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Master's Thesis  
Academic Year 2017

IN360: Creating Career Guidance Community to  
Change Preconceived Notion of Children in  
Pramuka Island on Their Future Career

Keio University Graduate School of Media Design

Fathima Assilmia

A Master's Thesis  
submitted to Keio University Graduate School of Media Design  
in partial fulfillment of the requirements for the degree of  
MASTER of Media Design

Fathima Assilmia

Thesis Committee:

Professor Keiko Okawa	(Supervisor)
Associate Professor Kai Kunze	(Co-supervisor)
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Abstract of Master's Thesis of Academic Year 2017

IN360: Creating Career Guidance Community to Change  
Preconceived Notion of Children in Pramuka Island on  
Their Future Career

Category: Action Research

Summary

Primary and secondary educations are the basic foundation of the Indonesian education system. Despite that, almost 25% of elementary school graduates do not continue to junior high school. To stimulate learning motivation in primary school students, career inspiration sessions are held by communities of professionals. However, these activities face limitations in time, distance, and physical infrastructure, especially when conducted in remote and undeveloped areas. To deal with this problem, a project named IN360 proposes an alternative medium to deliver career information for children in remote and undeveloped areas, utilizing a digital platform and 360-degree-video.

This research focused on creating a sustainable career guidance community for children age 9-12 years old living in Pramuka Island. There were several challenges in building the community; namely (1) creating career inspiration using 360-degree video format, (2) assessing the educational value in the video and (3) embedding the sense of ownership in the local stakeholders. All of the challenges were approached with separated but integrated actions, resulting in the initial change of mindset about careers from the children, awareness of all stakeholders in their roles and the understanding for them to contribute to the community.

Keywords:

Career Guidance, Sustainability, Community, 360-Degree-Video

Keio University Graduate School of Media Design

Fathima Assilmia

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# Chapter 1

## Introduction

### 1.1 Background

Primary and secondary education is the basic foundation in the Indonesian education system. United Nations International Children's Emergency Fund (UNICEF) Indonesia stated in their 2012 report that 92% of children in Indonesia were registered in primary school and this number improved to 99% in 2015 [4]. Despite the high enrollment rate, the drop out number is appalling. Based on the data from Ministry of Education and Culture of Indonesia, from a total of 26 million elementary students in 2015, 176,909 dropped out [18]. Moreover, 933,275 out of 4.3 million elementary school graduate did not continue to junior high school and 85,000 more students dropped out during junior high school [16,18]. In summary, around 1,018,275 children aged 7-15 only attained primary school diploma while 176,909 more did not even have any diploma in 2015. This condition was repeated in 2016 in which add another 1 million of children aged 7-15 out of school [16,17].

Economic and accessibility are said to be the two main reasons of children in Indonesia dropping out of school. Indonesian government release a school grant program called School Operational Assistance (BOS) started in 2005 to improve access and quality of 9-year basic education [1]. After 10 years of operation, BOS grant improved 5% of junior high school enrollment rate [2]. Unfortunately, there is no evidence that the program improved the transition rates from elementary to junior high school. From the interview with Novi Safitri, a co-founder of the Island Hopper community of professionals, and educational magazine editor, she believes that other than economic and accessibility which are external causes, intrinsic reason like learning motivation is also one of the most important factors that determines students involvement in learning activity. Exposure to role-models and the benefits of higher education for the future are scarce, especially in remote and undeveloped areas. This condition resulting in a lower prioritization for education from both parents and children.

A study on students academic tenacity by Carol S. Dwek suggests that students with long-term purposes, especially those with social impact, improve students' academic tenacity and cultivate a motivation for students to accomplish their learning goals [10]. In order to contribute to primary level education in Indonesia, Island Hopper, a community of professionals in Jakarta, conducted an informal one-day profession sharing session in primary schools in small islands close to their city. This group of professionals from various field of jobs like engineering, journalism, health care, education, government, marketing, design and many other fields, go to Seribu Islands and other small islands on the north of Banten twice a year [3]. The one-day inspiration class gives students a lot of new examples of future jobs, shown in the increasing variety of careers that they choose before and after the session. Moreover, some students who did not have any plan for their future before finally find a profession they aspired to.

## 1.2 Research Problem and Question

Despite the positive result of Island Hopper activity, time, distance and physical infrastructure are still some of the main obstacles to expand the value of their community. Because all volunteers are professionals, the activity in the islands is limited to two session each year to accommodate their busy schedule. Even so, not all professionals can meet this schedule. Due to the distance, places they can visit are also limited to the islands around Jakarta. Additionally, the infrastructure and facilities in the islands is also limited, so it is difficult to share most of the working experience with the students.

To deal with the problem of time, distance and physical infrastructure, a project named IN360 is proposing an alternative media to deliver career information to children in remote and undeveloped areas in Indonesia utilizing a digital platform and 360-degree-video. To ensure the sustainability of career guidance provided by IN360, a support community involving all stakeholders is needed. This research is focusing on building the community to support IN360 solution. The research question that would be answered in this research is, *"How to create a sustainable career guidance community for elementary school level children in remote and undeveloped areas in Indonesia?"*.

## 1.3 Understanding the Field

### 1.3.1 Pramuka Island

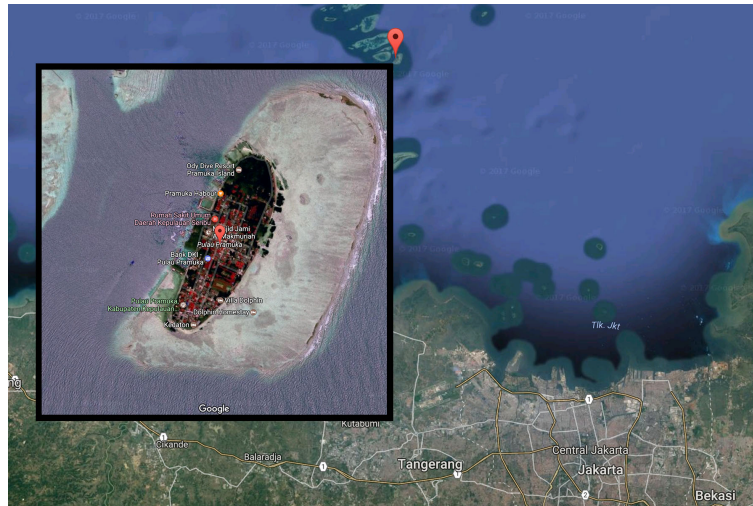


Figure 1.1: Map of Pramuka Island *source: Google Maps*

Pramuka Island, located on the north part of Jakarta, is a part of Seribu Islands chain (Figure 1.1). The community in Pramuka Island was chosen as the subject of the research because the area reflects part of the conditions of other remote and undeveloped areas in Indonesia. The island can only be accessed by small boats that operate one round trip per day. Even though located in the region of the capital of Indonesia, this area still has limited access to education, particularly higher education.

### 1.3.2 Children in Pramuka Island

This research targets children in Pramuka Island. 100% of children age 7-15 living in Pramuka Island are registered in elementary school. Most of their activities are centered in school. Thus, the research was conducted in collaboration with Panggang 02 Pagi Elementary School, more specifically 4th-6th grade students.

### 1.3.3 Internet Infrastructure

Pramuka Island is one of remote areas in Indonesia that are provided with internet access. There are two things that should be considered regarding internet access in the area: the availability and the speed.

For availability, towers of 2 main mobile internet provider in Indonesia have been built on the island beside Pramuka Island. However, power outages commonly occur in the Seribu Islands. When the electricity in the whole area dies, it will also affect the internet connection in Pramuka Island. This condition should be taken into consideration for platform development.

In term of speed, the internet connection in Pramuka Island is slightly faster than other islands, with 6 Mbps download speed and 1 Mbps upload speed. The speed of the internet might not be enough to stream 360-degree video without buffering. Fortunately, YouTube has their service activated in offline mode in Indonesia, so that users can download the videos and watch them without internet access.

## 1.4 Contributions

This research on IN360 contributes several features:

1. Building the community to support an ICT solution.
2. Application of story telling using 360-degree video for learning purpose.
3. Accessible career guidance for children living in remote and undeveloped areas in Indonesia.

## 1.5 Thesis Structure

**CHAPTER 1 (Introduction):** explains current conditions and challenges of education in Indonesia. This chapter also clarifies the research question and the field of this study.

**CHAPTER 2 (Related Works):** presents the literature review on career guidance, storytelling in 360-degree-video and the role of community to create a sustainable ICT solution. Some related works are also investigated for comparison.

**CHAPTER 3 (Methodology):** describes the design of the project. It also mentions the stakeholders, the challenges and the design of community building.

**CHAPTER 4 (Action):** elucidates the actions and carries out the result of each action.

**CHAPTER 5 (Result):** analyzes the result and presents a guideline for workshop replication.

**CHAPTER 6 (Conclusion):** concludes the whole research and indicates potential development in the future.

# Chapter 2

## Literature Review

### 2.1 Career Guidance and Learning Motivation

Career education is a system where education and broader community work together to enable someone to acquire hard-skill and soft-skill to be utilized in leading a successful working life [13]. However, the definition of career itself cannot be limited to work only, but rather a combined lifelong experience including education itself. Career education or education in general should be able to help individuals to understand their interest and develop abilities to later have the provisions in making decisions and taking action on their future [12].

Career education has been approached differently across the years and locations. For example, K-12 guidance for career education integration in 1980 [7] stated that to be able to make decision, one individual should attain self-understanding, work world understanding and lastly, exploration, planning and preparation. These competencies were distributed throughout kindergarten until grade 12. In career exploration part, K-6 grade students should start to develop awareness regarding the information of the work world and realize that job competency will require certain educational degrees or skills.

Another example is the Australian blueprint for career development in 2010. The blueprint proposed a framework of eleven competencies that are divided into three areas [19]. The area of competencies are personal management, learning and work exploration and career building. A review on career education in New Zealand discusses guidance in the career decision process which includes self-exploration, occupation exploration, developing training plans and securing a job [12]. Despite the shift in career education throughout the century and differences in method, identifying self and finding self-interest continue to be the most crucial aspects in the early stage of the development.

While career education is a system that helps someone to achieve certain goal, the person also needs the motivation to go further in obtaining certain knowl-

edge and capability. A study on students academic tenacity by Carol S. Dwek suggest that providing students with long-term purposes, especially those with social impact, improve students' academic tenacity and cultivates a motivation for students to accomplish their learning goals [10]. A sense of purpose gives the students more reason to stay in the school or learning institution and continue their study.

In this case, providing a set of examples of successful people who have experienced the process of achieving certain career paths is suitable in early stages of career education. Career guidance, as a service provided for career education, can provide the information for children to explore themselves. This exploration part will help children expand their view on the importance of education and relate their studies to realistic plans in achieving their long-term goal.

## 2.2 Immersive Storytelling in 360-Degree Video

Story telling is the oldest profile of education and its development into digital form is important both as a process as well as a product [8]. Storytelling reflects culture and social status, and as a product it helps people feel closer and connected to each other. The definition of storytelling in the beginning was specific to the oral activity of telling stories, but it is now used to refer to wider narrative story delivery using various technique and medium.

To deliver the story, it is important to choose a medium that will keep the interest of the target user. In asynchronous distance learning, there is a lack of direct physical interaction. Video as a combination of visual and audio is already a strong candidate to deliver information over distance. Video in digital form can also be kept and replayed continuously for repetition of information. Moreover, by eliminating the presence of the square medium by using 360-degree-videos, the story will be delivered in a more engaging way.

360-degree-videos, or spherical videos, are an immersive video where views in every direction are taken at the same time, enabling viewers to control the viewing direction like a panorama [15]. Researches on engagement in 360-degree-video or immersive media have been conducted, and based on the experiment by StoryUp, 360-degree-video beats fixed frame videos in terms of views, cost per impression (CPM) and click through rate (CTR) [11]. An experiment by Anne Schlosser on the effect of interactive media to peoples' memory of a product, showed that participants who used the interactive site would have better recall of the features



of the promoted product than those who used the static website [9]. 360 video cannot be classified as interactive media, but it does attract user's attention a lot more than conventional video media.

## 2.3 Community to Support ICT Solution

Indonesia is an archipelago country. Therefore, there is always a gap in the development and distribution of infrastructure and human resources. Utilization of Information and Communication Technology (ICT) will eliminate the barrier of distance between educators and learners. Appropriate use of new media in learning environments can also expand the level of engagement, accessibility, social support and expanding diversity to support classroom activity [14]. Jaka Warsihna wrote in his journal that even though small-scaled, ICT projects have been utilized in remote, undeveloped and frontier areas in Indonesia. He stated that sustainable ICT solution should include all stakeholders to contribute and participate in the solution [20].

As working culture and environment is always changing, to bridge the academic environment to working world, a collaboration with experts in the field is important to help children to be resilient and understand the relationship between academic learning and their future career. By connecting the experts and students, as well as other parties in their environment, the digital platform that is being proposed plans to empower the community surrounding the students and ensure the sustainability of the model.

## 2.4 Related Works

IN360 tries to provide a sustainable career guidance that is accessible and engaging for children in remote and undeveloped area in Indonesia. There are several activities in the field that can be associated as career guidance service for children even though they are not a part of a comprehensive career education system. Two services that will be discussed are Island Hopper's inspiration class activity and Kidzania.

### 2.4.1 Island Hopper

A community called Kelas Inspirasi (KI) or Class of Inspiration was initiated in 2012 by the alumni of Teach for Indonesia and several experts [5]. Experts from various field of jobs like engineering, journalism, health care, education, government, marketing, design and many other fields conducted an informal one-day profession sharing session in primary schools that are located in remote or undeveloped areas around their town (Figure 2.1). In 2014, the sister organization of KI called Island Hopper was established with a similar goal and approach, but focusing more on small islands areas to shorten the gap of education between big and small islands.



Figure 2.1: Activity of Island Hopper *source: <http://jelajahpulauid.org/>*

Over the last 3 years, Island Hopper has conducted 4 visits to Seribu Islands area. This activity tries to reach children with less access to information and help them find their learning purpose. Gradually the community also encourage active involvement of teachers in school during the activity. Unfortunately, only a few of them contribute full attention to the activity. This activity also require a huge physical presence of the experts in front of students. Schedule and physical condition of the experts sometimes do not allow them to visit the school. Limitation in transportation services and weather could also get in the way of the activity.

### 2.4.2 Kidzania

Another form of informal career guidance can be seen in Kidzania. Kidzania offers a service that replicates a miniature city in kids' scale with various facilities and roles in it. The company has expanded their service over 22 venues in 18 countries all over the world; one of them is operating in Jakarta, Indonesia [6]. Kidzania Jakarta has a lot of collaboration with companies that enable them to provide more than 100 engaging job simulation for children.

Kidzania is able to provide an engaging job experience to the kids, and their business model enables them to run the business sustainably. However, as it is only available in a permanent building in Jakarta, the reachability of this service is even more limited than Island Hopper's activity. Moreover, as Kidzania is a paid service that targets children from middle-income children, it is also only accessible to those who can afford it. The service costs IDR 150,000 to IDR 250,000 (around USD 15 - USD 25) for each child for a 5 hour session.

# Chapter 3

## Designing the Community

This research aims to answer the question: *"How to create a sustainable career guidance community for elementary students in remote, undeveloped and frontier area in Indonesia?"*

Along with the question, this chapter explains the concept of IN360 as a sustainable career guidance service for children in remote and undeveloped areas. There are various components of the project, but this research is focusing on the role of each stakeholder and their contribution to the project. The interaction between stakeholders in the community will be described.

For each stakeholder to be able to contribute to the project, several activities were designed and implemented to tackle each of their challenges. The design of the activities are described in detail along with the evaluation method used to assess the result of the activity and changes from every stakeholders.

### 3.1 Concept

IN360 is a project that aims to change preconceived notions of children living in remote and undeveloped areas of their future career by delivering career guidance in 360-degree-video format. 360-degree-video is a spherical video that enable user to control the view in 360-degree direction like a panorama. This approach was chosen as a medium to immerse children in the presence of the experts as well as delivering office tour experience if viewed with Cardboard or VR viewer. With the immersivity, the children are expected to be interested in the content and have more understanding of the information given.

### 3.1.1 Stakeholders

For this solution to work sustainably, involvement from all stakeholders is needed. The stakeholders included in the community are:

- *Experts.* People who have a minimum of 2 years experience in the field that requires higher education or certain level of skill mastery. The experts should be willing to share their working life and the journey towards the career path they are living. In the process, experts and video creators, which will be mentioned later, should be considerate towards various working ethic and company secret that should not be recklessly made public.
- *Video Creators.* Video Creators can be anyone who wants to contribute to this project and is expected to have basic video production skill. However in this research, the role is played undergraduate students. The university students should commit to create at least one video content. Not only will they contribute to the future of children in remote and undeveloped areas, but they also gain knowledge about the profession they work in, and of 360-degree video production.
- *Guardians.* Supervision from the guardians of the targeted children is important. In most cases parents at home and teachers at school are those who spend a lot of time with the children and have a big influence in deciding and planning their future.
- *Children.* IN360 is projected for kids of elementary school age. In this research, they are limited to age 9-12 years, or similar to the age of 4th-6th grade elementary school students.

### 3.1.2 The Components

There are three components in delivering the career guidance: (1) content creation, (2) data collection/organization and (3) content delivery. While the main stakeholders are the primary school students and the experts, other parties in the two remaining stakeholders are also encouraged to contribute and interact with each other in the scheme as illustrated in Figure 3.1.

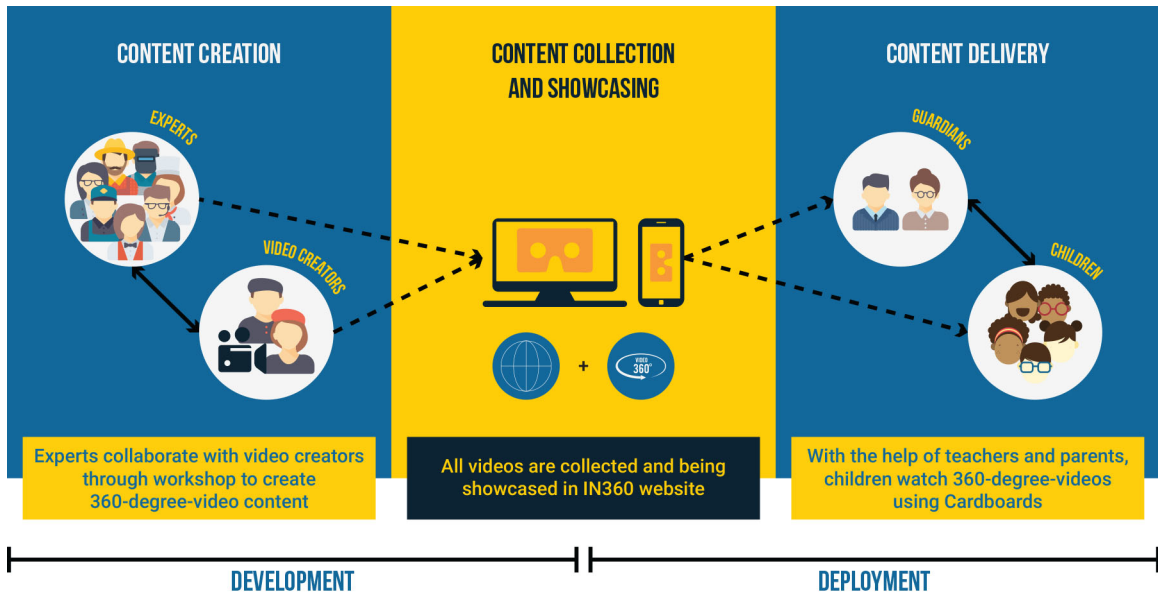


Figure 3.1: Component of IN360

## CONTENT CREATION

From the interview with 17 experts from Island Hopper, they agree that a medium like video is the most effective to deliver information to the kids. They testified that children pay more attention to visual presentation even in face-to-face activity. Given IN360 solution, they are also eager to create the video content. However, not every one of them has a video production background. They need help from video creators to create the content.

As creating video content can take a lot of time, moreover with experts' busy schedules, they need help from video creators to create the career guidance video. In this research, university students are invited to be a part of the community and take the role of video creator. Even for university students who study video production, 360-degree-video is still very new and very few of those who already have the basic knowledge of video production have experience in 360-degree-video production. Thus, a series of workshop is designed for them to be able to help expert in creating the video content.

### *Video Content*

Combining the inspiration session by Island Hopper and the career development competencies which should be learned at elementary school level, this is the in-

formation that should be arranged in the video:

- *Expert Introduction.* Introduction of the expert and simple description of the job he/she has.
- *Working environment.* Shows working place, colleagues and the way the expert interacts with them. Demonstration of how things are being done is also included.
- *Working value.* The importance and the role of this job in the society are defined.
- *Career requirement.* Briefly disclose the skill required for the job and, if necessary, the academic or mastery path needed to achieve the career.

### ***Video Elements***

While it is important for kids to understand the content of the video, it is also crucial to keep their interest during the experience. This is a list of elements in the video that can be utilized to deliver the information and maintain the enthusiasm of the children in watching the video:

- **Story Arc**  
The most common story arc in story telling consist of introduction, several action stages, climax and anti-climax or resolution. The first 15 seconds of the video is very important as it determines whether someone continues to watch the video or not.
- **Visual**  
Intriguing and descriptive visual choices can affect the flow of the video. For storytelling purpose, exploration and modification of the real environment is plausible.
- **Narration/Dialogue**  
The unique characteristic of 360-degree-video is in the user exploration in the video. There is a high possibility that users pay attention to things other than the main focus of the story. In such cases, narration or dialogue act as consistent information sources in the video. Sensible combination of visual and audio helps users to understand and remember the video content.

- **Point of View**  
In 360-degree environment, the point of view of the camera is the point of view of the user. This should be taken into consideration when setting up the camera.
- **Duration**  
The video duration should not be so long as to make the user feel bored, but cannot be too fast so to let the user have some time for exploration. Recognizing the two conditions, the assumed appropriate duration of the video is between 5 - 10 minutes.
- **Gimmick**  
Experimenting with the environment, video speed, scene changes, tools and other element of the video every once in a while is encouraged. These gimmicks can maintain user interest in the video.

## **DATA COLLECTION**

All videos created from the workshop will be collected and showcased in the IN360 website for the children to explore. As the video will be enjoyed using Google Cardboard, the website should be mainly developed as a mobile platform with a desktop site as its secondary access.

## **CONTENT DELIVERY**

Children should be able to explore the information by themselves as each student will have different interests. However, parents and teachers should also be involved in the exploration process to support them in decision making later in the future.

Even though 360-degree-video can be enjoyed in flat surface, experiencing the video in Google Cardboard is the main mechanism to enable students reach the maximum immersion of the video. Google Cardboard is the only VR equipment that is accessible for kids under 12 years old. However, for safety reason, it can only be used by them under the guidance of adults. With the help of teachers and parents as the guardians of the children, they can explore the possible career options for them together.



## 3.2 Community-building Design

To build the community, there are several obstacles that were faced on each component of the solution. Three activities were taken into actions to tackle three challenges. Those challenges are (1) content creation, (2) educational value in the video and (3) the ownership of stakeholders towards the project. As mentioned before, even for someone who already has video production skills, 360-degree-video production is still uncommon for most people. Second, the video created should be understood and efficiently enjoyed by the children. And lastly, continuous support from guardians to accompany kids in their exploration until the decision making stage is necessary.

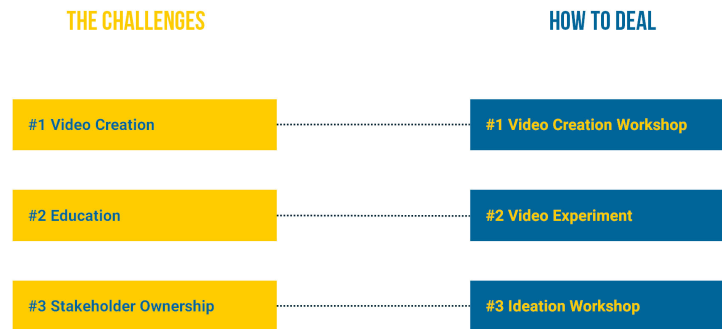


Figure 3.2: The Challenges

Each of the three challenges were analyzed and approached with specific action. A 360-degree video production workshop for video creators, video experiment with target users and ideation workshop with local stakeholders in the island were conducted. The goal, design, action plan and evaluation method for each action are explained below.

### 3.2.1 Video Creation

A workshop was designed to help video creators match the required level of knowledge and experience in 360-degree video production. By the end of the workshop,

the participants are expected to have final products of career guidance in the form of 360-degree video and sufficient knowledge to repeat the video production later in the future.

This workshop is also a part of community building method to invite many people to learn about 360-degree videos as well as contribute to society by providing a career guidance video. Target participants are undergraduate students who relatively have more spare time than experts. Moreover, undergraduate students have more flexibility in learning something new and passion to contribute to society.

## STRUCTURE OF THE WORKSHOP



Figure 3.3: 360-degree Video Production Workshop Structure

For participants to be able to create career guidance video in 360-degree video format, the workshop is structured into 4 learning objectives. There are (1) empathy building, (2) story creation, (3) video production and (4) post production. The empathy building session is dedicated to cultivate their empathy towards the problem IN360 is trying to solve. After that, the workshop continues to basic video production practice that is specialized for 360-degree video. As seen in figure 3.3, each session consist of 3 learning stages. Empathy is delivered through introduction, investigation and sharing. The other three sessions consist of introduction, practice and feedback time from peer participants. Below is a more detailed explanation of the learning objectives.

1. *Build Empathy.* Before working on the video, it is important for the participants to understand the purpose of this project and relate to the condition of children living in rural areas. Introduction of the project, sharing session from former Island Hopper volunteer, exposure to video of children in rural area and on-line investigation are presented in the workshop.
2. *Story Creation.* Research and story writing skills are the important competencies needed to create a story. Participants practiced research skill from literature review, interview and observation in the workshop and translated the data gathered into an interesting story. As experts are not included in the workshop, participants have freedom to choose the profession and the expert they want to introduce to the children by themselves. They have to contact and find more about the expert they choose outside of the workshop.
3. *Video production.* Compare to the conventional video production, creating storyboard for 360-degree video can be a challenge. Thus, experiencing the 360-degree video environment is also included in this part of the workshop. Before doing the actual video shoot, a hands-on practice of setting up the camera and introduction to lighting and audio equipment, as well as directing tips in 360-degree-environment are organized. The real video production with actual expert and their working place are organized by participants separately.
4. *Post-production.* To have final video ready, this part of the workshop will give participants the time to edit their video, add sound and music and, if needed, narration or voice over.

## EQUIPMENT

Several tools were used to support the course.

- 360-degree Video Camera (Ricoh Theta S).  
There are various 360-degree Video camera in the market. Ricoh Theta S is one of the easiest cameras to be operated even by amateurs. The quality of the video, Full-HD, is not really good for 360-degree video, but better compare to the earlier generation of Ricoh 360-degree video camera Theta m150. The camera provided in the workshop are also rented to the participants for their field production, one per group, for easier production planning.



Figure 3.4: Left: Ricoh Theta S; Right: Google Cardboard

- Smartphone.  
For easier control of the camera and directing purpose, Ricoh released a free mobile application for Theta S camera for iOS and Android. For this reason, participants have to bring their own mobile phone to be connected with the camera they are using in the real production.
- Google Cardboard.  
Google Cardboard is a 360-degree video viewer created by Google. The viewer is designer so that it can be replicated by anyone using plain cardboard and 2 magnifying glasses. The template of the design is available on-line and the final product is also sold in the market for IDR 20,000 - IDR 200,000 (around USD 2 - USD 20). Google Cardboards are used in the workshop to let the video creator experience the environment themselves. The experience is important to help them understand the differences of 2D and 360-degree video.
- Computer.  
A personal computer or a computer laboratory is needed for video production and post-production.
- Ricoh Desktop Application.  
A desktop application for Theta S is available for Windows and MacOS to convert the raw video from Ricoh Theta S into editable format.

- Adobe Premiere Pro CC.

Several 360-degree video editing software are available. However in this workshop, Adobe Premiere Pro CC is used. The software itself is not available for free, but the trial version lasts for 30 days. Additionally, academic institutes like universities usually provide a computer laboratory with this software installed in the computers.

## WORKSHOP ASSESSMENT

To evaluate the workshop, a real-time observation and video recording were done during the preparation and the workshop. Discussion with participants was also conducted after each session to have their opinion regarding the program. The topics used for observation were:

- *Recruitment.* Recruitment and group distribution are investigated. The reasoning of participations are obtained by survey and discussion with participants.
- *Program.* While the learning objectives are mostly the same, the learning distribution are customized according to the participants and time. Challenges and improvements in learning materials are explained.
- *Output.* The video result from the workshop will be described and evaluated based on the content and the elements in the video.

### 3.2.2 Education

To evaluate the content of the video, an experiment with targeted children was directed in Pramuka Islands. The result of the experiment would be analyzed to measure the impact to children and improve future video production.

## EXPERIMENTAL SETUP

Participants were chosen from among 4th-6th grade students of Panggang 02 Pagi Elementary School. The students picked 2 videos of their choice by looking at the thumbnail and title of the videos. Each of them was observed while watching the videos. After every video, they were asked to answer some interview questions regarding their watching experience. The whole experiment was recorded with video camera for further observation.

## VIDEO ASSESSMENT

The main method for evaluation was interviews with the students. The questions asked were around the topic of (1) immersion in the video, (2) knowledge obtained from the video, (3) their curiosity and tendency in choosing the video to watch and (4) the change of mindset after watching the video.

### 3.2.3 Stakeholder Ownership

Often ICT solutions are not effectively utilized by the target users because they do not understand how to use the solution or the solution was not created based on their needs. To increase the sense of ownership towards IN360 solution, especially for local stakeholders, an idea-generating activity was conducted to facilitate all stakeholders to contribute their ideas. This idea-generating activity was packaged in the form of a workshop. This workshop is also a method to build partnership with the local stakeholders.

This workshop is a collaboration with other research that tries to explore learning motivation of people in Pramuka Island through idea-generating activity. The design of the workshop is not a part of this research on its own but will be explained briefly in the workshop design section below.

## PARTICIPANTS

The participants consist of:

- Children
- Teachers
- Parents
- Video Creators

The same number of representatives of each category are distributed into groups. So one group must consist of the same number of children, teacher, parents and video creators. The members are organized so the children are not working with their own parents.

## WORKSHOP DESIGN

The workshop consists of ice-breaking, Introduction of IN360 project and video try-out, 3 parts of ideation sessions, discussions and skits as the final presentation of their idea.

The workshop involves various stakeholders from different age range and backgrounds. Ice-breaking is expected to help everyone have a more relaxed workshop process from the beginning. The participants are also given the chance to know about IN360 project and experience 360-degree-video. The main ideation process consist of three topics, which are:

1. What are the things that can improve learning motivation?
2. How would you like ICT to help learning activity?
3. What is the most interesting thing of your school/home/playground environment?

The last part of the workshop is discussion on how they are going to apply IN360 solution in their school/house/playground. The result of the discussion is being presented in a form of a skit.

### **WORKSHOP ASSESSMENT**

Qualitative and quantitative evaluation were used in this workshop. Questionnaire and ideation result were collected after the workshop. Feedback from facilitator and all participants was also part of the evaluation method.

# Chapter 4

## Actions

### 4.1 Video Creation Workshop

360-degree video production workshop was arranged to enable video creators in helping experts create video content about their profession. At the same time, the workshop also attracted people in joining the project as video creator. By the end of the workshop, participants were expected to have one 360-degree video product and obtained the knowledge to create another videos in the future.

Two workshops were conducted based on collaboration assembled between IN360 with two higher education institutions. They are Visual Communication Design department of Bandung Institute of Technology in Indonesia and Policy Management department of Keio University, Japan.

#### 4.1.1 Workshop ITB

The workshop was implemented in two days within a week's distance. As stated in figure 4.1, the four learning objectives mentioned on Chapter 3 were distributed in 3-1 combination. Empathy, Story Creation and Video Production were delivered on the first day and Post-Production was kept for the second day. In between the workshop, the participants were provided a week gap to do interview and shooting in the actual field with the expert of their choice.

##### *Empathy Building*

To indulge the empathy of participants towards the goal of IN360, the introduction of the project and the purpose of the workshop were explained. The activity continued with a sharing session from an Island Hopper volunteer regarding her inspiration session in Seribu Islands. Lastly, the participants had some time to explore more the general condition of education in remote areas in Indonesia.



Table 4.1: ITB Workshop Program

	Date	Duration	Knowledge
Day 1	August 27th, 2016	4 hours	Empathy building Story creation Video production
	Aug 28th - Sep 2nd, 2016	not specified	Real field experience
Day 2	September 3rd, 2016	4 hours	Post-production

### ***Story Creation***

Each group picked one profession they might want to introduce to the target user and did some on-line-research about it before generating an imaginative character along with his/her history and working life. The story was written on a profile template and transformed into a script as the ground for their storytelling video. It was then illustrated into a one scene 360-degree-video storyboard.

### ***Video Production***

After learning the technical terms and use of the camera, the participants were given some free time to explore it by themselves according to the requirement of their story. Participants were encouraged to install Theta S mobile and desktop application before the workshop, however the installer was also distributed during the workshop.

### ***Field Experience***

Each group applied the story creation and video production knowledge they obtained from the workshop with the expert of their choice. The profession could be different from what they chose in the workshop. They did some research on the profession first before planned the production with the expert. After everything was scheduled, RAW videos were recorded, converted into editable format and ready to be brought to the second day of the workshop.

### ***Post-Production***

On the second day of workshop, participants brought the converted video they shot in the field. They were given time to learn the basic editing skill and some important notes on 360-degree-video editing before working on two iteration of video editing. After the first editing session, each group presented their video to each other and received feedback for improvement. By the end of the workshop, the final videos were showcased once again to the class.

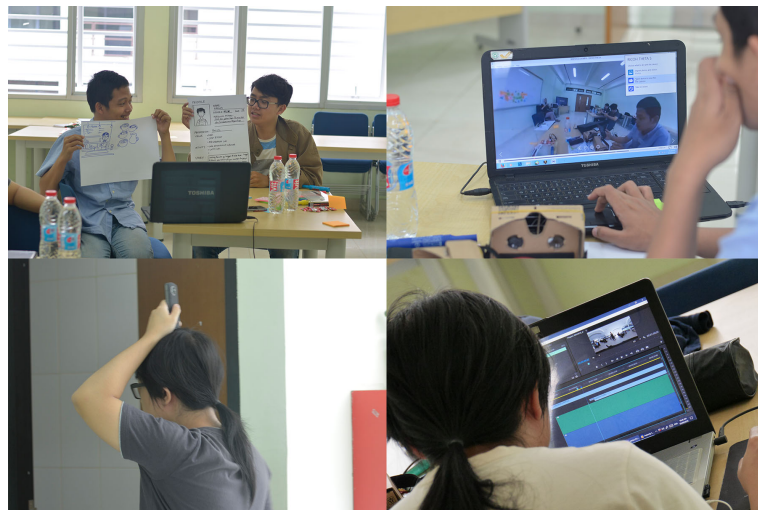


Figure 4.1: Workshop Activity in ITB

## RECRUITMENT

The first workshop was a collaboration with Visual Communication and Design department of Bandung Institute of Technology (ITB), Indonesia. Six multimedia students with knowledge in basic video production participated and were divided into two team. The original motivation of the students joining the workshop was to have the chance to explore 360-degree-video production. Later on they found out the purpose of the workshop in the empathy building session.

## PROGRAM

With initial video production experience, the participants was able to absorb the enormous information given on the first day of the workshop. Even so, they had some challenges in creating their videos as well.

As they learned about the production technique, they realized the challenges in 360-degree video production. Utilizing the 360-degree-video environment itself and translating difficult words in the working world into children's vocabulary are the two challenges they came across. One group had slightly better exploration of the 360-degree-environment because one member of the group already had experience in producing 360-degree-video. With more example and more practice, they believed that they could create better video in the future.

The time provided for research and production was only one week so the

production was a little bit rushed. Fortunately, the participants were final year students who had internship experience in the gap between their third and fourth year. The connection they had from the internship helped them to contact and conduct video shooting in the working place.

## OUTPUT

### 1. Job: Game Illustrator (Dur: 5 minutes 1 second)

The video started by the experts introducing himself, his job and the company he was working at. After showing of his working place, he explained how illustration for game was done. The explanation started from the brief, the ideation and the drawing part. While working, he also explained about his motivation and study to become a game illustrator.

### 2. Job: Video Producer (Dur: 3 minutes 54 second)

Without specific main character, the description of profession, working place tour, working mechanism, colleague and role in the society were clearly mentioned in the video. The creator also included some gimmicks like playing with soap bubble and using small megaphone to add funny comments. However, the motivation and learning path to become a video producer was not included.



Figure 4.2: Screen-cap of ITB Workshop Output

### 4.1.2 Workshop SFC

The duration of this workshop per day was a lot shorter than the first workshop in ITB. The workshop was carried out in a total of 6 days conducted every 2

weeks. Each learning objective was distributed on each day, except for post-production which was divided into two days of video editing and one additional day for translation and voice over.

Table 4.2: SFC Workshop Program

	Date	Duration	Knowledge
Day 1	September 27th, 2016	60 minutes	Empathy
Day 2	October 11th, 2016	90 minutes	Story creation
	October 12th - 24th, 2016	not specified	Field research
Day 3	October 25th, 2016	120 minutes	Video production
	Oct 26th - Nov 7th, 2016	not specified	Field production
Day 4	November 8th, 2016	90 minutes	Post-production 1
Day 5	November 22nd, 2016	90 minutes	Post-production 2
Day 6	December 6th, 2016	90 minutes	Translation

### ***Empathy Building***

To provoke motivation of the participants, the empathy session was conducted before the actual workshop. 25 students were presented in the presentation and given the introduction of the project as well as a sharing session from an Island Hopper volunteer. The investigation part was adjusted into Q&A from the students. 11 interested students filled in survey about video production experience, Indonesian language skill and motivation in joining the workshop. Most of the participants have had initial interest in Indonesia and wanted to help the project in supporting education for children in Indonesia.

### ***Story Creation***

To have a more in depth experience of research process, the topic for story creation practice in the workshop was shifted to "The Life of Foreigner in Japan". 3 foreign students were invited to the workshop to be interviewed by every group, one each. A guideline to help participants to generate questions were given. They chose one topic they want to share to the class, created a script about it and performed a skit in front of everyone.

### ***Field Research***

In between the session, each group visited their preferred experts and explored their working space to learn about the profession in detail. The result of their research was generated into the storyline and script.

### *Video Production*

The script they prepared was interpreted into a 360-degree video storyboard. Each group was given a Cardboard for them to explore existing 360-degree video as references in drawing the storyboard. Participants also learned about the technical skill to produce 360-degree video. The shooting practice was simulated according to the storyboard of each group.

### *Field Production*

Each group came back to the expert they visited and scheduled a shooting day in their working place. RAW videos were recorded, converted into editable format and ready to be brought to the next day of the workshop.

### *Post-Production*

Originally, the post-production was planned to be conducted on one day. However, the participants did a lot of trial and error on the first day, so they needed more time to get used to the editing software.

### *Translation*

The participants roughly translated all Japanese narration and dialogue into Indonesian. Facilitators helped to interpret the translation to be more natural for local kids in Indonesia.



Figure 4.3: Workshop Activity in SFC, Keio University

## RECRUITMENT

The workshop collaborated with a laboratory in the Policy Management department of Keio University which studies about Indonesian culture. Those who were interested to join the workshop had to fill in a pre-survey to know about their video production and Indonesian language skill. 10 Japanese students joined the workshop and separated into 3 groups with similar distribution of those who had video production experience and fair Indonesian language skill.

All participants were Japanese so their academic supervisor, who could speak Japanese, Indonesian and English, became the interpreter for the workshop. The workshop was delivered in their second languages which are Indonesian and English.

## PROGRAM

Some changes and improvements were done in the second workshop. The most significant changes can be seen in recruitment process, research skill practice and schedule distribution.

The empathy building session was conducted before the participants were finalized. Because the cause of this project could be too foreign for Japanese students, an introduction and sharing session from former volunteers was conducted to convince them in joining the workshop and become a part of video creator volunteers. Out of 25 Japanese undergraduate students who came to the empathy building session, 10 students registered through the pre-survey.

In the previous workshop, only online research skill was presented in the story creation session. Even though experts were still not invited to the workshop, some foreign students were presented for participants to practice information and data gathering skills. The topic of research is different from the video they were going to create, but they were armed with the ability to gather data and transform them into stories.

Unlike the previous workshop, where most of the learning objectives were packed on the first day, they were divided into maximum one learning objective per day on the second one. The gap between each day was extended into two weeks to give participants more time to explore the homework and adjust their schedule.

The biggest challenge felt on the second workshop was the video editing part. As the participants were not used to the software, they needed more time to

learn the environment and construct the video in accordance. An extra session was conducted with extra facilitators for each group so they could be assisted in finishing their video.

## OUTPUT

### 1. Job: Venture Company (Dur: 8 minutes 4 second)

The video about this venture company was taken from the university students point of view who brought the user to visit their role model. The working environment was briefly shown in the beginning and the video continued to interview session in a restaurant. The interview explained about the leadership skill the the expert obtained from her university period. The expert also explained her way to keep her learning and working motivation.



Figure 4.4: Screen-cap of SFC Workshop Output

### 2. Job: Restaurant Owner (Dur: 5 minutes 40 second)

The video paid visit to a traditional *unagi* or eel restaurant in Tokyo, Japan. It showed the interior of the restaurant and the cooking process in the kitchen. After that, the owner shared his story in dual language, Indonesian and Japanese. His story consisted of the long history of his family restaurant and his motivation to continue the business.

### 3. Job: Professor (Dur: 7 minutes 38 second)

The video introduce a female professor in Japan who does research about Muslim in Indonesia. It shows the 3 different universities she is teaching at. Her motivation and career path was explained in interview mode. The video was closed by a motivational comment from the expert in Indonesian language.

## 4.2 Video Experiment

### 4.2.1 Preliminary Test

Before experimentation, preliminary interviews on children's self-awareness were conducted in Panggang 02 Pagi Elementary School. 10 students from 4th-6th grade participated in the interviews. The interview questions were as follows:

1. What is your future career goal?
2. Do you know what this profession does? Please elaborate.
3. Why do you want to be a *profession*? What do you like about this profession?
4. How will you achieve your goal to be a *profession*? Please explain in detail.
5. What do you want to do as a *profession*?

The result of the interview showed that all of the students already had something in mind for their future career. The professions mentioned were those they probably see often in real life or text books. However, they found it difficult to answer when they were asked about how they are going to achieve their dream and what they are going to do once they achieved it. Most of the answers showed that they didn't really understand the specification and life path of the job.

### 4.2.2 Main Experiment

The goal of the experiment was to introduce the project to children in remote and undeveloped area, shows them variety of jobs in the world, evaluate the video from user point of view and foundation for future video production.

The experiment was conducted with 11 primary school students (6 girls, 5 boys) aged 9 - 12 years old was conducted in Panggang 02 Pagi Elementary School, Pramuka Island, Indonesia (Figure 4.5). With the help of three interviewer and three video recorder, 3 students participated in the experiment each time. The seating layout was organized so that the students sat back to back in far distance from each other. This way, they could not communicate or hear each others answer.

With one mobile phone, one headphone and one Google Cardboard for each student, they were guided to pick 2 videos from 5 option available. First, they picked one video and were interviewed on the immersion and knowledge topic. Then, they chose the next video they had interest in and were interviewed on immersion and knowledge topic along with the addition of interest and mindset



topic. The interview questions are as listed below.



Figure 4.5: Video Experiment in Panggang 02 Pagi Elementary School

*Participant chose first video*

1. Why did you choose this video?

***Immersion***

1. How did you enjoy watching the video?
2. Which part of the video was interesting for you?
3. Did you ever feel distracted while watching the video? What distracted you?
4. Which part of the video did you think is too short/too long?

***Knowledge***

1. What did you know about the profession beforehand?
2. What were the new information you get about the profession?
3. Please explain the story you just watch in the video
4. What did the expert do to achieve those profession?

*Participant chose second video*

1. Why did you choose this video?

***Immersion***(repeat the same questions)

***Knowledge***(repeat the same questions)

***Interest***

1. What do you want to know more about these professions?
2. Who do you want to share these videos with?

3. Is there any other profession you want to know more?
4. Out of the two videos, which one did you find more interesting?

### ***Mindset***

1. Do you think you can become like the professional in the video?
2. What should you do to become like them?

## **FINDINGS**

### ***Immersion***

All of the students had fun exploring the video in 360-degree environment. They spun their head back and forth to see the whole working place while listening to the explanation. Unfortunately, some technical factors from the cardboard and volume sometimes distracted their focus on the video.

### ***Knowledge***

The students mostly chose the video based on the profession on which they did not have any information before. Thus, the video gave them a lot of new information. Some of them also chose a job whose name is familiar to them, such as 'professor'. It turned out, the information they had about the profession was generalized from a scientist who works in a laboratory. The video gave them new insight on a professor whose research is about language and society.

### ***Interest***

From the five professions offered to the children, their interest is illustrated in table 4.3. 'Restaurant owner' and 'professor' were the two most favorite videos chosen on the first pick by the students, while 'venture company' was not chosen at all.

Table 4.3: Students' Video Interest

Video Title	Chosen	1st	2nd
Game Illustrator	4	1	3
Video Producer	2	-	2
Venture Company	-	-	-
Restaurant Owner	8	5	3
Professor	7	5	2

The most interesting part for most of the students was when the experts did their work. They wished the duration was longer because they wanted to know

more about how things are being done in the working world. Family and friends are the people they most wanted to share the video with.

### *Mindset*

After watching the video, 8 students thought that they can also become someone like them. The rest of them were still unsure if they had the capability to do so. Even so, they realized that there are different things to be learned depending on which career they chose. For example, to have a doctoral degree is important for 'professor' and practicing cooking skill is necessary for 'restaurant owner'.

## 4.3 Ideation Workshop

### ACTIVITY

30 participants were invited to this workshop. Participants included IN360 project stakeholders which consist of children, teachers, parents, and video creator. They were divided into 6 groups consisting of one child, one parent, one parent, one video creator from Japan, and one facilitator from Indonesia to support the communication.



Figure 4.6: Ideation Workshop with All Stakeholders

The children joining the workshop were taken from those who also participated in the video experiment. The group was arranged so that the children were not

sitting in the same group with their own parents. This seating arrangement was designed to let children feel more comfortable in pulling out their ideas.

The recruitment for teachers, parents and children are all arranged by the school, while the video creator and facilitator were recruited from the collaboration with the two universities that are Bandung Institute of Technology and Keio University.

## **FINDINGS**

From the questionnaire, 80% of the participants said that they could felt their involvement in IN360 project through this workshop. Teachers and parents understood the importance of ICT to support children's learning motivation and were willing to apply it. The school requested for one of the Google Cardboards to be kept by them so they could replicate the device by themselves. Most of the adults in the local community liked the activity and wanted it to be a continuous program for people in the island.

# Chapter 5

## Discussion

It is clarified in Chapter 1 that the objective of this research is to create a sustainable ICT-based career guidance solution with 360-degree-video as the medium to deliver the information. The question raised is "*How to create a sustainable career guidance community for elementary school level children in remote and undeveloped areas in Indonesia?*". To answer that research question, this chapter presents the analysis of the findings from all approaches organized to tackle challenges in the community.

### 5.1 Community Building Evaluation

A sustainable ICT product is manifested in the advocacy of all stakeholders in the solution. To build a community that supports the solution proposed by IN360, all of the challenges in the community are outlined and approached independently whilst integrated with other component in the solution.

As specified in Chapter 3, the challenges in the community are: (1) video production of career information content, (2) edutainment element of the video and (3) ensuring continuous support from the guardians. To approach the challenges respectively, the methods taken were: (1) content creation workshop, (2) video experiment and (3) ideation workshop.

#### 5.1.1 Content Creation Workshop

In content creation activity, undergraduate students were invited as video creators. The participation was voluntary, but commitment to finish the workshop is mandatory. Undergraduate students have the young characteristics of explorative and idealist individuals. The desire to try something new and contribute to the society are the two main motivations for them to participate. The collaboration

with undergraduate program was beneficial for both IN360, the program and the students themselves.

The program helped them to make contributions to the project. The participants learned not only from the workshop activity but also the field production. Some improvement in the material is necessary to equip them for the field production. Along with more iteration in production and exposure to 360-degree video, they were able to adapt to the 360-degree environment. They faced challenges in the learning process but finished their goal eventually.

### **5.1.2 Video Experiment**

The educational and amenity aspect of the videos created in the workshop were experimented with the targeted children. The interview result showed that the children enjoyed the video and were eager to watch more varied and in-depth videos. The short experiment also displayed initial changes in which the children started to find new information or break the misconception they had.

Nevertheless, more variety of professions along with improvement in the story telling, duration and quality of the visual-audio are necessary. Some technical issue happened during the experiment from the cardboard and video volume, resulting in distraction in enjoying the videos. The students also suggested that the working process can be shown in a more detailed and longer manner as they are curious about this part.

### **5.1.3 Ideation Workshop**

The closest stakeholder to the children and the one probably having the most influences and support towards their life decision are the guardians. In this case, the guardian can be teachers at school or parents at home. An ideation workshop involving the video creators, children and their guardians were organized in the local school. The workshop was designed for all stakeholders to spill out and hear each others ideas in contribution to IN360 project. From the questionnaire and feedback from the guardians, they thought that the solution is a good idea for them and were eager to apply the solution. They also felt their contribution to the project and understood the importance of it.

The workshop also acts as an initial collaboration between IN360 and local stakeholders. Follow up activity should be done in the future to create a bigger impact for the children.

## 5.2 Video Production Guideline

Involving the local community in the project may need different approaches place by place. The content creation however, can be replicated everywhere, especially with university students.

### Recruitment

Collaboration with universities is a valuable relationship that can have a mutual benefit for the project, the university and the undergraduate students. For university, this workshop can bridge the value of higher education to dedicate their knowledge and skill to the society. While the facility and the equipment in the university are necessary to ensure the performance of the workshop.

For undergraduate students, they can fulfill their youthful spirit by trying out something new while contributing to the community. Without reducing the opportunity for younger students, final year students who are going to meet with the working world are prioritized to participate in the workshop. Furthermore, if possible and necessary, the workshop can also be a part of class assignment and grant them extra point or credit.

### Program

#### Empathy (Suggested time: 60 minutes)

- Introduce the project and the purpose of the workshop, which is to create career information content in 360-degree-video.
- Watch short video about education and children in rural area to have a small insight about their condition and why this project is important.
- Sharing session from Island Hopper or Kelas Inspirasi volunteer about their experience explaining their own profession to the children.
- In group, do investigation about the professions that are available and not available in the targeted location. Choose one profession they might want to introduce to the children. (suggested number: 3-4 people per group)
- The groups do short presentation about their findings.

**Story Creation (Suggested time: 90 minutes)**

- Explain to the participant important research skill they should know.
- Each group practices research skill by doing on-line research about certain topic.
- Hand out a profile template using 5W1H method and explain how to use them. The template may vary depending on the topic.
- Do interview with guest facilitators as the subject of the topic who are assigned to each group.
- Explain that each group is going to pick one interesting sub topic from the research to be made into storyline and script. Hand out a storyline template for them to fill in. The script is going to be presented to the whole class in skit.
- Each group perform their skit.
- Announce the homework to do field research with expert of their choice. Distribute the templates of expert profile (based on video content guide) and storyline template and explain how to use them. Remind the participants to also book time for video shooting within the next 2-3 weeks with the expert.

**Video Production (Suggested time: 120 minutes)**

- Give 10-15 minutes for each group to review the result of their research and the script they created.
- Distributes 2-3 Google Cardboards to each group and let them try the device with their own smart-phone.
- Discuss the difference in 2D video and 360-degree-video.
- Hand out customized storyboard template for 360-degree-video and explain how to draw them.
- Each group transforms their script into storyboard.
- Explain video production step by step and the difference with 2D video production.



- Demonstrate the usage of the camera from shooting, connecting to mobile application, transfer to computer and converting the video into editable format.
- In group, hands on experience by pretending to shoot and act one of the scenes in the storyboard.
- Present to the class and analyze how it can be improved.
- Announce the homework to do field production with expert of their choice. The raw video should be converted and brought to the next session in converted format.

### **Post Production (Suggested time: 90(x2) minutes)**

- Explain the important measurement to 360-degree-video and demonstrate basic commands in the editing software.
- The group share their work for video editing, narration recording and translation if necessary.
- Videos are presented by each group in front of the class.

The session can be flexibly arranged into 2-4 days according to the available schedule from the university. Recommended gap between sessions is 2 weeks. By the end of each session, always provide 30 minutes of reflection session to review what they learn on that day.

### **Equipment**

The minimum equipment to be prepared for the workshop:

- Ricoh Theta S (1 per group)
- Smart-phone with Theta S mobile application (+earphone)
- Google Cardboard (2-3 per group)
- Computer with Theta desktop application
- Adobe Premiere Pro CC

## Video Guide

### Video Content

The video should contain:

- *Expert Introduction.* Introduction of the expert and simple description of the job he/she has.
- *Working environment.* Show demonstration of how things are being done, working place, colleagues and the way the expert interacts with them.
- *Working value.* The importance and the role of this job in the society are defined.
- *Career requirement.* Briefly disclose the skill required for the job and, if necessary, the academic or mastery path needed to achieve the career.

### Video Element

- Story Arc  
The most common story arc consists of introduction, action stages, climax and resolution. Good introduction is very important.
- Visual  
Wisely choose the best visualization to explain the story. Exploration and modification in the environment are allowed.
- Narration/Dialogue  
Narration and dialogue act as a focused information source in the video. Be sure to put clear audio with audible pronunciation.
- Point of View  
Be mindful that the point of view of the camera is the point of view of viewer. Unless necessary for storytelling purpose, setting up the camera in the height of children's eyes is the safest option.
- Duration  
The duration of the video is 7 - 10 minutes. The minimum limit is raised to give more space for exploration.

- **Gimmick**  
Gimmicks can keep the interest of viewer, but be mindful with the 360-degree-environment. Rapid scene changes or fast video speed may cause nausea.

### **Setting Up and Directing**

One unique characteristic of 360-degree-video production is that everything gets caught in the camera. This means lighting, audio equipment, staff and director. Thus, only use microphone and lighting that can be hidden in the set or just use default microphone and natural lighting. Unless the staffs and director can blend in the set, better do the directing using cue card or use technology that can be camouflaged in the set.

## **Facilitating**

### **Facilitator**

It is recommended for all facilitators to have experience in video production. Ideally there should be one main facilitator and one facilitator for each group.

### **Rehearsal**

Rehearsal is always helpful to anticipate the worst that could happen. Check out all of the devices before workshop and prepare the software installer for back-up.

# Chapter 6

## Conclusion

### 6.1 Conclusion

*"How to create a sustainable career guidance community for elementary school level children in remote and undeveloped areas in Indonesia?"* is the question this research tried to answer.

Individual approaches to the challenges faced by each role in the community were conducted. Three different challenges with three different approaches aimed to rise empathy and engage contribution. The content creation workshop conducted with undergraduate students succeeded in equipping them with the empathy and knowledge to do 360-degree-video production.

The videos created from the workshop were also well accepted by the children. They enjoyed the video and learned new things from them. Still, some improvement and more variety of video should be made in the future.

Additionally the ideation workshop acquired support from guardians towards the project. They embraced their involvement and contribution to the project by their demand for this project to continue.

Approaching all challenges individually helped each stakeholder to understand their role and learn how they can contribute to the project as one community. The videos created also showed initial impact on the children that should be followed up by a more comprehensive program in the future.

### 6.2 Future Work

There are still a lot of components in the project that have not been studied. Platform development and project deployment are two aspects that could be addressed.

First, to reach the local area from afar, a website is needed. What kind of

interaction can be performed in the platform is important in bridging all stakeholders, to achieve the ultimate goal of IN360 project to provide the children with a career guidance service. Security and validation to upload content to the platform should also be considered.

Second, the on-line platform is also another way to deploy the project. As of now, this research is still focusing on one local area. Application in more regions with different sorts of local community, geographical conditions and cultural customs can be the next step of this research. How the content can reach other regions and be supported by different communities is the initial step for deployment.

Career guidance as a service cannot stand by itself. A systematic career education is needed for the solution to actually take effect in the future. Recognition from the government and private sector towards the field of career education will play an important cue in changing the future of the children.

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# Appendix

## A Content Creation Workshop Result

### Participants' Feedback

- Di workshop hari ini baru belajar sedikit tentang 360-degree video. Nanti ketika produksi di lapangan pasti lebih banyak belajar.
- Salah satu tantangan buat saya ada di bahasa. Bagaimana cara mentranslate bahasa-bahasa sulit di dunia kerja ke dalam bahasa anak-anak.
- Jadi berpikir bagaimana cara mengatur set untuk membuat video 360-derajat.
- Kalau ada banyak contoh-contoh video sepertinya bisa lebih membantu.
- Setelah merekam langsung di lapangan, saya menyadari bahwa membuat script itu penting sekali.
- Melakukan interview dengan foreign students di Jepang, saya jadi belajar banyak tentang mereka.
- I really like the program. It really helped me to recall how to do research.
- Metode 5W1H membantu dalam interview, tapi saya jadi kesulitan mentransfernya ke dalam script.
- It's a nice and challenging experience to create story in such a short time.
- I made mistake by editing the video without converting first. But then I learned video editing twice so I know more now.
- It's challenging to create the video interesting for kids.
- Saya senang mendapat teman baru lewat workshop ini.
- Saya senang bisa membantu anak-anak di Indonesia.
- Bahasa Inggris dan Bahasa Indonesia saya tidak begitu bagus, jadi saya kesulitan menangkap keseluruhan materi. Tapi workshopnya menyenangkan.
- Rasanya puas ketika melihat videonya sudah jadi.



## Video Channel

Link to channel: [bit.ly/in360-ch](https://bit.ly/in360-ch)

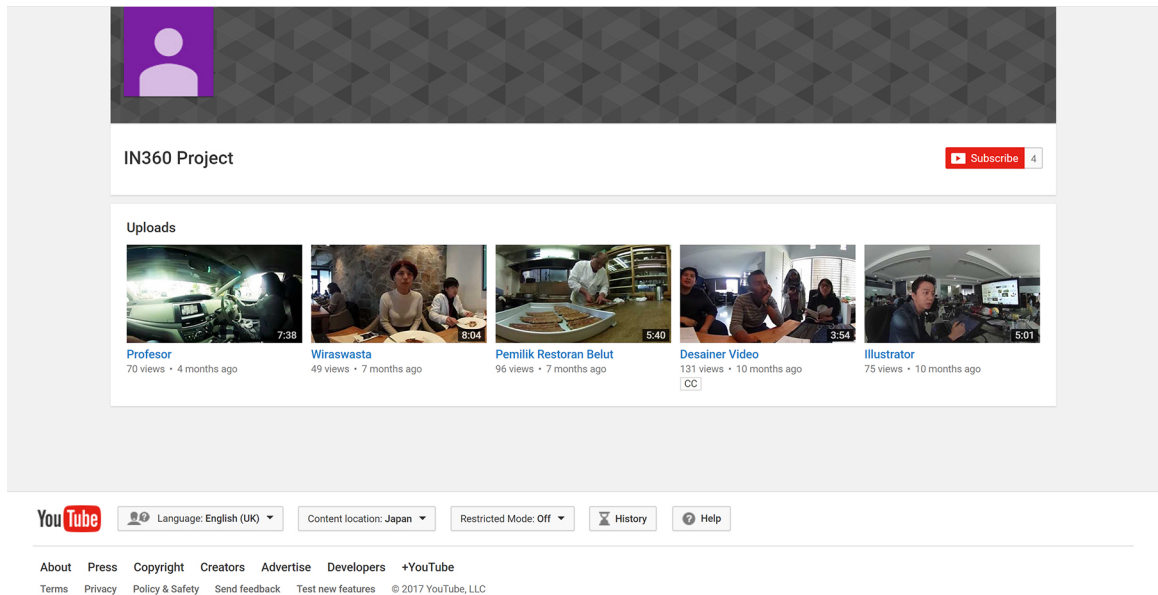


Figure A.1: IN360 YouTube Channel

## B Video Experiment Result

### Preliminary Interview

Q.1 What is your future career goal?

1. Guru
2. Tentara
3. Professor dan ustadz
4. Dokter
5. Pengusaha
6. Arsitek Bangunan
7. Polwan
8. Profesor
9. Profesor
10. Ustadzah

**Q.2 Do you know what this profession do? Please elaborate.**

1. Mengajarkan dan menjelaskan pelajaran
2. Menolong korban banjir, membawakan makanan ke papua
3. Mengajar anak-anak mengaji agar bisa tahu tentang agama Islam
4. Membantu orang yang sakit
5. Membuat baju
6. Membuat bangunan
7. Menangkap pencuri, mengatur jalan raya
8. Meneliti suatu sejarah dunia dan membuat benda yang unik
9. Menciptakan benda yang bermanfaat
10. Menasihati jikalau ada orang yang berbuat jahat kepada orang lain

**Q.3 Why do you want to be a/an ;profession;? What do you like about this profession?**

1. Supaya bisa mendidik anak-anak
2. Karena suka menembak dn suka menolong
3. Supaya bisa mengajarkan anak-anak dan memberikan mereka ilmu
4. Karena ingin membantu orang yang sakit
5. Membuat bisnis, suka bikin baju jadi ingin jadi pengusaha baju
6. Karena ingin membuat bangunan
7. Kata nenek saya cocoknya jadi Polwan
8. Karena bermanfaat untuk orang lain
9. Suka, karena bisa membuat benda
10. Karena mau ajarin anak-anak membaca Al-Quran dengan benar dan artinya

**Q.4 How will you achieve your goal to be a/an ;profession;? Please explain in detail.**

1. Belajar sungguh-sungguh
2. Menolong orang tua, menolong teman, dan kadang suka olahraga
3. Belajar, mengaji, dan membaca buku-buku tentang Islam
4. Belajar yang sungguh-sungguh
5. Belajar dengan giat
6. Belajar lebih giat
7. Harus bisa baris-berbaris
8. Belajar dengan sungguh-sungguh, berprestasi dan wawasannya harus tinggi

9. Belajar yang rajin, harus pintar
10. Belajar, berdoa, dan mengetahui lebih dalam apa itu agama

**Q.5 What do you want to do as a/an ;profession;?**

1. Mengajarkan dan menjelaskan pelajaran, juga mendidik anak-anak
2. -
3. Banggakan orang tua
4. Membantu orang yang sakit untuk di operasi
5. Ingin membuat apartemen
6. -
7. -
8. Jam tangan bisa keluar dari dimensi (pindah ruang waktu)
9. Bikin robot koki
10. Membangun pondok baca Iqra, mengajarkan orang-orang yang ingin bertaubat

## **Interview Result**

**Q.1 What is your favorite subject in school?**

1. Agama Islam, karena dapat ilmu pengetahuan tentang sholat dan puasa. PKn, belajar bermasyarakat.
2. IPA, mau jadi dokter.
3. Matematika dan Agama Islam.
4. Agama Islam.
5. Bahasa Indonesia.
6. Agama Islam dan Matematika.
7. Matematika.
8. IPA, Biologi dan Fisika.
9. Matematika.
10. Agama Islam.
11. Matematika.

**Q.2 Aside from school subject, what are you good at?**

1. Jago main bulu tangkis.
2. Menggambar dan main musik.
3. Menulis puisi dan cerita-cerita tentang hutan, laut dan pantai.

4. Menyanyi.
5. Menulis.
6. Bermain alat musik pianika.
7. Berenang dan bermain bola.
8. Bermain bulu tangkis.
9. Bermain bola dan bulu tangkis.
10. Bermain bulu tangkis dan bola.
11. Bermain bola.

### Q.3 What is the video title?

1. (a) Profesor  
(b) Pemilik Restoran
2. (a) Profesor  
(b) Pemilik Restoran
3. (a) Pemilik Restoran  
(b) Ilustrator Game
4. (a) Pemilik Restoran  
(b) Profesor
5. (a) Pemilik Restoran  
(b) Produser Video
6. (a) Ilustrator Game  
(b) Profesor
7. (a) Pemilik Restoran  
(b) Produser Video
8. (a) Profesor  
(b) Ilustrator Game
9. (a) Profesor  
(b) Ilustrator Game
10. (a) Profesor  
(b) Pemilik Restoran
11. Pemilik Restoran

### Q.4 Why did you choose this video?

1. (a) Biar lebih thau tentang profesor. Cita-cita saya ingin menjadi doktor.  
(b) Biar tahu gimana cara masak belut.

2. (a) Mau tahu tentang professor.  
(b) Mau tau tentang koki.
3. (a) Mau tahu tentang masak-memasak.  
(b) Mau tahu tempat kerjanya dimana.
4. (a) Ingin tahu tentang makanan biar bisa masak buat ibu.  
(b) Mau tahu tentang profesor.
5. (a) Pengen tahu cara masaknya.  
(b) Supaya bisa belajar bikin video.
6. (a) Ingin tahu tentang ilustrator.  
(b) Karena belum tahu apa-apa tentang profesor,
7. (a) Pengen menambah pengetahuan tentang profesi ini.  
(b) Thumbnailnya menarik
8. (a) Cita-cita saya jadi profesor.  
(b) Pengen tahu aja.
9. (a) Karena saya mau jadi profesor.  
(b) Ingin tahu lebih banyak tentang profesi ini.
10. (a) Pengen tahu aja.  
(b) Karena ada hubungannya dengan restoran.
11. Judulnya menarik

#### **Q.5 How did you enjoy watching the video?**

1. (a) Seru  
(b) Nyaman.
2. (a) Bisa muter-muter liat Jepang  
(b) Bisa muter-muter dan lebih menarik karena tentang masak-memasak.
3. (a) Seneng.  
(b) Seneng bisa tahu cara-cara pembuatan permainan dan tempat kerjanya.
4. (a) Enak bisa melihat semua bagian dari ruangan.  
(b) Enak dan nyaman. Ada bagian waktu belajar di dalam kelas.
5. (a) Senang.  
(b) Senang.
6. (a) Senang.  
(b) Ga se seru video yang sebelumnya.
7. (a) Seru, dapat melihat suasana di Jepang.  
(b) Agak seru, belajar menggambar laba-laba.
8. (a) Senang.

- (b) Senang.
- 9. (a) Senang.  
(b) Menyenangkan.
- 10. (a) Seneng karena bisa lihat Jepang.  
(b) Seneng karena baru tahu kalau belut bisa dimakan.
- 11. Menyenangkan, asik dan nyaman.

**Q.6 Which part of the video was interesting for you?**

- 1. (a) Ketika tahu pengajarnya dari Jepang dan ketika profesor lagi mengajar. Beliau terlihat baik, ramah dan jelas ketika mengajar.  
(b) Ketika masak cepat dan rajin. Restorannya pun bagus dan nyaman.
- 2. (a) Ketika di mobil, karena bisa liat jalanan di Jepang.  
(b) Bisa tahu cara bikin makanannya.
- 3. (a) Bagian cara pembuatan masakan belut.  
(b) Ketika membuat gambar.
- 4. (a) Bagian waktu di dapur.  
(b) Bagian yang di dalam kelas karena bisa tahu tentang profesor dan ikut belajar.
- 5. (a) Bagian memasak belut  
(b) Yang bagian ambil gambar.
- 6. (a) Bagian bekerja yang ada komputernya.  
(b) Ketika profesornya sedang mengajar.
- 7. (a) Ketika memanggang belut.  
(b) Bagian menggambar,
- 8. (a) Di kampus, ada banyak peralatan belajar.  
(b) Membuat gambar sketsa.
- 9. (a) Ketika profesor bercerita tentang dirinya sendiri.  
(b) Ketika dia menunjukkan video hasil yang sudah jadi.
- 10. (a) Naik mobil berangkat ke kantor.  
(b) Pas lagi masak, cara masaknya berbeda.
- 11. Kokinya banyak bergerak dan saya senang melihat suasana dapur ketika dia memasak.

**Q.7 Did you ever feel distracted while watching the video? What distracted you?**

1. (a) Nyaman-nyaman aja.  
(b) Nyaman tapi sedikit pusing karena muter-muter.
2. (a) Ga ada  
(b) Ga ada
3. (a) Kaca pembesarnya bikin gambarnya kaya ada dua jadi bingung.  
(b) Kaca pembesarnya buat burem.
4. (a) Suaranya tidak jelas.  
(b) Tidak ada.
5. (a) Bahasa jepangnya ga ngerti.  
(b) Suara video kecil dan banyak yang ribut di luar.
6. (a) Tidak ada.  
(b) Tidak ada.
7. (a) Cardboardnya harus dipegang.  
(b) Diluar berisik.
8. (a) Ga ada.  
(b) Gak ada.
9. (a) Suaranya terlalu kecil.  
(b) Cardboardnya sakit untuk dipakai.
10. (a) Ga ada.  
(b) Gaka da.
11. Gak ada.

**Q.8 Which part of the video did you think is too short/too long?**

1. (a) Pengen lebih tahu bagian mengajarnya, supaya lebih tahu bagaimana cara profesor mengajar.  
(b) Sedeng-sedeng aja.
2. (a) Pas di Kampus terlalu lama  
(b) Ga ada
3. (a) Penjelasan tentang tempat duduk jerami tidak jelas.  
(b) Gad ada.
4. (a) Pas bagian masak terlalu cepat.  
(b) Bagian naik mobil terlalu panjang.
5. (a) Waktu lagi bakar sosis, suara koki tidak jelas terdengar.

- (b) Bagian perkenalan terlalu panjang.
- 6. (a) Bagian membuat gambar terlalu pendek.  
(b) Tidak ada.
- 7. (a) Bagian memasak terlalu cepat.  
(b) Bagian menggambar terlalu pendek.
- 8. (a) Terlalu pendek, info yang diberikan jadi tidak jelas.  
(b) Terlalu pendek jadi kurang seru.
- 9. (a) Bagian menyetir terlalu panjang.  
(b) Tidak ada.
- 10. (a) Gak ada.  
(b) Gak ada.
- 11. Bagian mahasiswa terlalu panjang.

**Q.9 What did you know about the profession beforehand?**

- 1. (a) Belum tahu, baru tahu namanya aja.  
(b) Belum tahu sama sekali.
- 2. (a) Professor buat roket dan alat-alat modern.  
(b) Masak-memasak.
- 3. (a) Belum tau apapun.  
(b) Baru pertama kali tahu.
- 4. (a) Koki itu memasak.  
(b) Profesor itu meneliti.
- 5. (a) Tahu.  
(b) Tidak tahu.
- 6. (a) Tidak tahu.  
(b) Saya pikir profesor itu yang menerbangkan pesawat.
- 7. (a) Memasak dna memotong-motong sayur.  
(b) Belum tahu apa-apa.
- 8. (a) Membuat sesuatu dan meneliti.  
(b) Gak tahu.
- 9. (a) Membuat larutan-larutan kimia.  
(b) Tidak ada.
- 10. (a) Bisa membuat ramuan.  
(b) Pemilik restoran tidak memasak, koki memasak.
- 11. Tidak ada.



**Q.10 What were the new information you get about the profession?**

1. (a) Jadi tahu tentang ilmu-ilmu yang diajarkan profesor.  
(b) Jadi tahu tentang cara kerjanya di dapur.
2. (a) Ternyata profesor itu mengajar, kok bukan buat alat-alat. Ternyata professor  
(b) Cara membuat masakannya.
3. (a) Ada restoran belut di Tokyo, Jepang dan melihat teknik menaruh belutnya.  
(b) Tahu cara pembuatan permainan di Google Play Store.
4. (a) Sudah tahu dari sebelumnya.  
(b) Ternyata profesor juga mengajar.
5. (a) Tentang cara memasak.  
(b) Tentang cara membuat video.
6. (a) Ternyata pekerjaannya berat, membuat game dengan menggunakan komputer.  
(b) Profesor mengajar di perguruan tinggi.
7. (a) Cara memasak belut.  
(b) Cara membuat game.
8. (a) Tentang penelitian beliau mengenai orang muslim di Indonesia.  
(b) Bikin game dari animasi dan desain gambar.
9. (a) Ternyata profesor mengajar.  
(b) Tentang cara membuat game.
10. (a) Gak ada.  
(b) Informasi tentang memasak belut.
11. tentang resep dan cara memasak.

**Q.11 Please explain the story you just watch in the video**

1. (a) Ceritanya tentang orang mengajar, lalu dia menyetir dan mengajar lagi. Dia sempat membahas tentang agama.  
(b) Video nunjukin kokinya masak secara cepat dan ngomong dengan ramah dan sopan.
2. (a) Cerita tentang professor yang berpindah-pindah tempat untuk mengajar dengan mengendarai mobil. Profesor juga memberi masukan-masukan untuk anak-anak Indonesia.  
(b) Cara membuat masakan belut.

3. (a) Ada sekelompok orang yang berkunjung ke restoran di Tokyo. Mereka duduk di atas tempat duduk jerami sambil melihat pemandangan. Kemudian mereka ke dapur dan memberi tahu cara pembuatan belut. Pemilik restotannya berbicara bahasa Indonesia tapi ga jelas.  
(b) Dia ada di kantor pembuatan game di Bandung. Dia membuat permainan tentang laba-laba.
4. (a) Petama-tama koki membuat makanan, dimasak dan dipanggang, kemudian disajikan di meja.  
(b) Petama-tama belajar, kemudian naik mobil sambil ngasih pembelajaran diakhiri dengan kegiatan menentukan materi pembelajaran.
5. (a) Masak-masak dan ada pembeli.  
(b) Bagaimana cara bikin video yang asik.
6. (a) Tentang seseorang yang bekerja di dunia game dan membuat film.  
(b) Ada adegan mengajar dan mengendarai mobil.
7. (a) Memasak dan ada tempat makannya.  
(b) Bermain komputer, meniup balon gelembung, memberitahu namanya kemudian membuat gambar.
8. (a) Tentang meneliti sesuatu.  
(b) Ada ilustrator disuruh atasan buat gambar.
9. (a) Tentang profesor dari Jepang yang belajar dan mengajar Bahasa Indonesia.  
(b) Proses membuat film dna game.
10. (a) Cerita di kantor tentang Jepang yang pengen ke Indonesia.  
(b) Pertama lihat tempat makan, kemudia ke dapur lihat kokinya memasak.
11. Di restoran, melihat proses memasak dan makan.

**Q.12 What did the expert do to achieve those profession?**

1. (a) Butuh belajar yang rajin dan sering cari tahu lewat komputer dan hand-phone (internet).  
(b) Harus tahu tentang resep dan gimana cara memasak.
2. (a) Belajar. Latihan buat aat-alat dan cairan.  
(b) Latihan memasak.
3. (a) Belajar bertahun-tahun untuk membuat belut.  
(b) Harus senang menggambar, terus mengambil kuliah jurusan Illustrator.
4. (a) Belajar membaca, menulis dan memasak.  
(b) Bekerja dan belajar sungguh-sungguh.

5. (a) Rajin memasak dan harus bisa masak enak.  
(b) Bikin video harus bagus.
6. (a) Belajar yang rajjin tentang film.  
(b) Belajar yang rajin dan jadi yang paling pintar di kelas.
7. (a) Belajar memasak, memotong bahan-bahan dan sayuran.  
(b) Belajar menggunakan komputer dan menggambar.
8. (a) Rajin belajar dan membaca buku.  
(b) Belajar sungguh-sungguh dan harus bisa menggambar.
9. (a) Belajar dan berdoa agak bisa meraih cita-cita.  
(b) Harus belajar dna mencari tahu tentang ilustrator dari awal.
10. (a) Belajar.  
(b) Belajar masak.
11. Belajar tentang resep dan cara memasak.

**Q.13 What do you want to know more about this profession?**

1. Bagian pemilik restoran saya ingin tahu lebih detil tentang cara kerjanya.
2. Saya ingin tahu tentang cara professor membuat alat-alat modern.
3. Mau tahu lebih detail tentang cara memanggang belut.
4. Ingin tahu lebih banyak tentang bagaimana cara koki memasak, menyediakan bahan-bahan dan resep-resepnya.
5. Ingin tahu tentang cara masak belut.
6. Professor.
7. Tentang bagaimana cara menggunakan komputer dan bagaimana memasak belut.
8. Tentang pembuatan game.
9. Bagian professor mengajar.
10. Ingin tahu lebih banyak tentang cara memasak dan profesi profesor itu sebenarnya seperti apa.
11. Resep lain untuk memasak belut.

**Q.14 Who do you want to share these videos with?**

1. Dengan teman-teman.
2. Dengan teman-teman dan orang tua.
3. Kakak, adik dan orang tua.
4. Ke ibu dan bapak.

5. Ibu dan kakak.
6. Tidak ada.
7. Orang tua.
8. Teman dan orang tua.
9. Teman yang memiliki minat yang sama.
10. Orang tua dan teman-teman.
11. Tidak ada, supaya yang lain iri.

**Q.15 Is there any other professions you want to know more?**

1. Dokter.
2. Dokter.
3. Pemilik restoran.
4. Koki.
5. Koki.
6. Dokter dan pilot.
7. Penjelajah dan koki.
8. Profesor.
9. Profesor, penemu, astronot, polisi dan ustadz.
10. Arsitek dan profesor.
11. Pekerjaan kantoran.

**Q.16 Out of the two videos, which one did you find more interesting?**

1. Profesor. Karena yang pemilik restoran videonya bikin pusing.
2. Profesi profesor menarik, tapi video tentang pemilik restoran lebih asik.
3. Restoran belut.
4. Koki.
5. Koki.
6. Doktor.
7. Koki.
8. Profesor.
9. Ilustrator.
10. Koki.
11. DUa-duanya menarik.

**Q.17 Do you think you can become like the professional in the video?**

1. Insyaallah.
2. Bisa.
3. Insyaallah.
4. Insyaallah bisa.
5. Bisa.
6. Tidak, sepertinya terlalu susah.
7. Belum tahu.
8. Bisa.
9. Iya.
10. Insyaallah bisa.
11. Belum tahu.

**Q.18 What should you do to become like them?**

1. Harus belajar dan tahu tentang kesehatan.
2. Belajar dan nonton lebih banyak video tentang pekerjaan seperti ini.
3. Harus belajar masak di dapur.
4. Bantu-bantu orang tua dan teman, belajar dan latihan memasak.
5. Harus belajar.
6. Harus baik, suka menolong dan peduli dengan orang lain.
7. Bekerja keras dan belajar dengan sungguh-sungguh.
8. Belajar, menambah wawasan serta pengalaman dan sekolahs ampai S3.
9. Belajar yang rajin dari awal.
10. Belajar dan giat memasak.
11. Keinginan untuk bekerja.

## **C Ideation Workshop Result**

### **Feedbacks**

- Menambah wawasan
- Semoga lokakarya ini dapat dilanjutkan tidak sampai di sini saja
- (Lokakarya ini) menambah ilmu dalam IT
- (IN360) menambah ilmu dan semangat belajar untuk anak didik

- Dengan adanya lokakarya ini, menambah pengetahuan guru, orang tua dan siswa
- (Lokakarya ini) membantu saya dalam belajar dan memperbaiki kehidupan
- waktunya cuma sebentar, kalau bisa ditambah
- Harapan kami ada kelanjutan untuk memperdalam pemahaman tentang aplikasi IN360
- Mendapat tambahan wawasan tentang penggunaan aplikasi IN360 untuk digunakan dalam kegiatan belajar
- (Menambah) pengetahuan dalam menggunakan media digital
- Kurang dalam penjelasan medianya/tidak tuntas
- Sebaiknya ada waktu lihat video 360 sama-sama
- (It was important) to be able to work on 1 project with orang asli
- Ide sharing time (was important)
- Tambah orang yang bisa bahasa Indonesia
- Saya menjadi tau tentang aplikasi IN360
- Materi digital (bermain sambil belajar)
- Mengetahui pentingnya IN360
- (Komunikasi) terhambat oleh bahasa dan pengetahuan atas "Apps"
- Mungkin lebih banyak video seperti video yang interaktif tentang informasi-informasi yang disampaikan
- Komunikasinya dipermudah
- (Lokakarya ini) menambah pengalaman dan koneksi
- (Bagian penting dari lokakarya adalah) komunikasi, kreativitas, freedom of speech, thoughts and idea
- To play dramas. It was fun
- Mengenal teknologi baru
- Agak ribut karena semua orang diskusi dalam waktu bersamaan
- Sebaiknya konten dibagi menjadi beberapa lokakarya
- Kolaborasi dengan mahasiswa jepangnya bisa lebih diperjelas dan diperbanyak
- Peserta lebih banyak
- I didn't get why it had to be a skit. Maybe poster presentation was preferable
- Explain the point of making a drama (it was fun though)

## D Conference and Academic Presentation

### CHI 2017: Conference on Human Factor in Computing System, Late Breaking Work Poster Presentation

#### IN360: A 360-Degree-Video Platform to Change Students' Preconceived Notions on Their Career

**Authors:** Fathima Assilmia, Yun Suen Pai, Kai Kunze, Keiko Okawa

**Presentation Date:** May 6-11, 2017

**Section:** Late Breaking Work

**Publication:** CHI EA '17 Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems



Figure D.1: Late Breaking Work Poster Presentation at CHI Conference on Human Factors in Computing Systems 2017

## ASEAN Academic Forum 2017, Poster Presentation

### IN360: Creating Sustainable Career Guidance Community to Change Preconceived Notion of Children in Pramuka Island on Their Future Career

Presentation Date: July 16, 2017

Section: Poster Presentation



Figure D.2: Poster Presentation at ASEAN Academic Forum, Tokyo, Japan