CHAPTER I
INTRODUCTION

1.1 Background

As regarding human development, education is basic meaning of a state that improves the student's performance for rapid changes and advances in scientific approach especially in science learning and technology for improving educational system (Hammond, Flook, Harvey, Barron, and Osher, 2020). Based on Wandari, Wijaya, and Agustin (2018) claimed in era 21st century, technology has explored a wide range of opportunities which can encourage students' interest in science. According to Karyadi, Winari, Susanta, and Ekaputri (2018) states science is material of natural phenomena in the form of data, concepts, principles, laws and theories. The process of science learning requires several activities for creating products. Products are formed through a process of thinking and acting in responding to problems through science learning, students can be helped to work physically or in hands by thinking on way to find information related to learning (Rakhmawati, Hasnunidah, and Priadi, 2019).

Concept mastery are used to determine factors at the end of learning process (Gamanik, Sanjaya, and Rusyati, 2019). The concept mastery is arranged based on the previous concept becomes basic concept. Misconception is a result of a concept in a misunderstanding. Therefore, an understanding concept must be owned by students because science and other topics are interrelated (Mahayukti, Suarsana, and Hartawan, 2017).

Science concept mastery is ability of students' cognitive becomes one of important form to make successful understanding in learning science (Wicaksono, Supeno and Budiarso, 2020). According to Hayes and Kraemer (2017); Baumfalk (2019) states process of comprehensive on science concept is able to success when students can be simplified abstract concepts to be simpler, easy to understand, provides interpretation, and useful for many applications in daily life. Cherif, Roze, and Gialamas (2016) claimed students' concept mastery results from students' thinking.

Ulfa, Anggraeni, and Supriatno (2017); Ridlo, (2018); Melkior, (2020) were doing research in students' understanding. They state many students get low score in understanding concept on science because students have difficult during learning. They claimed learning disabilities as experienced condition by student has failure to achieve academic objectives in learning process. Furthermore, students' understanding can be achieved in an instructional approach (Wewe, 2020).

Maulina, Wahyuni, and Halim (2017) explained learning difficulties are commonly found in understanding basic concepts, principles, and skills. Concept mastery is ability to understand concept that is interrelated in everyday life. Learning difficulties are understanding small concepts in learning process and inaccurate concept delivery. Based on Wewe (2020) mentioned it can be assumed learning disabilities are a condition which student fails to achieve learning objectives triggered by internal factors. The internal factors include ability to learn, concept mastery, and principles.

At junior high school level, teacher implements methods that affect students emotionally, physically, and socially. Based on reality, Maulina, Wahyuni and Halim (2020) claimed learning system applied at school is more dominated by conventional learning. Alzahrani (2018); Barrows (2019) said students tend to be passive since teacher only offers content, answer and questions it is not enough to encourage students' comprehension. Lack of concept mastery in science indicated by low learning achievement.

According to Agustrianita, Suherdi, and Purnawarman (2019) Teaching style was dominated by lecturing methods that it cannot facilitate students to participate in improving their thinking skills. Teachers lacked teaching materials to encourage students use technology. Puspitasari and Permanasari (2012) found 87.16% teachers have consistently applied method of discussion and exercise in science courses. Lessons were dominated by lecturing, assignments, demonstrations, while needs of students in the classroom were less facilitated by teacher. Pujani, Suma, and Sadia (2018) mentioned lack of teaching variation affects students learning through memorization it can be quickly forgotten concepts. This shows lecturing method is less effective in maintaining student's concept mastery.

Previous studies were performed to evaluate the profile of student concept mastery. According to Imansyah (2013) states students' ability for learning science at a junior high school in Bandung that is still quite small in terms of evaluation, understanding of content and experiment activities.

Creativity is a skill in 21st century skill that has increased these past years and it has become one of skill competencies in classroom implementation (Blamires and Peterson, 2014). Creativity is accepted as an important ability for student's learning outcomes in school. there are many ways to evaluate student's creativity. Students' creativity should be assessed by teacher. Two benefits of assessing student's creativity: 1) teacher is more confident in improving student's creativity. 2) students are able to understand what is to be creative (understanding to construct their progress) (Lucas, Claxton, and Spencer, 2013).

Roy (2016) said students have to think that they are creative to develop new ideas and products can be used in their learning. Students' creativity must be developed based on knowledge and learning experience. Student's creativity can be used in all subjects and important role in innovation as a key aspect in fostering creativity (Sugiyanto, Masykuri, and Muzzazinah, 2018). Student's creativity can be empowered to encourage questions, opens minded to create new ideas, and learn from failures (Ridlo, 2018).

Sugiyanto and Masykuri (2018) creativity is important to develop student's competence because they have learning difficulties. Based on research, students' creativity is still far below international average. It can be concluded students' creativity of Indonesian students is still low. Furthermore, (Fatmawati, 2018) assumed the result of learning only focuses on building knowledge, memorization, and convergent thinking skill (Fatmawati, 2018).

The results of tests conducted in some schools. Students' creativity showed low. Zubaidah, Fuad, and Mahanal, (2017) got results with score range are 0-100. Total mean score of creativity was 18.03. The indicator of student's creativity is low. Indicators show: (1) fluency (15.90), (2) flexibility (18.75), (3) elaboration (16.28), (4) originality (12.05) (Zubaidah, Fuad, and Mahanal, 2017). So, students' creativity needs improvement.

The first factor of students' creativity is low, the teacher does not understand to facilitate students' creativity in learning process (Laius and Rannikmae, 2014; Cheng, 2010). The second factor is the skill too hard to apply for students who have limited knowledge and thinking skills. Third, school does not have access for developing their thinking (Wijayati, Sumarmi, and Supanti, 2019). Fourth, Hoque (2019) said learning process is bad, there is unproductive thinking, focuses on memorization and lack of learning strategy. It will affect to student's creativity.

In addition, Pujani, Suma, Sadia, and Wijaya (2018) claimed lack of teaching variation it can influence for student's creativity. Teachers rarely use a method that can build knowledge for learners, lead students to be more creative or explore material independently to make learning concept more meaningful (Fatmawati, 2018). Some studies have shown traditional learning model is less effective than learning with technology in developing student understanding (Alsalhi and Eltahir, 2019).

Umriani, Hairun, and Sari, (2020) claimed factors affect weakness of students' creativity are caused by lack of training or exploring students' thinking skill. Students have a low curiosity to solve their problem in learning science so, they only know simple answers. Therefore, creativity needs to be developed in learning science. Likewise, students are given creativity assignments to bring up student's confidence. Anggraeni and Suparman (2019) said if students allowed to practice their thinking skills, they are able to distinguish between true and untrue reality, facts, and opinions as well as knowledge and beliefs.

Hoque (2019) claimed for improving students' concept mastery and creativity, learning process started with challenging questions about the phenomenon, assigning tasks to students to carry out activities focus on gathering and using evidence with technological properties rather than simply providing information and focusing on memorization. Grover and Pea (2013); Tsortanidou (2019) claimed making digital technology can develop student creativity in a flexible way, using imagination or self-expression can infuse their interests and personal styles for creating digital media (Tsortanidou, 2019). For developing technology, learning experience is assumed to be meaningful and unforgettable for students (Fatmawati, 2018).

Digital technology has become more easily accessible in classrooms and provide for students and teachers. Accoridng to Oroujlou and Vahedi (2011); Thompson and Erdil (2016) the product of "Digital storytelling video" is important component for students to develop their understanding and imagination (Hava, 2019). Digital storytelling video is used as an embodiment of multimedia production for educational purposes. Digital storytelling video is tool to create relationship students' experience and academic content through active engagement in learning process. Based on Saritepeci (2020) digital storytelling video has been good one of most prevalent forms of technology integration in 21th century. It is also can be adjusted to other disciplines, and there is important potential to facilitate learning outcomes. Based on findings, Yan (2019) digital storytelling video has been a powerful and effective learning tool to develop student's English proficiency in linguistics through combining video with their sound for checking their fluency, grammar, pronunciation, vocabulary, and content (Yan, 2019). Other previous research is from social and behavior science. This study is from Seker (2016) intended to provide a digital platform for children with behavioral concerns to direct their own self-expression through digital storytelling. In this research, researcher investigates students' concept mastery and creativity through digital storytelling video in learning science context.

Digital storytelling video is a powerful media can grow 21th century skills. Digital storytelling video defined as a video which include learning materials. Based on previous research, the use of digital storytelling video can improve student's achievement. Digital storytelling video has role for skills such as writing, speaking, operating ICT based program, and listening. Other benefits are fostering creativity, building positive classroom atmosphere, and focusing student's participation (Dewi, Savitri, Taufiq, and Khusniati, 2018). Also, digital storytelling video can improve student's activities such as discussion and express their ideas. Students complete process of digital storytelling by sharing with their stories and it could support students to understand each other (Dewi, Savitri, Taufiq, and Khusniati, 2018).

Digital storytelling video can help educational environment from traditional storytelling to digital storytelling. Burmark (2004) said digital storytelling video is

useful technological tool to analyze and present information that combined with pictures, written texts, and recording to facilitate student's understanding. Digital storytelling video is also helping students to investigate new subjects. Thus, digital storytelling video has positive aspects to technology integration and it can be used as appropriate teaching and learning process (Dewi, Savitri, Taufiq, and Khusniati, 2018).

Many studies have conducted research about digital storytelling video. The studies mostly conducted in social science and languages such as digital storytelling video for improving students' speaking skills (Rosyidah and Putri, 2019), students' oral communication skill (Ayman, 2019), students' writing skill (Sudamaji and Mulyana, 2020), improving economic learning (Lestari, 2019), and analyzing students' reading skill (Anggeraini and Afifah, 2017). Digital storytelling video in science context rarely researched. Thus, researcher focuses on analysis students' concept mastery and creativity through digital storytelling video in learning food additives topic. This research desires students to make digital storytelling video about food additives topic.

In this research, digital storytelling video produces creativity product as the result of students learning output. Researcher finds out mastery of student's concept mastery and creativity that will be applied in learning food additives based on 2013 curriculum. The difference of this research from other research, this research focuses on students' concept mastery in learning "food additives" topic and students' creativity with rubric have never been researched before.

In recent years, food habits have changed in world. The consumption of food increases in society and young students (Rhaiem, Sedki, Youss, Chahboun and Ouhssine, 2016). Many young students look for foods are attractive color and delicious favor. For the examples are noodles, ice cream, candies, etc. These food products are part of food additives (Ghany, 2015). Food Additives are used by food industry to extend food shelf life, make food becomes good quality and safety (Jin and Han, 2019). Most consumers especially young students have little knowledge about food additives. So, they have to understand food additive topic based on curriculum in school.

It is difficult to learn food additives because it is complex, unfamiliar, and abstract concepts. Students have learning difficulties in memorizing them. Overcome this problem, the use of technology can help student's understanding. Digital storytelling video contains images, three-dimensional models, and animation to reach the target information easier. Thus, digital storytelling is effective tool for learning subjects. Based on previous research Karakoyun and Yapici (2016) claimed digital storytelling video improves students' achievement in science education.

Therefore, the researcher decided to conduct research entitled "Examining students' concept mastery and creativity through Digital Storytelling Video in learning food additives". This research tries to examine two variables which are students' concept mastery and creativity in learning food additive topic.

1.2 Research Problem

This research problem is "How is examining of students' concept mastery and creativity through digital storytelling video in learning food additives."

1.3 Research Question

Deciphering the research problem, research arrangement to analyze the following question:

1) How is the impact of digital storytelling video on students' concept mastery in learning food additives?
2) How is the impact of digital storytelling video on students' creativity in learning food additives?

1.4 Research Objective

This research is conducted to analyze students' concept mastery and creativity in junior high school towards the problems, aims of this research are:

1) To examine the impact of digital storytelling video on students' concept mastery in learning food additives.
2) To examine the impact of digital storytelling video on students' creativity in learning food additives.

1.5 Research Benefit

The results of research are expected to have the following benefits:

1) For students, digital storytelling video can give student new experience by create product for students' concept mastery and creativity in learning food additives.
2) For teachers, this research will guide teacher facilitates students by creating product (digital storytelling video) for better comprehension in learning food additive topic.
3) For another researcher, this research is expected to add knowledge and experience for other researcher in the future also applicate digital storytelling video in new different research area.

1.6 Organizational Structure of Research Paper

The organizational structure of the research paper is to present the content of the research paper. Every chapter, the structure of writing and relation between one chapter and the other chapters.

1) Chapter I: This chapter consist of background, research problem and question, research objective, research benefit, limitation of problems and organization of research paper structure.
2) Chapter II: This chapter arranged by literature review of Digital Storytelling Video, dependent variable such as students' concept mastery and creativity, and Food additives topic.
3) Chapter III: Research methodology consists of research method and research design, population and sample, assumption, research instrument, validation result and research procedure.
4) Chapter IV: This chapter consists of result and discussion
5) Chapter V: This chapter stated conclusion and recommendation

1.7 Limitation of Problem

Achieve the objective of this research, it covered the problems that requires to be limited. The limitations are:

1) Digital storytelling video

   The concept of digital storytelling video emphasizes the use of multimedia resources to tell a story, including images, audio, video, and animation. The students combine collection of pictures and their sounds to create a story. The software is *Kinemaster* to make digital storytelling video.

2) Students' concept mastery

   Concept mastery (students' understanding) is measured that involves cognitive levels of remembering (C1), understanding (C2), applying (C3), analyzing (C4), synthesis (C5), Evaluation (C6) based in the 2013 curriculum, the standard of food additive subject in basic competence 3.7 is remembering. The topic focuses on the food additives types, the effects of food additives and human effort to reduce consuming food additives.

3) Students' creativity

   The creativity of the students examines only creativity of product. Students' creativity based on three dimensions of creativity: Novelty with 2 indicators (Germinal, and Surprising), Resolution with 3 indicators (Valuable, Logical, and Useful), and Elaboration and Synthesis with 5 indicators (Complex, Elegant, Understandable, Organic, and Well-crafted).

4) Food additive

   The topic is used in this study only food additive concept included in Indonesia curriculum 2013 especially in core competence (3.7).