Chengchum Prajanukul Elementary School in Sakhon Nakhon Province.

They were divided into groups of 4 or 5 to do the work. They would receive guidance from me but I would not dictate them to do what I wanted. They were free to express their opinions, exchange views and giving suggestions. Each group of students was small enough for me to observe what they were doing and provide help when they needed.

Together with being requested to co-work on the wooden blocks to create the forms or objects according to their imagination, the students were also asked to fill out the questionnaires so that I could get the information about them and their opinions on the product of their collaboration. Their answers should also help me do something to improve my prototype model and the App.

These questionnaires were also given to the people outside the target group - the students who were not in the target group but they were interested in the activities that the target group was doing, the teachers who tried to find a way to make their students spend their free time doing something that would benefit them, not playing games on their mobile phone only, and the parents who wanted their children to have quality free time. The students who had a mobile phone responded to these questionnaires online while the ones who did not have it would do it on a hard copy and presented their answers to me. These questionnaires would be kept for me to find a way to improve the prototype later.

1.6 Research Results

It can be said that the fieldwork and the research were successful to a certain degree, especially as time permitted. The students who took part in my research showed enthusiasm to cooperate and collaborate to get the task done. They were confident to express their ideas and give suggestions and they respected each other's opinion. The students who did not own a mobile phone and thus could not communicate through the App would express themselves verbally and make as much contribution as they could to the groupwork. This shows that human beings might not need high technology to create positive communication but technology could enhance communication and

collaboration when used properly. The design I provided them could be considered as an educational plaything that these students could use their creativity to co-work to create something that was functional, like household furniture, or artwork that reflected their imagination.

The research fulfills my goal in creating collaborative design to enhance positive communication. My research emphasizes that human beings are social by nature so they need to have direct or face-to-face contact but at the same time, I do not totally reject the use of technology, which has become important part of human lives.

1.7 Summary/Discussion of the Results

The fieldwork to try my prototype model with school children shows that my research is in the right direction in boosting communicative skills in children. Design or artwork can play a significant role in helping children to communicate. They will learn that in order to live in the world that meets many kinds of challenges, they still need other human beings to help them grow and develop themselves into quality social members. They cannot be alone; human contact is essential in human lives. At the same time, these children cannot avoid the use of technology as it helps to facilitate lives, but they must learn how to make the best out of technology instead of letting it control and ruin their lives. Learning to use my App to accompany the creation of the models will teach the children that design and technology can go side by side and technology can contribute to design work.

1.8 Suggestions about the Research

These suggestions are from the answers of the questionnaires and my conversation with the teachers and the parents of the children in my target group. The teachers and parents think that the wooden blocks are a bit too heavy for the children of this age range to handle. To this observation, I think if the model is to be developed in larger numbers, the wood to be made into blocks should be lighter in weight or else the blocks should be made of a lighter material.

This fieldwork gains less attention from schoolgirls. From my conversation with some girls, I found that they did not like sturdy, geometric blocks because they formed angular shapes only. They preferred something like curvy or round shapes that they could use to form cute, curvy figures. This makes me realize that more forms should be added for users to have more choices.

As for the App, more functions should be added to enable it to help users more. Video clips should be added to make the communication through the App more life-like and more interesting.

All in all, this product is still in its initial stage and it should be further developed. The comments from its users will help to improve it a great deal, and at the same time,

I have to continue further research to find ways to improve it so that one day, it may be produced for commercial purposes.

It is noticeable that despite the fact that this work still has room for improvement, the Director of the school where I conducted the fieldwork asked me whether I could send the prototype model back to them as he found it useful to encourage students to learn to work in groups so that they could learn to properly communicate without being forced. I think this is a good sign.

Chapter 2

Literature Review

2.1 Background

As I have already mentioned in the "Introduction" that my thesis was initiated by my personal interest in human communication. Observing a number of people in different kinds of atmosphere and social environment, private and public, I found that people, though sharing the same space or sitting next to each other, did not really have true communication or interaction. Each tended to focus on what they saw or talked on their mobile phone or through communicative devices. And it was obvious that the use of communicative devices increased during the past three or four years (2020 -2023) when the world was threatened by the outbreak of COVID 19 and people were made to stay at home while offices and schools were closed to stop the spread of the virus. Classes were organized online so students did not have the opportunity to go to school to attend classes with their teachers and fellow students. Employers were made to work from home, connecting with their colleagues from afar through the use of technological devices. Face-to-face communication has been disrupted for a long time, making communication situations even worse.

I personally believe what Simon N. Young said, "Humans are social by nature". (Young, National library of medicine, 2008) And there should be a way to improve the quality of human communication. I think that this should start at a family level because a family is the smallest unit of society and the communication among members of each family should be the beginning of the communication of the members of society at large. The following is what I did when I wished to show that collaborative design could enhance communication.

In order to make my research more concrete, I started by going through the theories, disciplines or studies related to how communication, interaction and collaboration can be achieved. The following are the theories and disciplines that support my proposal that collaborative design can help enhance communication: David Berlo's theory of communication, the principles of collaboration, benefits of collaboration, brain-based learning and basic color theory

2.2 David Berlo's Theory of Communication

In this theory, Berlo proposes that positive communication consists of four components: source, message, channel and receiver, known as the SMCR model. These four components can indicate the effectiveness of communication. In this respect, I wish to show that my collaborative design is guided by Berlo's theory, which is summarized by Ben Janse as the SMCR Model of Communication, and the theory can lead to effective communication. The components summarized by Janse can be applied to the components of my research project as follows. (Janse, 2019)

1) Source (S) refers to a group of children, aged 8 -12 years old, with or without the guidance of other people, like parents, siblings, peers or teachers, who have to use their communicative skills, their knowledge about the design they want to achieve and their imagination to communicate, interact and collaborate in order to create the forms or objects they desire. During this process, they may create, change and recreate to obtain the product they wish.

2) Message(M) is in the form of the product or the object that the children have collaborated to create. This product is a concrete way to communicate the message these children want to relay to others.

3) Channel (C) is related to the senses through which the message is related to. In my research, the focus should be on saying, seeing, hearing and touching—all these senses are generally used when people communicate, interact and collaborate with one another.

In my research, Channel may expand to include an App which has been developed to help to give basic information about how to create a design and to enable users to communicate with one another and me, who is the creator of the App.

4) Receiver(R) focusses on the children who have acquired the knowledge about the importance of communication, interaction and collaboration which helps them to assemble, pull down and reassemble the design that can be considered as a group product. These children do not isolate themselves from others.

2.3 Principles of Collaboration

A positive communication which consists of the aforementioned components can lead to collaboration. The principles of collaboration vary according to the group or characteristics of people who work with or their age; however, there are common elements that help to promote collaboration that results in work efficiency and the elements are as the following:

1) Purpose: we must what work we will do and what to do to achieve clear goals and to create speed and efficiency in working;

2) Communication: we need to talk and share ideas to build a trusting relationship; Exchange: we have to exchange knowledge and experiences to enhance cooperation without problems;

3) Expression: we must dare to express our opinions or express what we can do and what we want in order to create actual exchange of knowledge and experiences;

4) Environment: an environment can affect the mood when people work together; for example, if we work in a suitable and well-equipped place, such as a proper classroom or an office, collaboration will be good, but if working in a noisy place, such as at a party, there will be no concentration and the work will be inefficient.

If all the above elements work together, they will contribute to efficient collaboration and thus create a good performance. (Technology, 2001)

2.4 Benefits of Collaboration

Effective work collaboration will yield five benefits:

1) Increased communication: because communication is the foundation of collaboration, we will understand the problem and improve the efficiency of the work when we talk with the team;

2) Invaluable flexibility: if we are open to communication, we will find new guideline or ideas to be adapted for our benefits;

3) Increased productivity: this is the most significant benefit because collaboration can increase the speed of work or productivity. Usually, this is important for companies or organizations, but even if we are not working for a private company or organization, collaboration can reduce the time spent in talking and working; as a result, it can increase work efficiency.

4) Learning potential: we will be able to learn, exchange information and experience from each other in the team and develop ourselves; this will allow us to grow from that.

5) Becoming more engaged: when we feel good about working together, it will affect the atmosphere of work. When joining with other people can make us feel happier to work, we will be able to work harder and the performance will be

good. Though there may be problems while working or there may be conflicts among team members, the work can be kept flowing if the team members keep talking and discussing to find a way out of the conflicts. (5 Benefits of collaboration – and how to unleash them! 2023)

The five benefits above show that working as a team or in collaboration effectively increases productivity. It can help increase face-to-face communication that may also result in better health, both physical and mental health. Research has shown that social interaction can help reduce mental and physical health problems in many ways and has long-term benefits for the brain because social interaction with others helps relax the brain. When the brain is relaxed, we will be able to work more efficiently and our forgetfulness will be reduced (The health benefits of strong relationships, 2010) Social interaction, especially talking, can stimulates hormones that help to reduce mental stress and health problems as well as to relieve social interaction anxiety, which has become a broader problem as people are becoming less social nowadays, making the next generation experience this symptom much more easily.

2.5 Brain-Based Learning

Believing that positive communication and collaboration should be instilled in children while they are young, I have looked through any educational theory that may help me work with the children and consequently contributes to the success of my research. And I have found the brain-based learning theory which has also been introduced to early childhood education to engage children to activities apart from traditional instruction. (Brain-Based Learning in Early Childhood, 2023) This theory is meant for the design of school programs, lesson plans and teaching methods to be appropriate for the age of learners; I, therefore, think that this theory can be applied to my target group because some of the characteristics described in this theory fit for what is going to happen when I finish the prototype model and go on a fieldwork to try the model with the students of my choice.

2.6 Basic Color Theory

Another important element that I wish to emphasize when I create the prototype model is color. I have emphasized the importance of color in the presentation of my prototype model for some reasons. In "Why Color Matters," Jill Morton discusses how "substantial research shows why colors matters and how color plays a pivotal role in all our visual experience". (Morton, 2019) She states that color can attract attention, referring to tests that indicate that a black and white image may sustain interest for less than two-thirds a second, whereas a colored image may hold the attention for two seconds or more. She continues to discuss the connection between sensory input and human beings and concludes that "in our current state of evolution, vision is the primary source for all our experiences. … Our nervous system requires input and stimulation. … With respect to visual input, we become bored in the absence of a variety of colors and shapes. Consequently, color addresses one of our basic neurological needs for stimulation".

Therefore, the shape and the color should affect our visual ability and, in turn, stimulate our mind to act in a more active way.

As my prototype model is going to be tested on children, I should use color to engage the students' attention. I am aware that the color I am going to use must stir a sense of seeing in the children but I must be careful that it should be something harmonious, or else the use of color will be either boring or chaotic. This idea is discussed in detail in "Color Harmony" from "Basic Color Theory" (Sheppard, BASIC COLOR THEORY, 2016) as the following:

"The human brain will reject under-stimulating information. At the other extreme is a visual experience that is so overdone, so chaotic that the viewer can't stand to look at it. The human brain rejects what it cannot organize, what it cannot understand. The visual task requires that we present a logical structure. Color harmony delivers visual interest and a sense of order."

2.7 Trying on Culture Probes

After acquiring the theories and principles I would work on in my thesis, I first chose to work on Culture Probes. Like any research, I started by interviewing five families, consisting of totally 20 members who were fathers, mothers and children, and they were interested in my project to cultivate positive communication in the family. However, the interviews showed that my research would not be able to continue smoothly because my informants consisted of people of different ages—the parents would not share the same interest as their children. Parents of different families would not be interested in the same thing, so would not the children. Above all, they would not have time to be interviewed more by me and to test the prototype model that I would design because belonging to the middle-class, they had to focus on working to earn money for their families. And on my side, in order to design Culture Probes to promote positive communication in the family, I had to consider the psychological aspect of the model I was going to design. This means that I had to do research on psychology and interview a psychologist to get the information. With the limitation of time that should not exceed two academic terms, I would not be able to meet the deadline with an amount of work I had to do. After consulting with my advisor, I decided to change my target group from families to children. For one reason that a sense of positive communication, interaction and collaboration should be introduced to children when they are young and once these students are equipped with these notions, they can share what they have learned with their family members and friends. And I decided to create a design in the form of wooden blocks of different shapes and sizes for children to co-work to create different forms and objects.

As I have decided to create my design for children through which they can learn to develop the skills of communication, interaction and collaboration, I have chosen to create a prototype model for children aged 8 -12 years old because they are young to learn new things and at the same time, they are old enough to understand what my research means and it should not be too difficult for me, who do not have any teaching experience, to talk with them.

2.8 Preparing a Prototype Model under the Brain-Based Learning Theory

With the above notion in mind, I have created geometric wooden blocks, painted in vivid colors, to be designed in different forms and objects. The creation of these forms and objects must be simple enough for the young children to help each other to do but at the same time, these students can use their imagination without limits to create the forms or objects that they wish. This is relevant to "Creating art" in the brain-based theory. "Creating art" invigorates the children's brain and keeps their mind sharp; the vivid colors of the wooden blocks and different forms and objects the children create will help to stimulate and engage their brain and solidify their learning. As a consequence, the brain capacity will increase as it is able to change and grow through repetition and practice. It is thus able new habits and new skills, which motivates children, to learn more. Besides stimulating the brain, group work that is required in creating artworks from the wooden blocks I have designed will appeal to the children who have various styles of working and will help to develop collaboration skills through group work. This way of co-working promotes movement and exercise because physical activities are discreetly incorporated into the activities and this helps to boost children's physical and mental wellness, which should contribute to their ability to communicate, interact and work together.

My prototype model will also help to establish a "turn and talk" routine. While they are helping each other to create the forms or objects according to their imagination, they will talk about what they are doing, suggesting what to do and not do to get the result that all of them look for. It is the content they learn when they are creating things together. Each student will speak to and listen to the members of their group and vice versa. This will help them organize their thoughts before expressing them into words and thus helping them to become more articulate.

The fact that the students will co-work to create the forms or objects during the intervals of learning time suggests that they are relieved from long instruction time so that their brain is allowed to relax after being cluttered with the information that they tend to forget as they are forced to learn it when their brain is exhausted. So, in a way, what the students are going through is not different from what we call active learning. They are engaged in what they are doing that expands their way of learning and makes them take charge of what they are doing. Active learning increases their energy levels, makes them pay attention to others in their group and to details, so they tend to enjoy what they are doing because they are not forced to learn.

As I have emphasized that I am not against using technology in communication, interaction and collaboration but I disagree with those who let technology control their lives and ignore human contact. I am aware that the modern world cannot do without technology and what we have to do is to use technology to improve and facilitate lives. In the same way, technology should enhance communication, interaction and collaboration, not replacing them. In my case, I incorporate technology into my project, designing an App to make it more convenient for users of my creation. This is how they can learn how those wooden blocks can be put together to create designs and they can communicate with me, the app's designer, when they have problems or when they want to give suggestions. I have a plan to develop this app more by adding more functions, for example, adding video clips and maybe music to make users more relaxed and able to work in a pleasant atmosphere so that their work should be higher in quality.

The fact that I would like to create the prototype model for elementary school students and carry out a fieldwork to test the model with them in the schoolground is because I want to conduct a test in a positive and safe environment. As one of the brain-based learning strategies is to create a positive and safe environment, my choice of a school as the venue of my test will create a positive and safe environment for the students who go through the test with me. They will feel encouraged and supported to do what they are asked to do and the relaxed atmosphere will help them to go through the activity more effectively. This is a physically and emotionally safe environment that contributes to the success of the test.

The above discussions of the theories and principles pave the way for my design of the prototype model that I would like to use with the children to try to prove my point that collaborative design can help to enhance communication, interaction and collaboration in children. And the design will be presented in the next chapter, Chapter 3 - Research Methodology: Creating Collaborative Design for Children.

Chapter 3

Research Methodology

3.1 Background

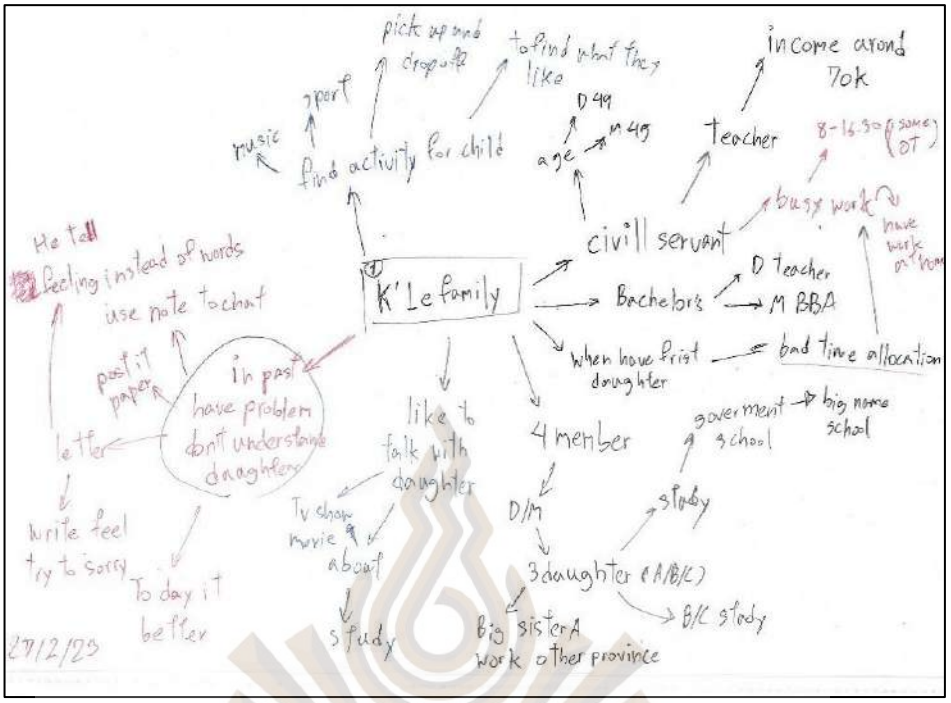
Before I finally decided to create a prototype model presented in this thesis, I went through discussions with my thesis advisor and tried some of the designs that, I thought, would make me achieve my goal in using collaborative design to promote face-to-face communication, which has become less and less in today's society. I wanted to start with communication in a family, which is the smallest unit in society and there should be a way for parents to communicate with their children and make them realize the importance of face-to-face communication as we, humans, are social creatures. Communication will help humans to interact and collaborate, which is important when we have to work with others.

3.2 Interviewing and Designing Culture Probes

At first, I intended to work on culture probes to create a design model to enhance communication in families, so I did some experiments and interviewed the people who I considered as my target group. My work on culture probes consisted of three parts: 1) a target group, 2) a design and 3) an App.

A target groups

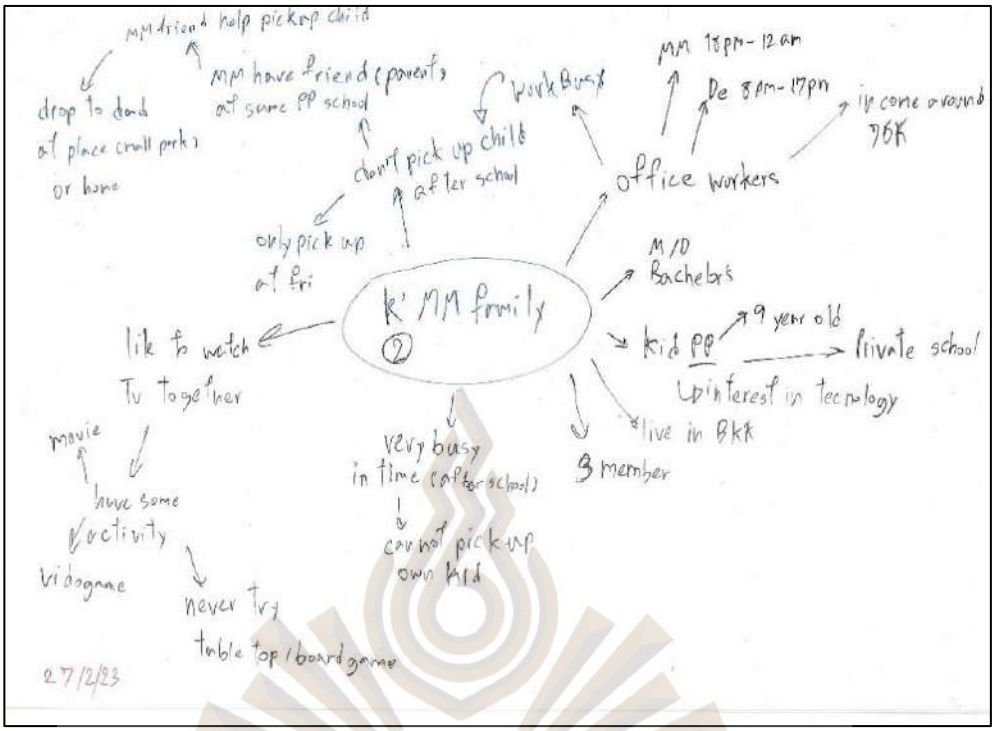
The target group consisted of five families that I interviewed about their problems in communicating with the members of the family, the activities they took part in or did together and some basic information about them.



Figures 3.1 Example of the chart of an analysis 1

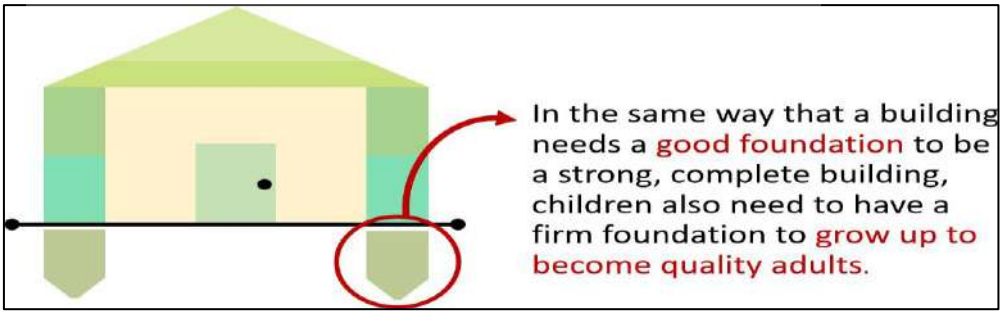
The chart comes from the summary of the interviews of the families; the results of the interviews are analyzed in order to find where the problems are, so the analysis helps me look for how to design to solve the problems.

Below is an example of the chart of an analysis of the first family.



Figures 3.2 Example of the chart of an analysis 2

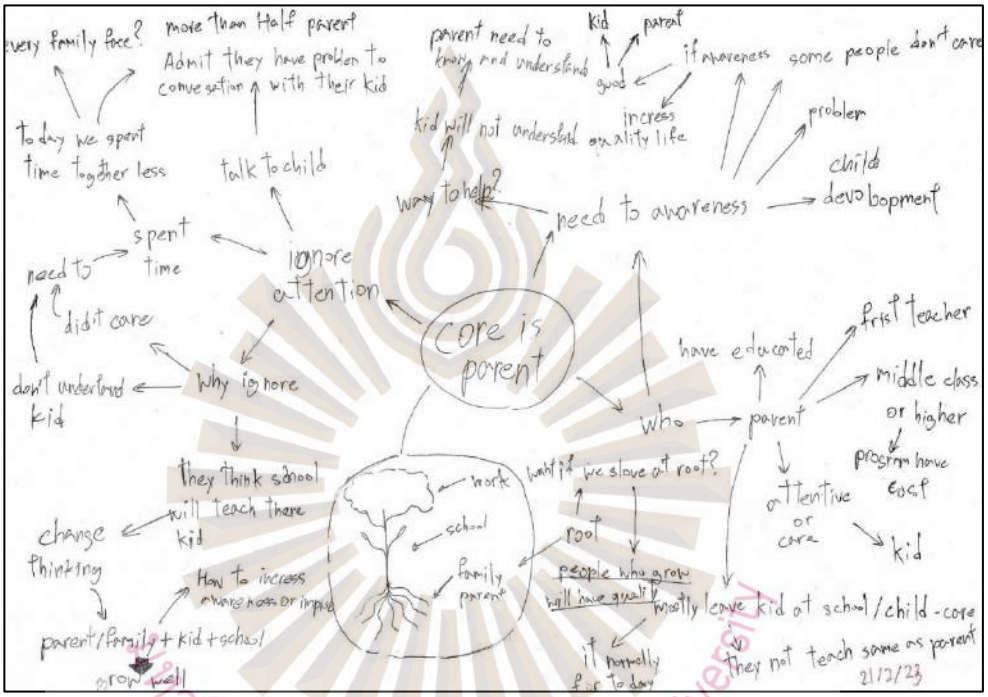
The interviews of these families show that the number of family members differ and they are different in age, so each has different problems. The gap in their communication is obviously seen in every family.



Figures 3.3 How children can grow up to become quality adults from a strong family

3.3 Results of the Research on Culture Probes

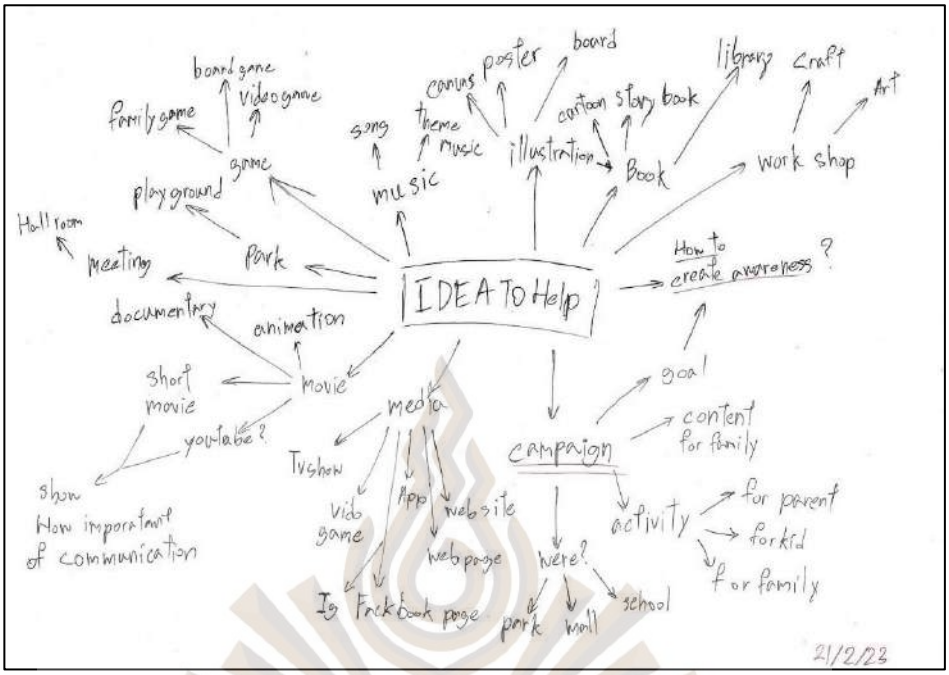
Communication is important during the time of childhood because it will affect children's behavior; an example can be seen in the families that I interviewed as some children did not want to talk with others and they liked to be alone. Parents or adults should play a very important role in initiating communication.



Figures 3.4 Why parents play the key role
in creating communication in a family

After getting the information from the interviews and understanding the root of the problems, I began to design culture probes with an aim to change the behavior of the parents and make them realize the significance of the problems and change them. But the main problem is that I could not change them.

The interviews show that the change of the behavior is a significant issue for the parents because no one wanted to change; they thought their behavior was good already. When they were suggested to gradually adjust their behavior instead of abruptly changing it, they thought this took a long time and the result was unpredictable and nothing might be changed at all.



Figures 3.5 Idea for design culture probes

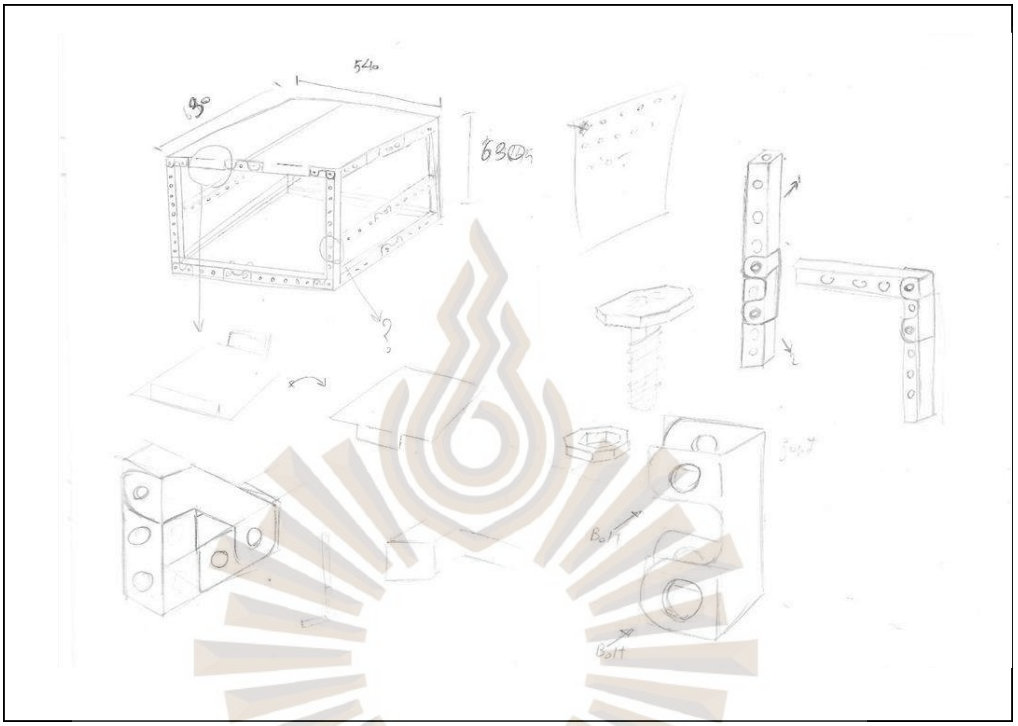
After a conclusion that culture probes would not work for my collaborative design, I turned to design of a DIY set of furniture that needs collaboration of the members of the family so they have to spend time working together.

3.4 Design of DIY Furniture

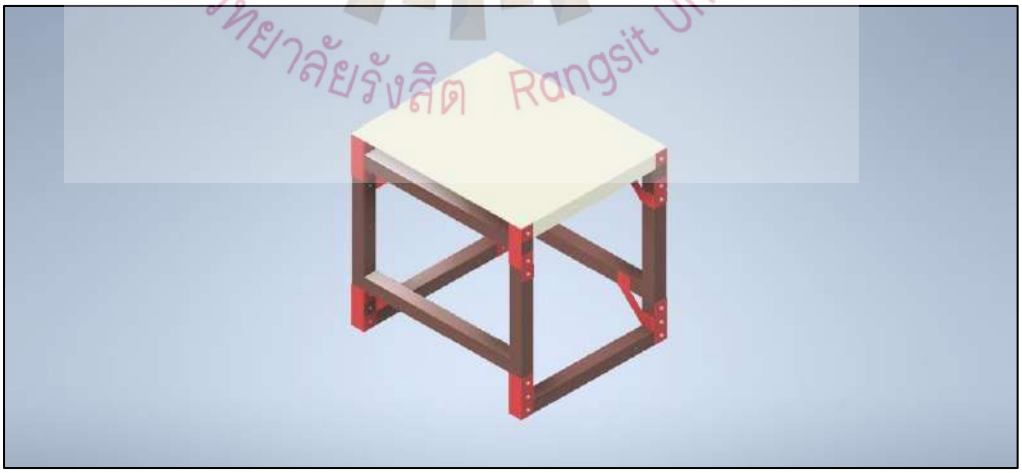
Figures 3.6 Idea of designing a set of furniture

I first designed a DIY set of furniture that everyone could help to put those pieces together, thinking about furniture for a child's room. When I started to design those pieces, I asked what about a house without a child's room or when the children grew up, this furniture would not be of use anymore. I, therefore, thought about designing anything that could be changed or adjusted as needed.

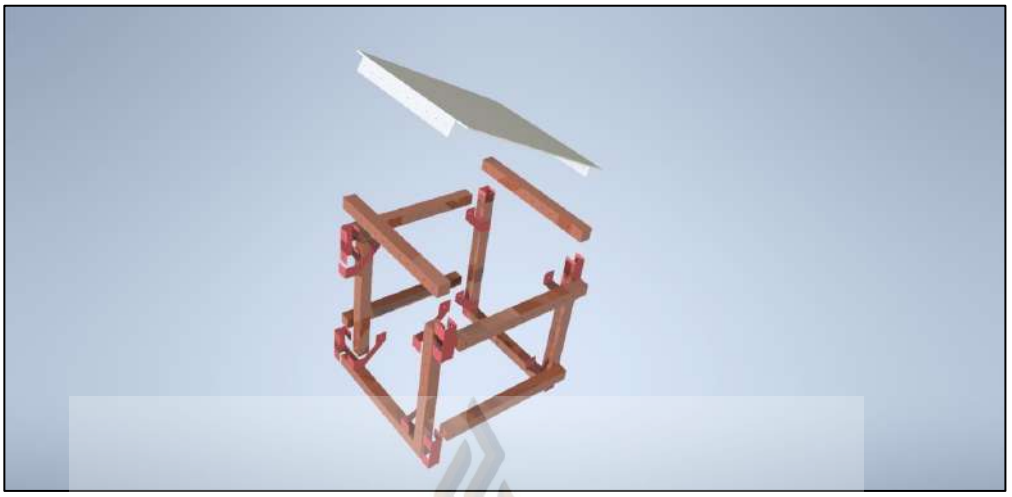
3.5 Sketches of the Pieces to Be Assembled into Different Forms and Objects in the Project



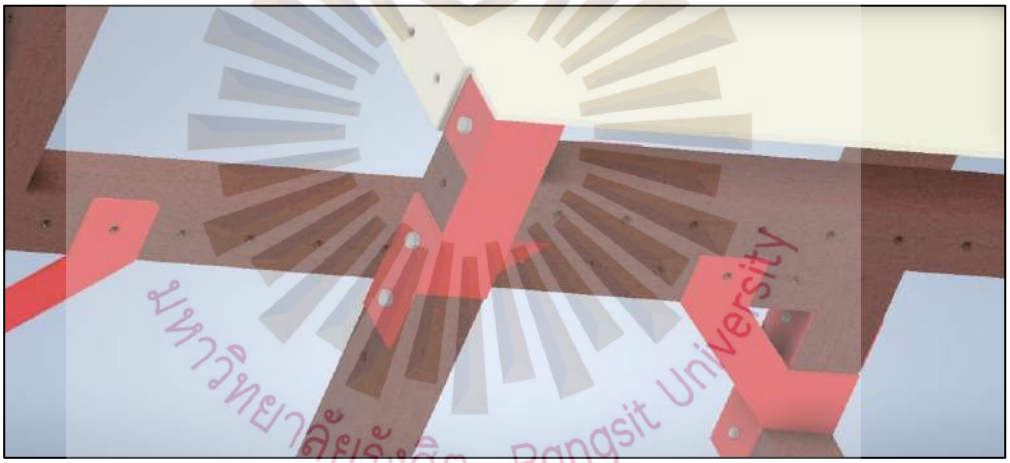
Figures 3.7 Sketch idea 1



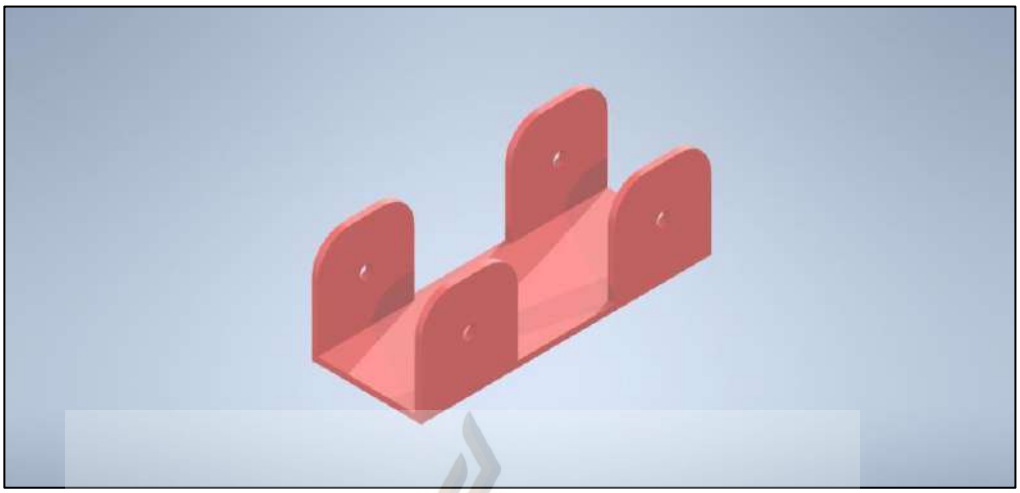
Figures 3.8 3d model Idea assemble table 1



Figures 3.9 3d model Idea assemble table 2

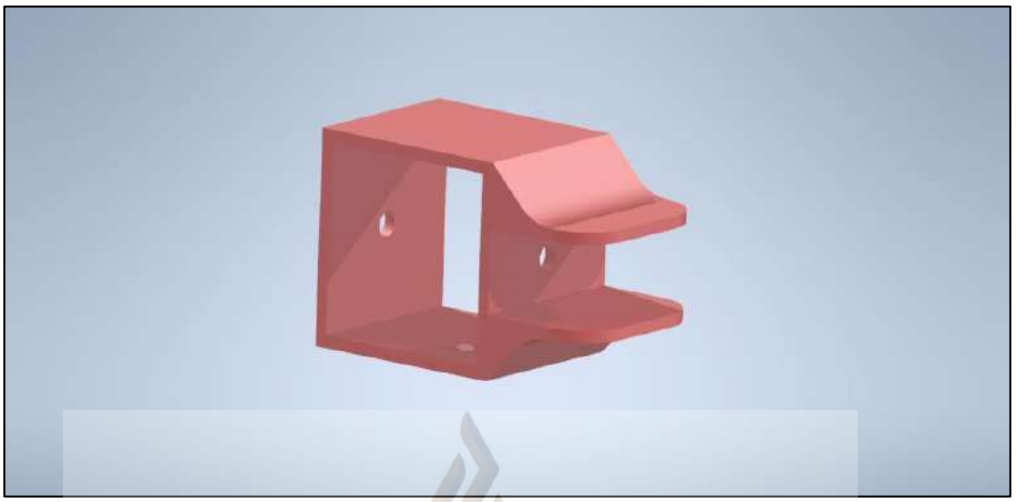


Figures 3.10 3d model Idea assemble table 3

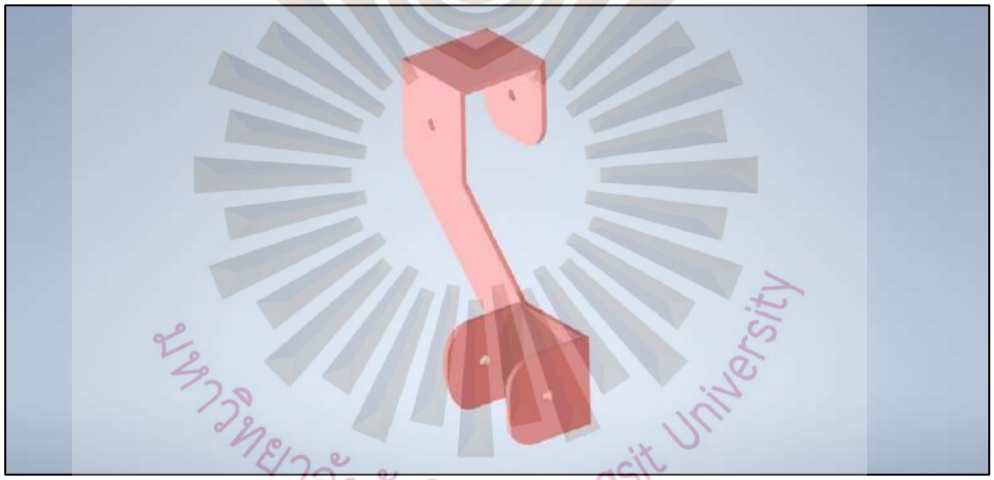


Figures 3.11 3d model joint 1

Figures 3.12 3d model joint 2

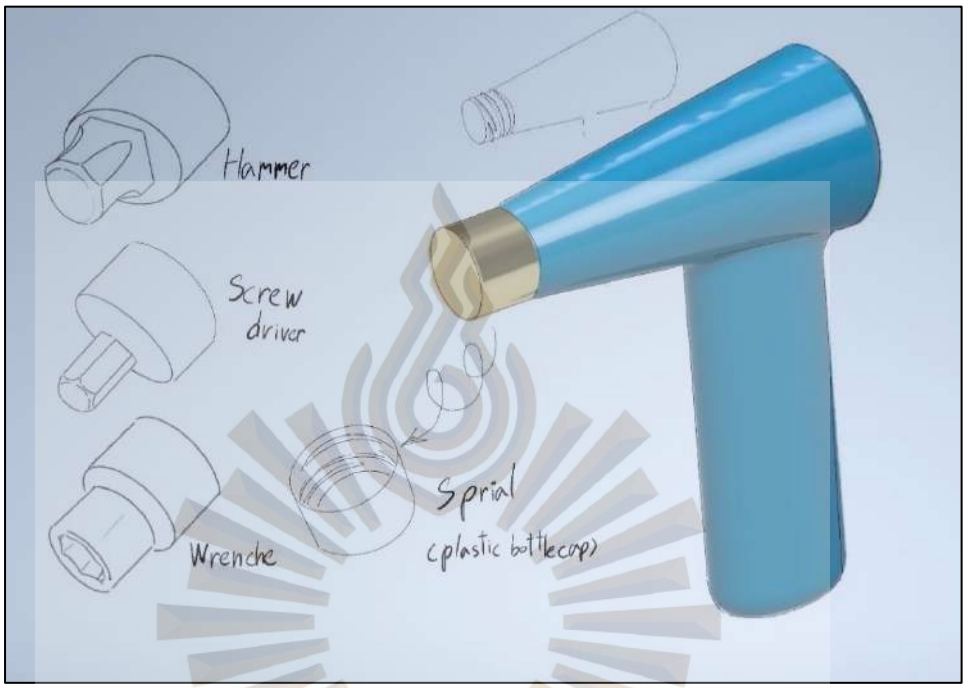


Figures 3.13 3d model joint 3



Figures 3.14 3d model joint 4

Joints were designed into only 4 types because designing too many types of joints would confuse users and thus making assembling those pieces together too complex and too difficult for them.

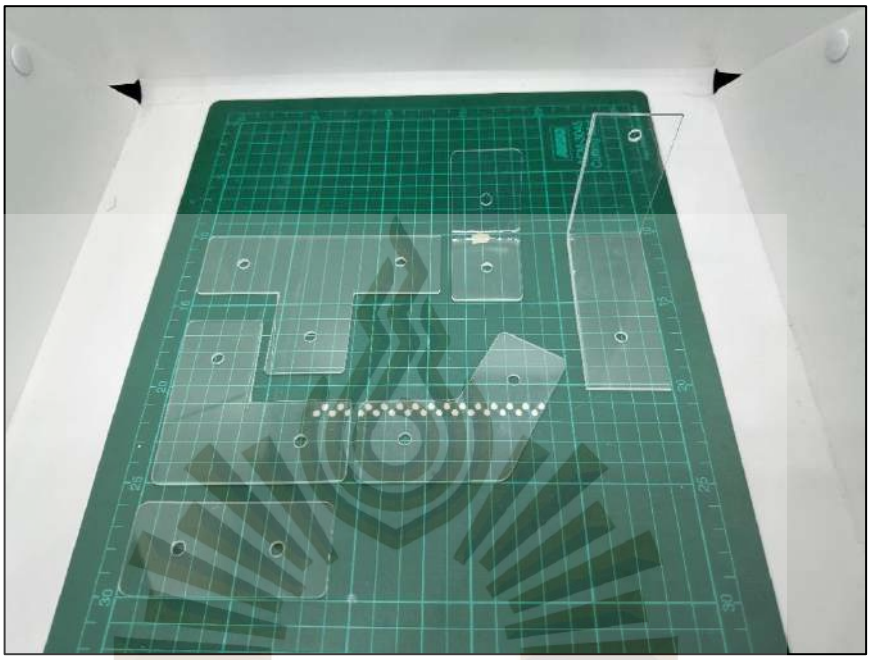


Figures 3.15 Tool used in replace of a hammer

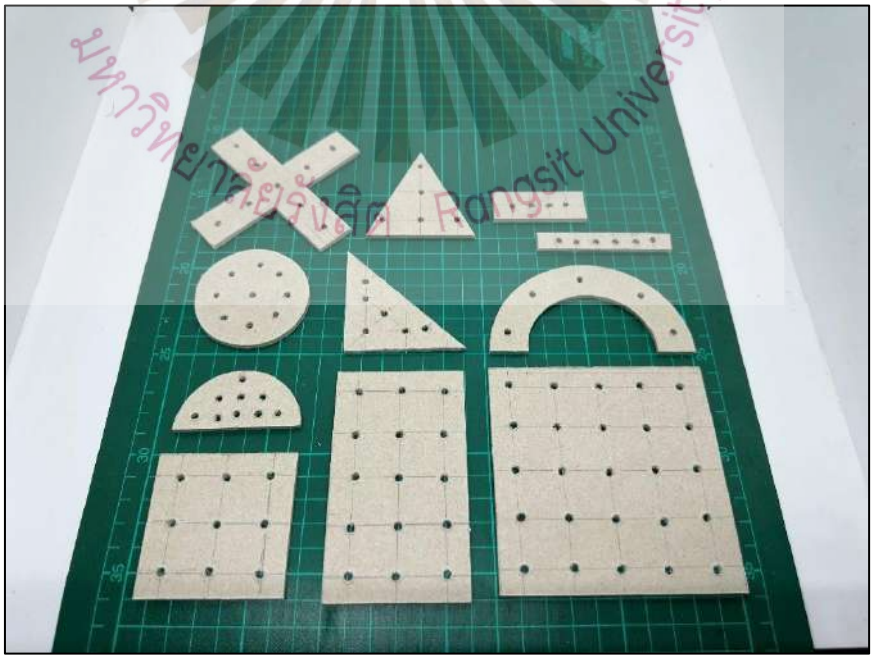
Figures 3.16 Model joint example scenario 1

Figures 3.17 Model joint example scenario 2

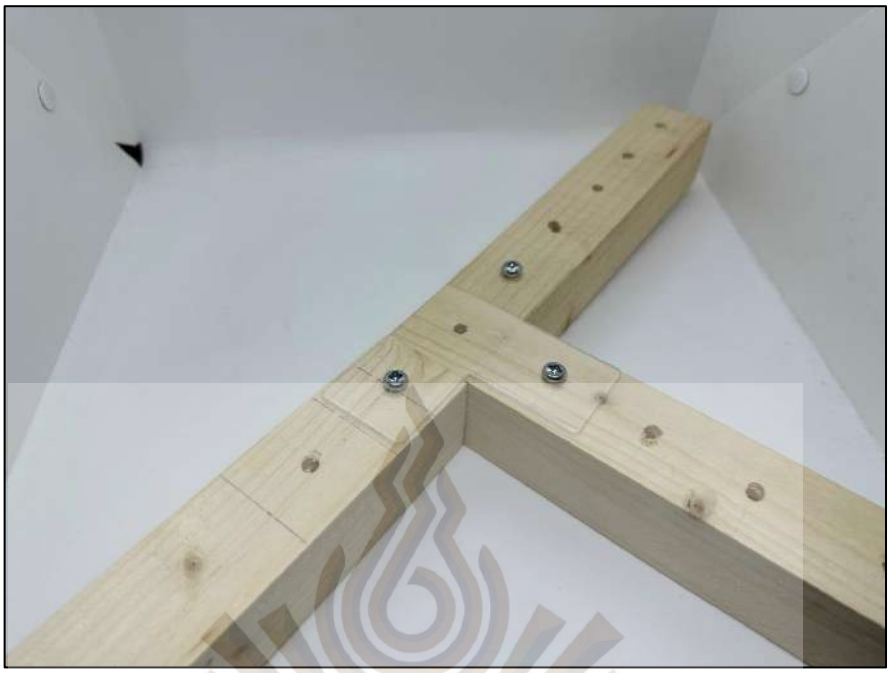
Prototype model created by assembling those pieces with the joints into different forms



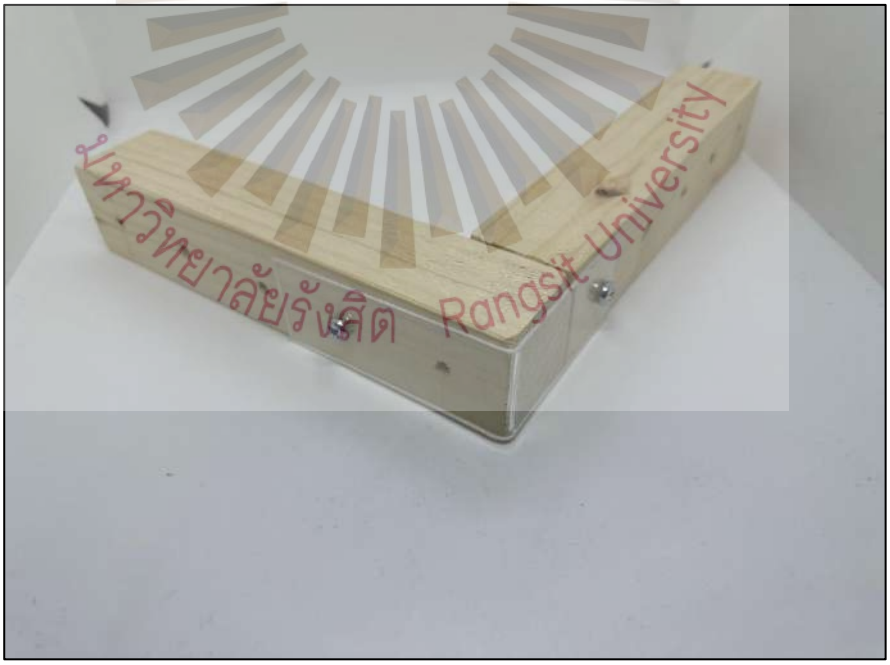
Figures 3.18 Model plastic joint



Figures 3.19 Model plank shape



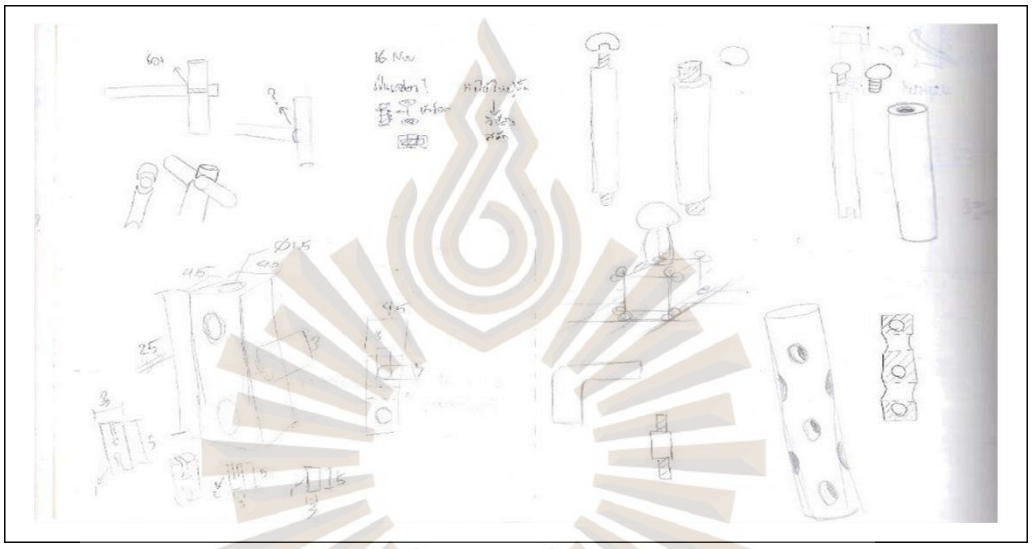
Figures 3.20 Plastic joint example scenario1



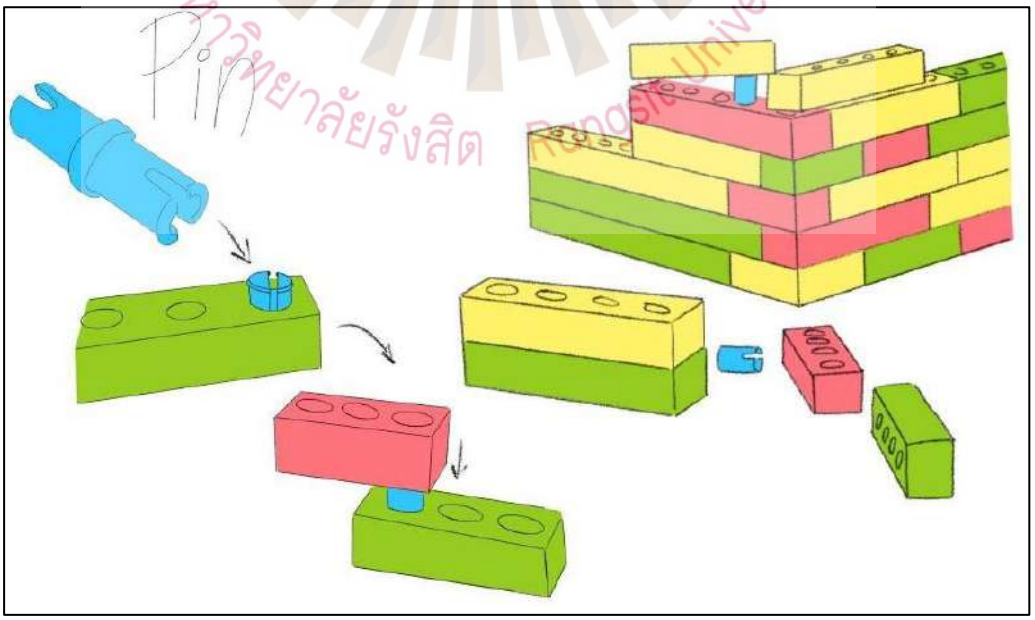
Figures 3.21 Plastic joint example scenario 2

3.6 Final Design

The design was finalized and the joints were no longer used because they tended to create confusion and difficulty when the pieces were put together to create different forms. This confusion and difficulty might cause a negative working atmosphere for co-working and communication.

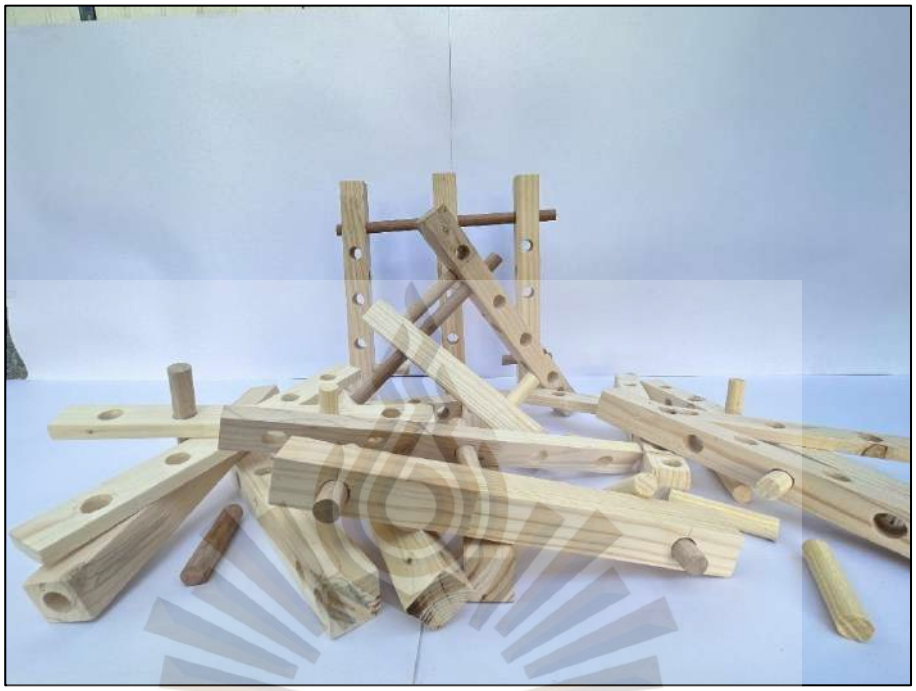


Figures 3.22 Sketch idea 2



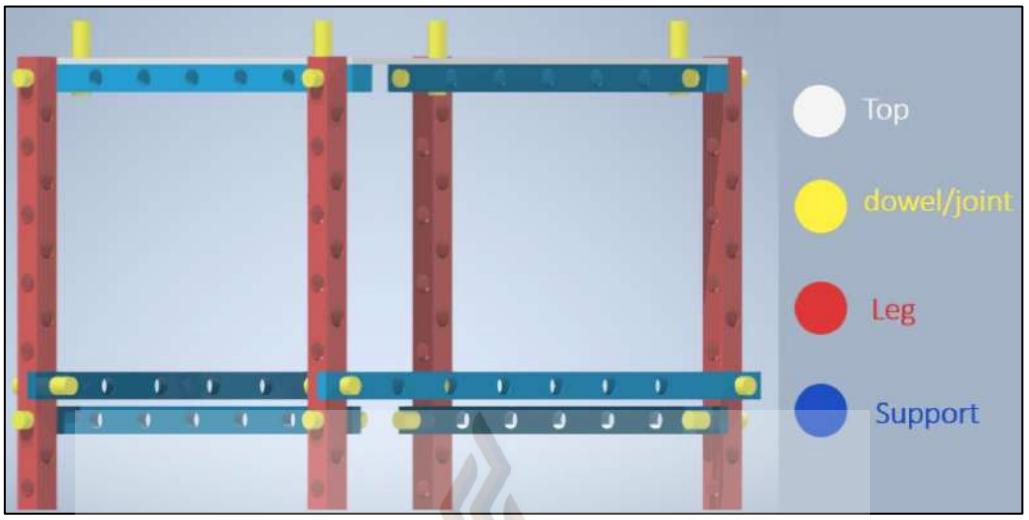
Figures 3.23 Sketch Idea 3

Dowels are used to replace joints in holding those pieces together in order to reduce confusion in users.



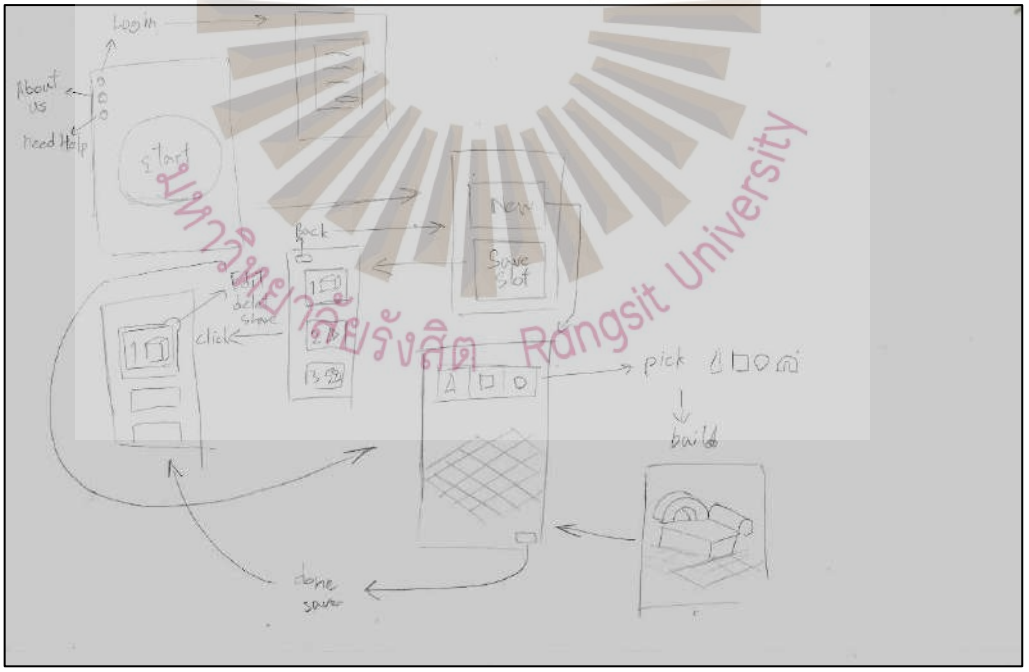
Figures 3.24 Wood model 1

Figures 3.25 Wood Model 2



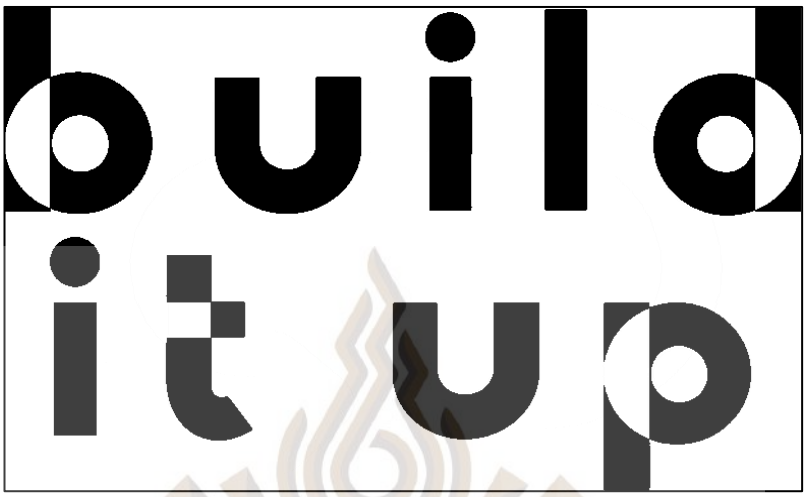
Figures 3.26 3D model and color part

3.6 Creating an App to Help Create a Model



Figures 3.27 App sketch lay out

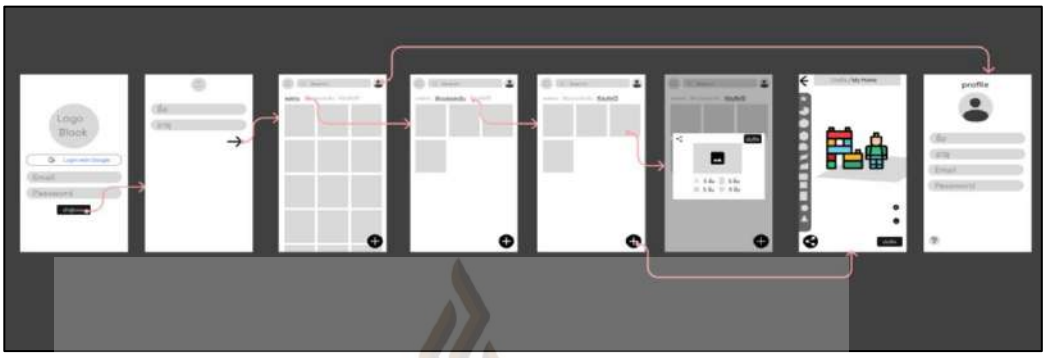
3.7 Package of the Final Product with a Logo in Primary Color Scheme



Figures 3.28 Logo

Figures 3.29 Primary Colors Used in my design

3.8 An App to Accompany the Prototype Model



Figures 3.30 App layout version 1

Figures 3.31 App layout version 2

After finishing the prototype model and the App, I would try them with my target group which consisted of 40 elementary students, aged 8-12 years, at Municipality 1 Chengchum Prajanukul School in Sakhon Nakhon Province, which I will present in Chapter 4.

Chapter 4

Research Results

4.1 A Set of Wooden Pieces Ready to Be Assembled into Forms and Objects

Figure 4.1 Color logo

Figure 4.2 Box containing colored wooden blocks, marked with the logo

Figure 4.3 Set in 1 box

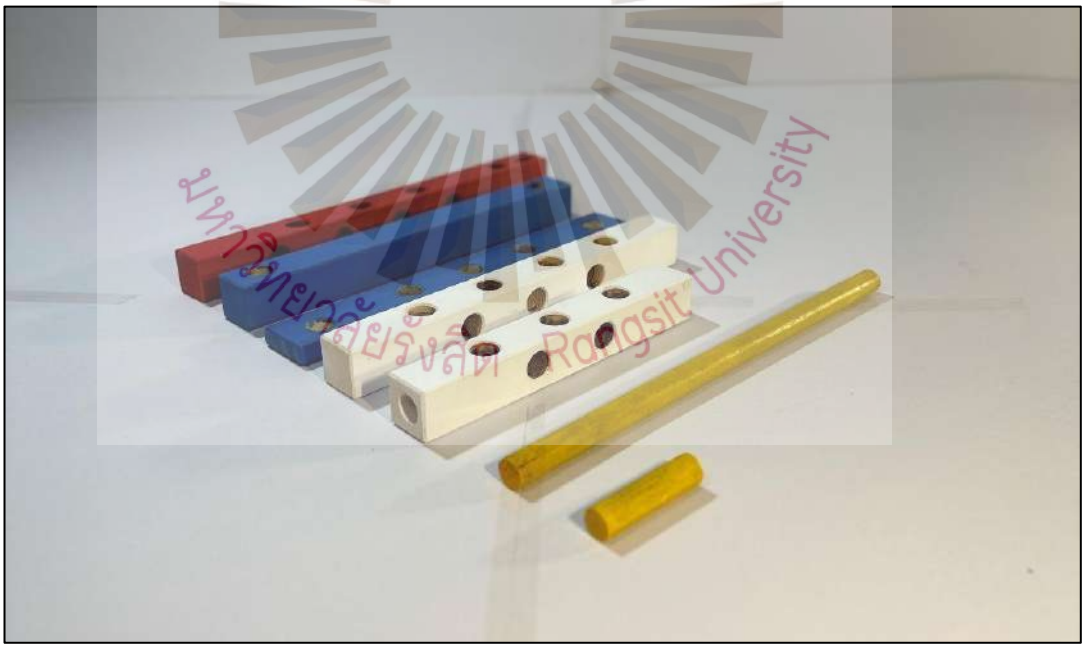


Figure 4.4 Type of shapes in 1 box

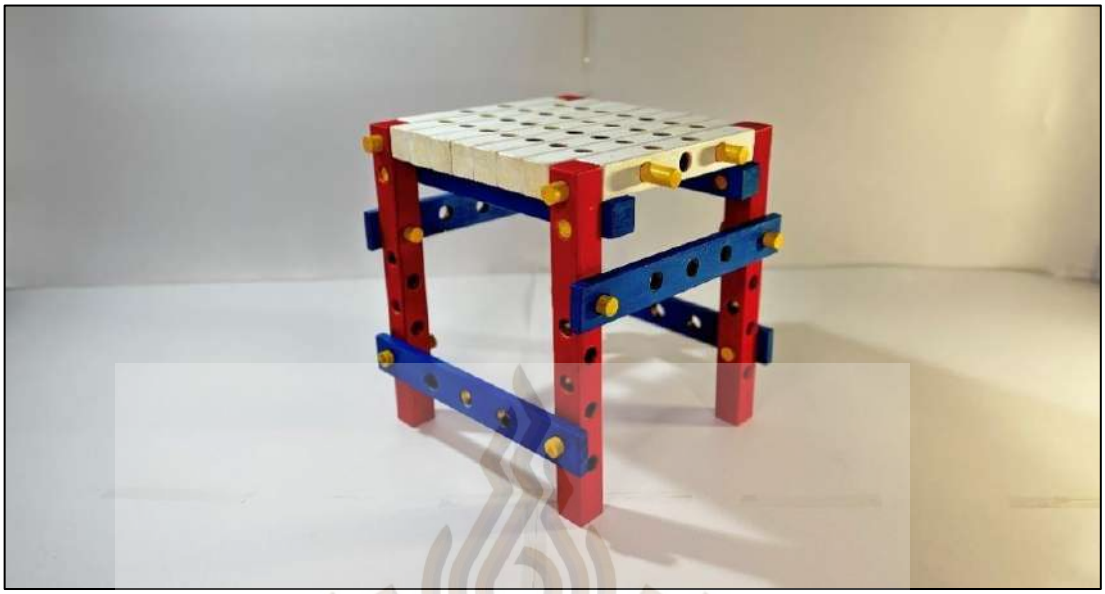


Figure 4.5 Chair

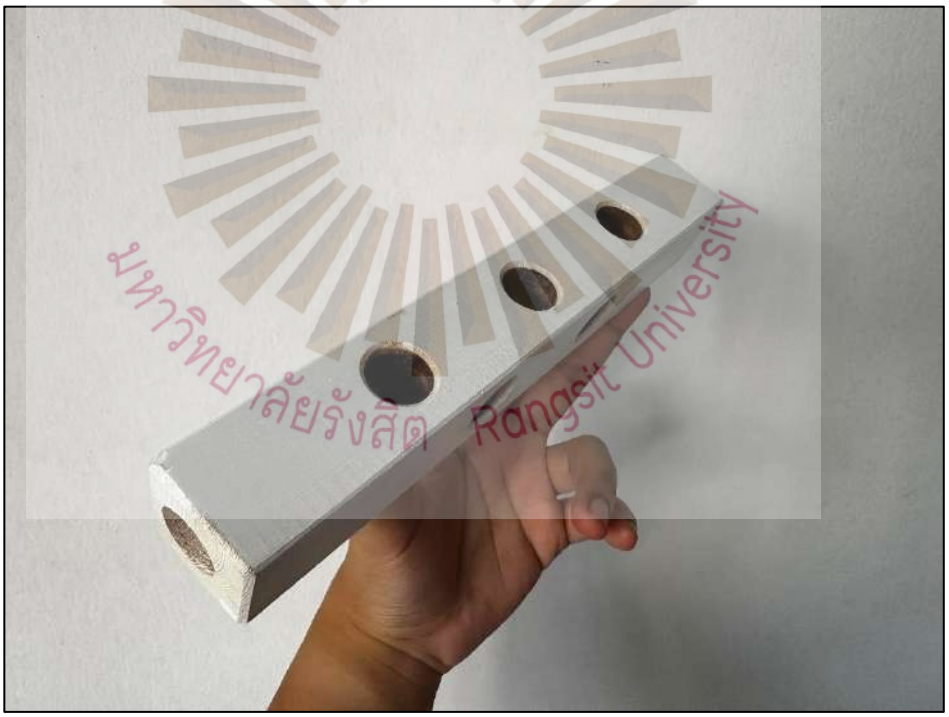


Figure 4.6 Surface texture before play

Figure 4.7 Surface texture after play

A damage on the texture caused by the dowel being hit by wood instead of a hammer-this is the problem that needs to be explained to the children when they work.

4.2 Children Collaborating to Create Designs from the Wooden Blocks

Figure 4.8 Children Co-working 1

Figure 4. 9 Children Co-working 2

Figure 4.10 Children Co-working 3

Figure 4.11 Children Co-working 4

4.3 Products of the Children's Collaboration

Figure 4.12 A table set with one table and two chairs.

The girls were proud of their creation.

Figure 4.13 A rocking horse-a creative product by these boys

Figure 4.14 A robot

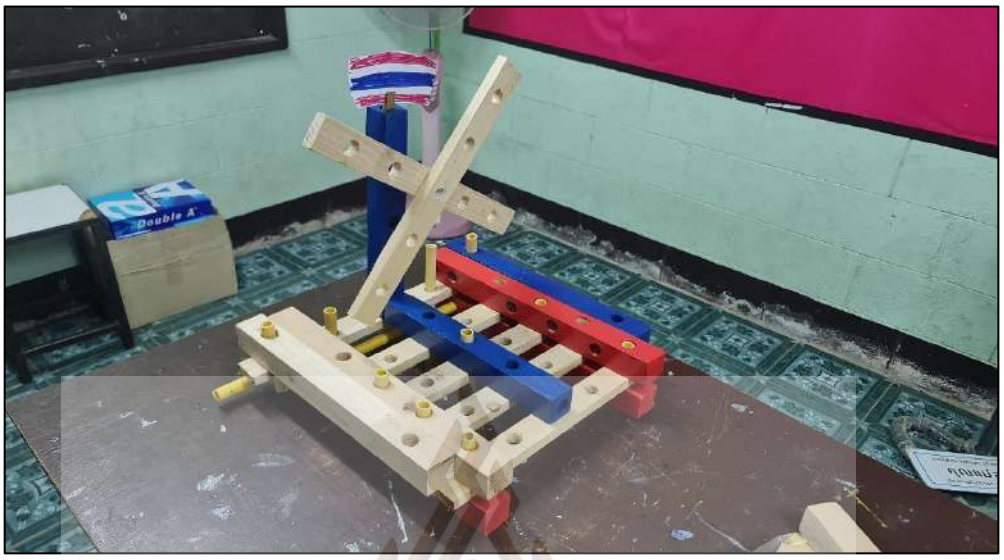


Figure 4.15 A windmill

Figure 4.16 A shelf

4.4 Learning to Use an App to Facilitate Their Collaboration

Figure 4.17 Testing the App 1

Figure 4.18 Testing the App 2

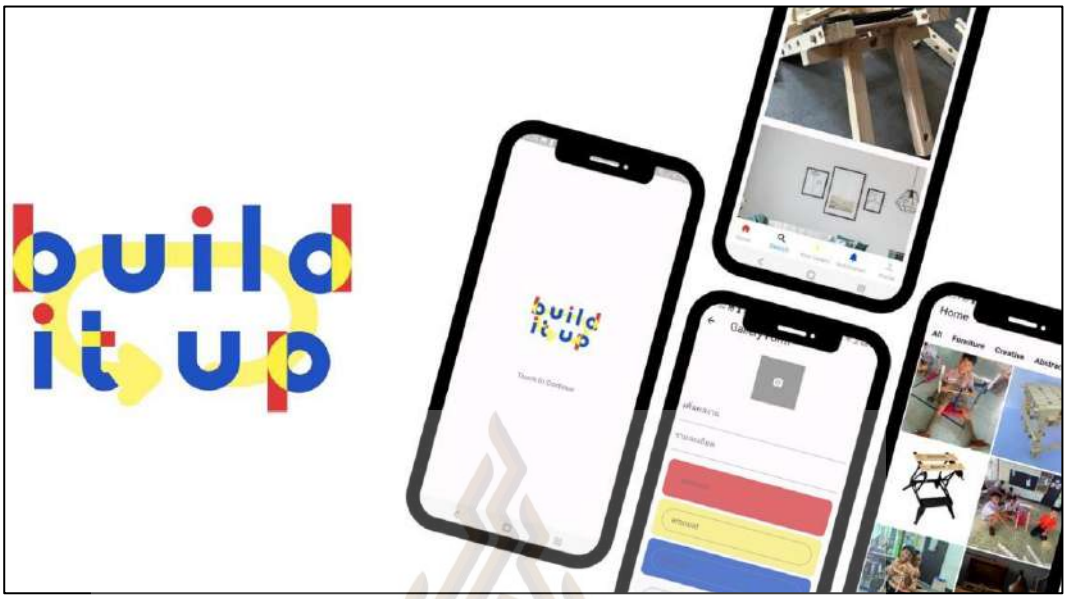


Figure 4.19 App

Figure 4.20 How to use App 1

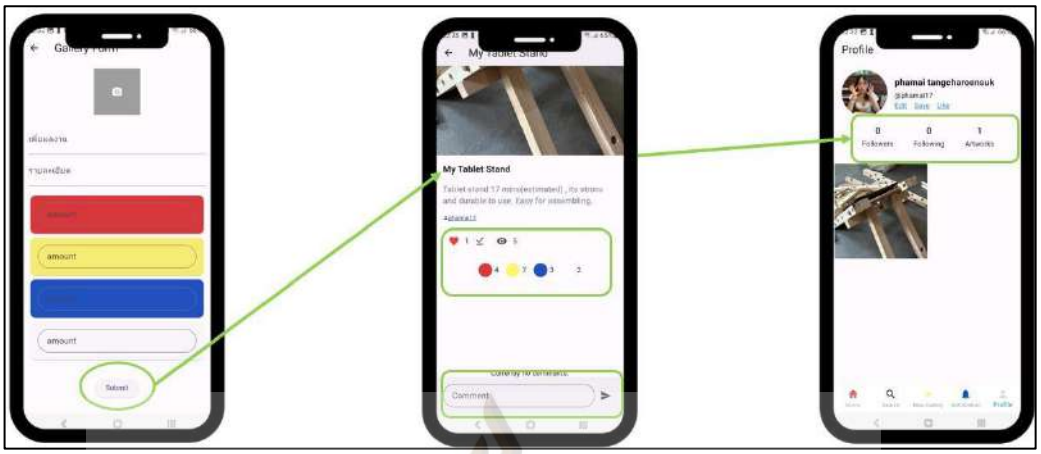


Figure 4.21 How to use App 2

All the photos presented in this chapter show that the children in my target group really collaborated to get things done. They talked and discussed what they could do to accomplish the task they were assigned. They made use of high technology to help them do the work more smoothly. As they belong to the new generation, they were not threatened by technology but were eager to learn in order to make use of it to help them work with other people in a more efficient way.

Chapter 5

Conclusion and Suggestions

5.1 Five Characteristics that Children Should Have Proposed by The World Economic Forum 2023

In 2023, the World Economic Forum cited five characteristics that children nowadays need to acquire in order to develop themselves to grow up as quality adult citizens in the modern world. These five characteristics are the following:

1) Creativity: human beings need to develop their creativity in order to create something new to contribute to the community where they live. This is extended to larger communities like the country, the region and the world;

2) Digital skills: the world nowadays, at all levels, relies on technology which facilitates lives. Children should be introduced to digital skills in order to acquire the knowledge and information that are available on and can be retrieved from social media. This will enhance their learning because education and knowledge are not limited only to classroom environment and what is taught by teachers but with their digital skills, they should be able to enlarge their educational world.

3) Collaboration: children should be taught to realize the importance of collaboration because no one is able to exist alone. Human beings need to communicate, interact and collaborate to get things done, more quickly and more effectively. This collaboration can grow from collaboration between people to that between communities, countries and regions. Before larger scale of collaboration can develop, we have to start with the smallest form of collaboration—that between individuals or between members of a family.

4) Global citizenship: in the modern world where geographical boundaries cannot limit the connection between people, children have to develop themselves so that they will be able to live or fit in any society, not only the country of their birth. In this case, it means that they have to be very flexible, learning new languages, new cultures and new ways of life and adjust themselves to international environment.

5) Environment stewardship: in the world that the natural environment has been declined by human hands and global warming has caused deadly effects on human physical and mental conditions, young children should take these.

6) Problems into their hands and try to protect the natural environment to make lives in the future livable. (Forum, these are 5 skills kids will need in the future, 2023)

5.2 How My Thesis Enhances the Five Characteristics Proposed by the World Economic Forum

My project, Build It Up, can contribute to the promotion of the five characteristics suggested by the World Economic Forum as follows:

1) Creativity: the children are allowed to assemble the wooden blocks into the forms and objects as far as their imagination goes. This is an early stage of the development of children's creativity. When they are confident of what they are doing now, they will be able to apply their creativity to doing other things;

2) Digital skills: I always emphasize appropriate use of technology as technology can make life easier but we have to learn how to use it and we must not let it completely control our lives. My project has introduced an App for children to learn to use it to accompany their creation of the forms and objects that they wish to create. The App is also used to support the communication among them and with me, who is the App creator. For some students who have not acquired a mobile phone of their own, this

is the chance for them to handle technology and as time passes by, they will have more confidence in their digital skills;

3) Collaboration: this is the main focus of my project because I wish to point out that design can bring about collaboration that enhances positive communication among the students who took part in my project. The result of their participation in the project and the students' positive reactions to the project suggest the success of collaborative design.

4) Global citizenship: this characteristic is still too far to achieve now because these students still have a long way to go but I believe that with the first three characteristics being instilled in them, it will not be difficult for them to adjust themselves to become global citizens when time comes. The significance of collaboration that they have learnt from this project should help them learn to work with others, and respect their differences while leaning to maintain their own identity.

5) Environmental stewardship: the wooden blocks for this collaborative design are made of spare wood left from other activities so it means that you do not have to feel new trees in order to get wood to create this design. Or, maybe if the design is to be produced in a large number later on, the material for making it can be changed to something else but this will be done with a notion that natural environment will not be affected.

5.3 Results of the Research

From observing what the members of my target group were doing and my conversation with them, I am quite pleased with my fieldwork and the children's performance. However, I realize that this project is still at its early stage and it can be developed and improved in many ways. Now, I will use the comments from the interviews of my target group to present the conclusion of my first attempt to test the prototype design with the children who took part in my field work.

My prototype design consists of two parts—a product in the form of colored wooden blocks to be assembled into pieces of furniture, objects or abstract forms, in accordance with the students' creativity, and an App to guide users when they assemble the wooden blocks into what they wish, to communicate with me, the App creator, when they have problems or when they want to give suggestions and to communicate with others who belong to other groups. They can post their creative products on the App after they finish the products and would like to share them with those in other groups. The App is created to alleviate a gap in communication.

5.4 The Target Group's Responses to the Questionnaires

The following will be the conclusion of my target group's responses to the two parts of my prototype design. These responses are obtained from their answers to the questionnaires I gave them.

5.4.1 The Product: Before and After Creating the Product

Before:

The students were asked in the questionnaires why they decided to join the fieldwork; 55.8% of them expected to have fun in trying the prototype design; 33.7% wanted to spend more time with others; 30% did this as a way to kill time; 25% hoped to spend time to find their "self"; 1% wanted to try something new and 1% did not expect anything

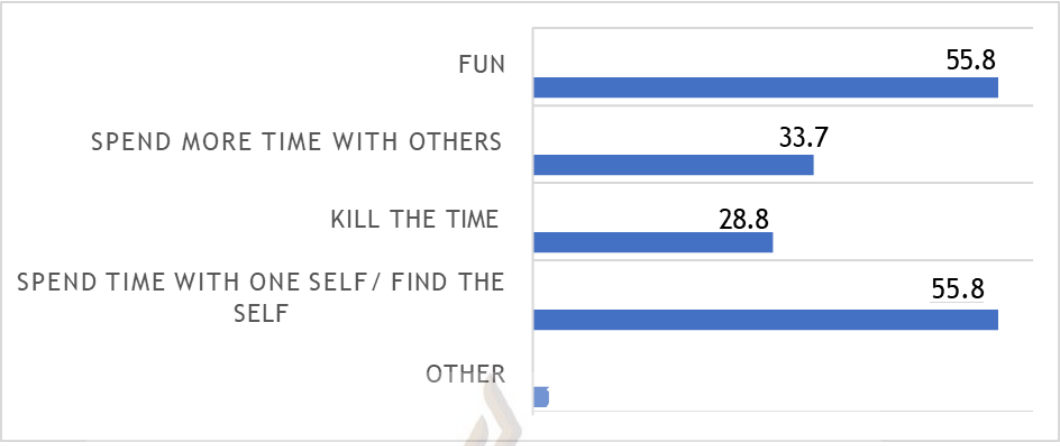


Figure 5.1 What they expect from using the product/the App

In fact, the answer that most of them expected to have fun can suggest the success of this project; at their age, children should get fun from what they are doing or else they will easily be bored with it. And their answers that they wanted to spend more time with others and they wanted to kill time can be the key to this research as there is a glimpse of the importance of communication and collaboration.

They were also asked about problems working with others. 26.9% of them said that they did not share the same free time so it was difficult for them to co-work; 47.1% said that they did not share the same idea or opinion and this made it difficult to work with others; 38.5% said the activity was too complicated and 1% said they loved to spend time alone or they did not feel comfortable talking to others.

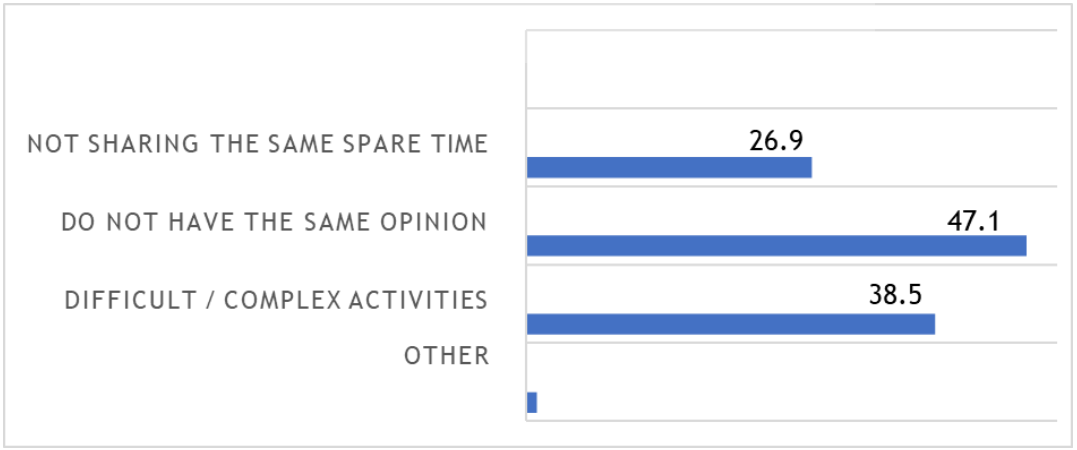


Figure 5.2 Problems and obstacles in working with others

The answers show that time management is needed when they have to co-work, and the fact that they blamed it on different ideas and opinion is what should be improved because these children should be raised to grow up with tolerance of differences. They must realize that people do not generally think the same.

Before dividing the 40 participants of my fieldwork into groups of 4 or 5 students, I gave them an instruction about what they were to do. I asked them to help each other to use the wooden blocks that I provided for them to create a form or and object from their imagination. And this had to be the product that every member of the group agreed upon. And they were left to create the product(s) on their own without unnecessary interference from me until they finished the task.

After:

Then, in the questionnaires, they were asked whether they were talking to or interacting with others while they were assembling those wooden blocks into forms or objects. To this question, 86.4% said that they were. This means that co-working, using design as a tool, can motivate these students to communicate in order to get the work done. Only 13.6% said that they did not talk with others. This is understandable because when children are doing group work, there will be some who isolate themselves from the group and it takes them some time to break the ice and blend into the group. (And in my case, I had only three days to work with them and that could be too short a time for some children to reach out to communicate with others).

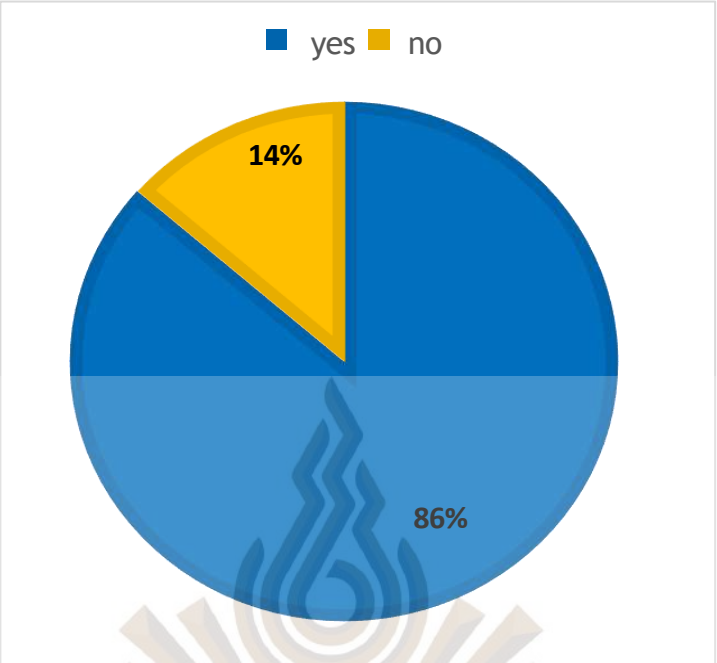


Figure 5.3 Communicating with others while trying to use the product

The students were asked how they felt after they finished the task assigned. To this question, 62.5 % felt satisfied with their group work and their contribution to creating the products; 27.9% felt indifferent because they thought they did not create anything new; 9.6% did not like it because they thought it was too complicated for them.

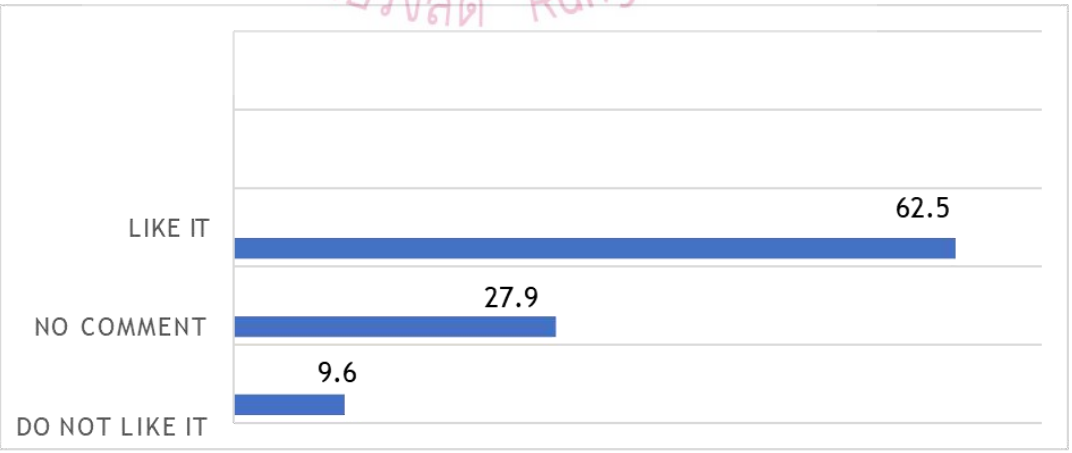


Figure 5.4 How they feel after they try the product

The answers show that more students gained satisfaction from the work they could accomplish. They felt that co-working with their peers to create something was fun and the design work enabled them to work with others in a positive way; instead of competing with each other, they collaborated with one another to get things done. The ones who were indifferent seem normal too as there are always this kind of students. Maybe, it is the duty of the parents or teachers to motivate them to take part in the groupwork more and their attitude might change in the future.

The fact that some students found this kind of design too complex is also understandable. This sort of work might not be their preference and their ability in handling technology might not be at the same level as those who enjoyed doing groupwork.

5.4.2 Responses to the Use of the App

The students were asked whether they talked to or communicated with others when they tried to use the App. 75% said that they used the App to communicate with others whereas 25% did not. As for the question about how they felt about using the App, 51.9% said they liked it and it was easy to use while 35.6 % felt indifferent and they did not find anything new in it. Those who did not like the App and found it too complex to use fell to 12.5 %.

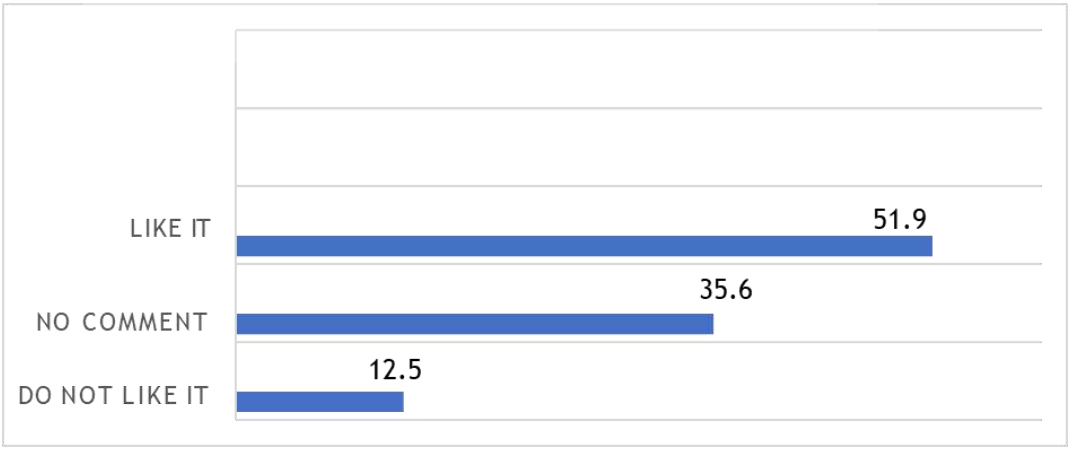


Figure 5.5 How they feel after they try the App

The number of the students who liked using the App is higher than those in other categories. This might be because, at present, Apps tend to be more common and people can make use of them to get things done on line and these students might be familiar with this technological device. For those who were indifferent is something we can always expect and they should be encouraged to make use of this device for their own benefit as Apps are widely used to acquire information and knowledge and to do business.

I think that the students who found the App too complicated and thus did not like it could be the ones who do not have a mobile phone so they are nor familiar with the use of this platform. With time and necessity, they will learn how to use it to make their lives easier.

The children were asked whether, when they tried the prototype model and the App, their communication with others improved and whether it was a good practice for work collaboration. The answer suggested that the communication and collaboration increased from 1% to 38.5%. However, after they finished assembling the prototype model and recorded in the App, the percentage of communication and collaboration decreased by 14.5%.

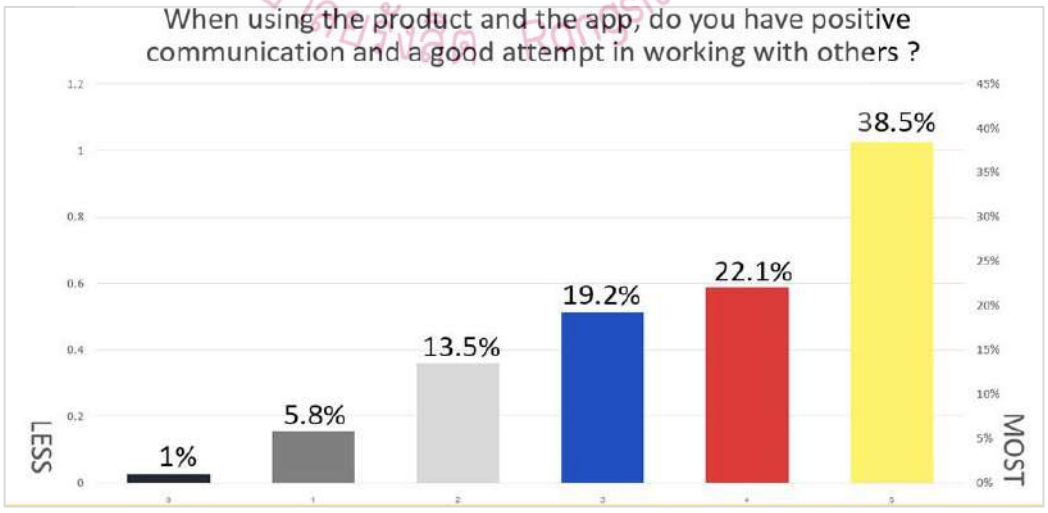


Figure 5.6 Percentage

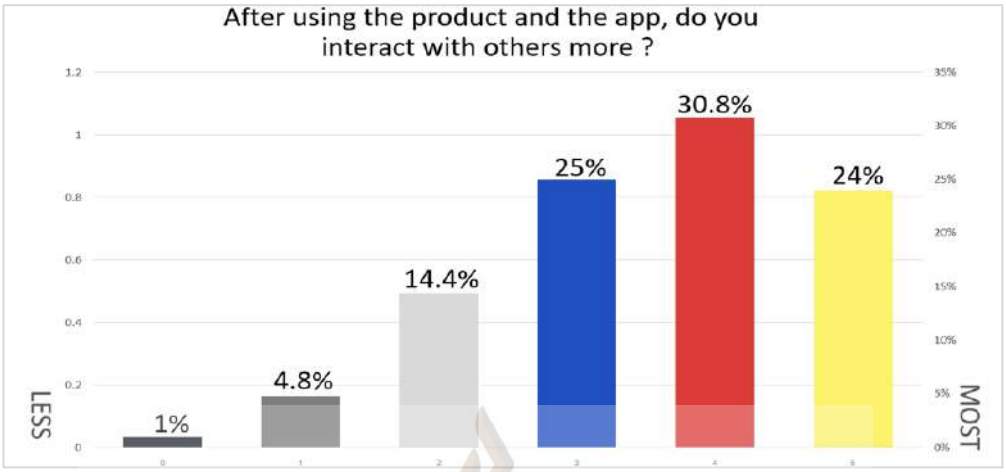


Figure 5.7 Percentage of collaboration after using the product and the App of collaboration when using the product and the App

The rate of decrease is understandable because after the task is completed, the participants of the fieldwork would feel that their communication and collaboration should be halted and they would resume their communication and collaboration when they are assigned to create another product. This gives me an idea that I must create more pieces to be created into products of different forms and styles. At the same time, the App has to be upgraded to help guide the children to do their works.

It is interesting to see that despite the decrease in the percentage of communication and work collaboration, the Director of the school where I conducted the fieldwork requested me to send this set of work and the App for the students to use for their learning to improve their communicative and collaborative skills in the future. The Director and the teachers who came to observe my interaction with their students and the students' performance found that this set of work would be useful to encourage the students to engage themselves in extracurricular activities during their spare time, instead of focusing on games on mobile phone.

As the protype model I tried with the children is still something new and there is room for improvement, I have collected some advice from my target group and other people who were interested in our activities. The following are some of the suggestions I will take into consideration.

5.5 Suggestions about the Prototype Model

The wooden blocks are quite heavy, especially when they are assembled into a finished form. I think for next production the blocks should be made of lighter wood or other lighter materials.

The shapes of the blocks should be more varied as the ones they have are mainly geometrical, which produce angular and sturdy forms only. They look for the blocks of different sizes, shapes and colors to make their creation more exciting.

This is a technical problem because they found the screws and the dowels too tight, making it difficult to assemble those blocks together. This problem will not be difficult to solve.

Some commented that it was difficult for them to understand how to assemble those wooden blocks into forms. I think this problem can be solved if the children are let to familiarize themselves with the model and they will feel comfortable to handle it.

This can be seen in the comment that this model is suitable for young children of this age range.

5.6 Suggestions about the App

The main problem of the school children where I conducted the test was that some children did not have a smart phone so they did not know how to use an App or they could not use the App that I created for them.

They faced with App bug problems. They were not able to delete edited works. The App could not upload videos and it should have 2 or more languages; the notifications should be more clearly presented.

Except for the lack of smart phones for use by the children, I think the problems related to the App can be solved. More functions should be added to make the use of the App cover more areas and thus benefits the users.

5.7 Brief Conclusion of the Research Project

In a brief summary, my collaborative design has achieved its goal in enhancing positive communication, which is introduced to children while they are young. My design does not only help children to communicate in their interaction and collaboration but contributes to making these children to be quality citizens of their community, country and the world because the design can boost the five qualities needed by children in modern society, as specified by the World Economic Forum.

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