

# A Study on the Educational Significance Guidance Plan Value of the Jumong Myth Using STEAM\*

Lee Eun-min

MunSeong Middle School, Gwangju City, South Korea

Jumong is a legendary figure in Korean mythology. He is depicted as a genius archer, a brilliant mind with horses, a god who rules the rivers and the sky. Jumong is a mythical character who is believed to be of divine descent and to possess superhuman abilities that humans cannot match. The myth of Jumong is a very competitive content that can compete on a global scale. However, in order for it to be successful, it is necessary to be able to reinterpret our mythology to suit the times and reproduce it culturally. To this end, the realistic globalization of Korean classical literature should commence with the genre of Korean mythology. This paper presents the educational significance of the Jumong myth as a teaching-learning model, via STEAM (science, technology, engineering, arts, and mathematics), on the theme of Korean mythology. As we enter the era of artificial intelligence (AI) through the 4th Industrial Revolution, the most appropriate teaching and learning method, the convergence class, will provide an opportunity for students living in modern times to discover the cultural archetypes that allow them to recognise themselves as individuals and us as a collective, and to find the roots of the myth to positively renew their identity. Furthermore, it is my hope that they will rediscover and appreciate the representative work of Korean mythology, Gojomong, the eponymous story of Goguryeo.

*Keywords:* Jumong, STEAM, educational significance, personal and reflective assessments, organic complexes, evaluate a collaborative activity (rubric)

## Prologue

How might the Jumong myth be integrated with STEAM? The Jumong myth is a complex entity that can be interpreted in various ways, including as history, scholarship, religion, and art. However, in the majority of educational institutions, it is taught as a mere component of a history or literature course. Consequently, the teaching of the Jumong myth requires a pedagogical paradigm shift to align it with contemporary standards. It is therefore proposed that the Jumong myth be approached as a scientific and empirical theory of STEAM (science, technology, engineering, arts, and mathematics) in order to further organise logical intellect and IQ, and to develop expanded, synthetic, and creative thinking. Students engage in activities that foster the development of critical thinking skills. These include graphing the narrative structure of the hero and mind-mapping the life of Jumong, the founding myth of Goguryeo. Another activity involves examining the constellations carved on the mural of Deokheung-ri Tomb and identifying the relationship between these and the Jumong myth. Finally,

---

\* This paper was prepared with the support of the Korea University of Education and Training Center for Convergence Education (2019-2022).

Lee Eun-min, Munseong Middle School Korean Language Teacher, South Korea.

students engage in creative thinking activities, such as designing a fan based on their understanding of the Jecheon ritual of Goguryeo. It is of great significance to engage in the reorganization of integrated education through these harmonious interdisciplinary class activities. The Jumong myth is included in only three out of 18 high school literature textbooks in Korea. The reason for this underrepresentation is that the educational value of Korean mythology has not been sufficiently acknowledged.

This paper presents a teaching-learning model via STEAM that illustrates the educational significance of the Jumong myth. This myth demonstrates the collective consciousness and conceptual thinking of the Korean people and reflects the politics, history, culture, religion, and art of the ancient society at that time.

By awakening the educational significance of the Jumong myth through the STEM approach, which is most in line with the current trend of the contemporary era, it is hoped that students living in the present era will be able to escape from ignorance and indifference to Korean mythology, discover themselves as individuals with positive thoughts, discover themselves as a collective, and identify new values for the Jumong myth.

### **A Re-examination of Gojoomong, the Eponymous Heroic and Charming Man of Goguryeo**

The question of whether the Jumong myth, which is believed to be the founding myth of Goguryeo, is a historical fact or a plausible story requires further investigation. Or is it a plausible narrative? The interpretation of Korean myths is contingent upon the perspective of the individual. From the perspective of history, mythology can be regarded as a source for studying ancient history. From the perspective of culture, it can be considered a discipline that studies ancient folklore. From the perspective of religion, it becomes our indigenous faith; from the perspective of art, it becomes epic literature, a fantasy narrative based on a non-conventional structure and unlimited imagination. Korean mythology is a complex and enigmatic narrative that fuses various forms into a unified whole, where they coexist in an organic manner.

The fact that the Tomb of King Gwanggaeto begins with the story of the Jumong myth indicates that the Goguryeo people were proud of their eponymous king, as they recognised Jumong as a real historical figure. In other words, the Goguryeo people believed in the Jumong myth as a historical figure and recorded the plausible story of the Jumong myth as a historical fact, thereby transforming it into history. Consequently, the Goguryeo period can be defined as an era of mythology, during which history and mythology coexisted in a state of ambiguity, but with a strong divine and divine power.

The next step is to examine the heroic narrative structure of the Jumong myth, which is a common feature of heroic narratives in both the East and West. The hero is born into a noble lineage, displays extraordinary abilities at an early age, faces early starvation, suffers hardships and trials, and is saved by a nurturer or rescuer. However, they struggle to overcome death again, find victory and glory, found the nation, and establish the eponymous parabolic “U” structure. In light of the aforementioned understanding of the multifaceted nature of Korean mythology and the narrative structure of the hero, I would like to present a teaching and learning model for the Jumong myth, comprising a total of eight poems.

### **The Jumong Myth and the Goguryeo People’s Mythical Afterlife in the Constellations of the Deokheung-ri Tomb Murals**

What is the relationship between the constellations depicted in tomb paintings and the myth of Jumong? It was an understandable inclination for the Goguryeo people to venerate and revere the celestial realm.




Consequently, numerous tomb murals depict the celestial realm, suggesting that the mortal world is but a microcosm within the greater cosmic order. This belief in the continuity of life after death is reflected in the funerary art of the Goguryeo people. It follows that the afterlife of the Goguryeo people can be understood through an analysis of the tomb murals. The founding myth, which constitutes the epic material of our nation, narrates the entire process of the birth and death of the founding fathers. Although the place where a person dies is the afterlife, the place where a person lived before being born is also the afterlife. Therefore, the opposite space of life is not necessarily limited to the place where a person goes only after death. In other words, prior to the advent of Buddhism in the form of Yunghwan, a form of nature religion was prevalent which espoused a cyclical and repetitive worldview. This was also the case with the Goguryeo people, who believed that life and death were inextricably linked. This is referred to as Wonjuktongchul (圓融通徹). In the mural painting of the Deokheung-ri Tomb, which offers insight into the afterlife of the Goguryeo people, the stars that spread out in the night sky of Goguryeo 1,600 years ago are depicted on the ceiling, as illustrated in Figure 1 and Table 1.








Figure 1. Deokheung-ri Tomb Mural Constellation.

Table 1

*Sun and Moon Constellations in the Wall Paintings of Deokheung-ri Tomb and Their Relationship to Jumong Mythology*

Names	Pictures	Meanings
Sun		The sun symbolizes Jumong's father, Haemous. The bird in the sun is the representative bird of Goguryeo as the 'Samjok-oh.'
Moon		The moon is a symbol of Jumong's mother, Lady Yuhua. The insect observed in the moon is a toad, which symbolises eternity. This symbolises the myth of eternal immortality.
Big Dipper		The Big Dipper is a constellation with a profound and enduring connection to Korea. In the Bronze Age, the Gojoseon people inscribed the Big Dipper constellation on the lids of their dolmens, or tombs. The Goguryeo people similarly considered the Big Dipper to be of sufficient importance to inscribe it on their tombs.

Cepheus		Cepheus is in the constellation of Jumong and is known as the Five Flying Fish, which means winged fish.
Cassiopeia		The constellation Cassiopeia is said to symbolize Jumong's bow, which he strikes the water with as he crosses the Umpqua River.
Northern Crown		The Northern Crown is a U-shaped, seven-star constellation that can be described as a bundle of ropes. The Northern Crown is a western constellation comprising seven stars arranged in a semicircular configuration between the constellations of Cygnus and Hercules.
Nurturing Phallus		The constellation, which resembles the Big Dipper but with six stars, is shaped like a scoop. It is also known as the Archer or Shooter constellation, as the Milky Way in the southern sky during the summer months of July and August in the southern sky of Goguryeo resembles a spotted bowstring on the horizon.
Atrial Hypertrophy		The constellation Atrialis, depicted in the southeast corner of the ceiling, is the central constellation that forms the heart of the seven blue dragons observed in Beomcheol. The three stars on the left are Simsu 3, and the three stars on the right are Woori 3. Collectively, they constitute the six stars of Simbang, the azimuthal constellation representing the east in Goguryeo astronomy.

### The Goguryeo Alliance and the Jumong Myth Represent a Unified National Event

In order to establish a legitimate ruling authority, the ancient state borrowed its authority from the gods and established a lineage link with the divine and divine deities. This was an era of mythology and a society of unity in which the king played the role of a priest who presided over the national Jecheon ritual to secure the legitimacy of the founding and rule. This emphasised that the country was ruled by the descendants of the divine gods through the direct lineage of heaven. The enigmatic narrative of the establishment of Dangun and Gojoseon, the national founding myth of Korea, is believed to be a historical event that asserts the direct lineage of Koreans to heaven. This is evidenced by the fact that the Gaecheon Festival, the national holiday established to commemorate the descent of Hwan-in's son Hwan-woong to earth, the birth of Dangun, and the founding of Gojoseon, the first nation of our people, is still celebrated today. In this manner, the Jecheon ritual of the Samseong Empire, which enshrines the three generations of Hwan-in, Hwan-woong, and Dangun in Gojoseon, influenced other affiliated countries. As an alliance system for Goguryeo, the grant was made as Younggo and the example was Mucheon.

Annually in October of the lunar calendar, the Goguryeo alliance system held a ritual called Tongcheongul (通天窟)<sup>1</sup>, which translates as "a cave that communicates with the sky". This ritual was held in Gukdongdaehael (國東大穴)<sup>2</sup>, a cave located east of Domestic Castle, the capital of early Goguryeo. During this ritual, sacrifices were made to Jumong and Lady Yuhua. The alliance festival, organised by the king himself, brought Jumong and Lady Yuhua to the banks of the Yalu River to be welcomed by the heavens. That night, they feasted on a sumptuous repast of liquor and food, accompanied by dancing and singing. This was known as "pungryu", a traditional Korean concept that originated from the ancient Jecheon event, but today it is widely used to refer to any action or pursuit that is executed or enjoyed in a manner that is both stylish and refined.

<sup>1</sup> A den with a connection to the sky.

<sup>2</sup> It is a cave located east of Domestic Castle, the capital of early Goguryeo, where sacrifices were made to Jumong and Mrs. Yuhwa during the Goguryeo Alliance. Other names include Daehyeul (大穴), Susin (隨神), Suhyeul (隨穴), and Shinhyeul (神穴). It is currently located in the city of Jian'an, Jilin, China.

## STEAM Education

### Defining STEAM terms

STEAM education is a pedagogical approach that integrates elements of science, technology, engineering, arts<sup>3</sup>, and mathematics. It also encompasses teaching methods that incorporate mathematical elements. For the purposes of this study, STEAM education is defined as an integrated approach to education in two or more of the STEAM subject areas, as well as STEAM education.

### Design Principles for STEAM lessons

Firstly, STEAM lessons are problem-based, presenting unstructured, real-life, relevant, and real-world challenges based on problems that engage students' personal interests, motivation, and joy of success. Secondly, STEAM lessons present real-world problems that are relevant to students' lives, rather than being isolated from them. Furthermore, they provide real-world connections that allow students to actively participate in the problem-solving process in real-world problem situations. Thirdly, STEAM lessons demonstrate experiments that are difficult to perform in the real world and produce learning outcomes. The utilization of technology serves to facilitate communication, the establishment of interpersonal relationships, and the dissemination of information among learners. Fourthly, STEAM lessons facilitate the implementation of hands-on, thinking, feeling, and emotional learning activities. Fifth, STEAM classes facilitate ongoing discussions with fellow learners, which serve to motivate each other and facilitate the resolution of common problems through a process of feedback. Collaborative learning provides an environment conducive to the achievement of a common goal through the learning process with one's peers. The process of collaborative learning, which is modular learning, allows for the creation of new individual or group tasks. If the creative lesson design for solving the problem is not successful, the creative design is returned to the creative design, another solution is researched and tried again, and the feedback process continues with a new creative design until the successful experience is completed. Once the problem is successfully solved, the student gains confidence and enthusiasm to challenge new problems or move up the process to a deeper level than the successful problem.

A learning framework that exemplifies the characteristics of STEAM education can be observed in Figure 2.

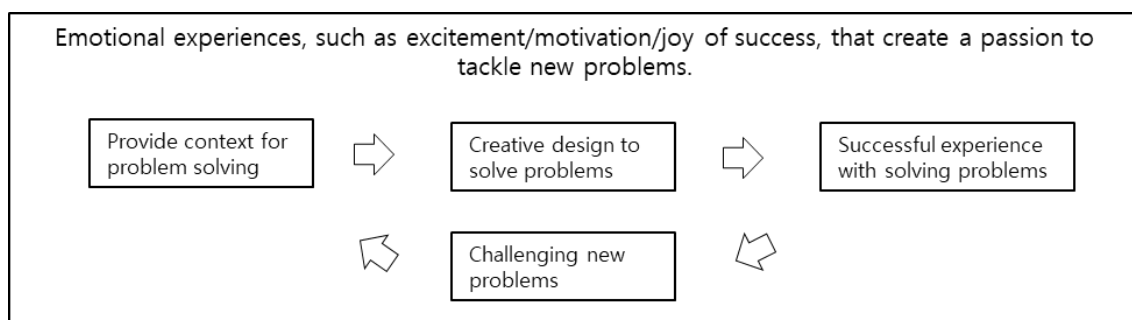


Figure 2. Framework for STEAM learning.

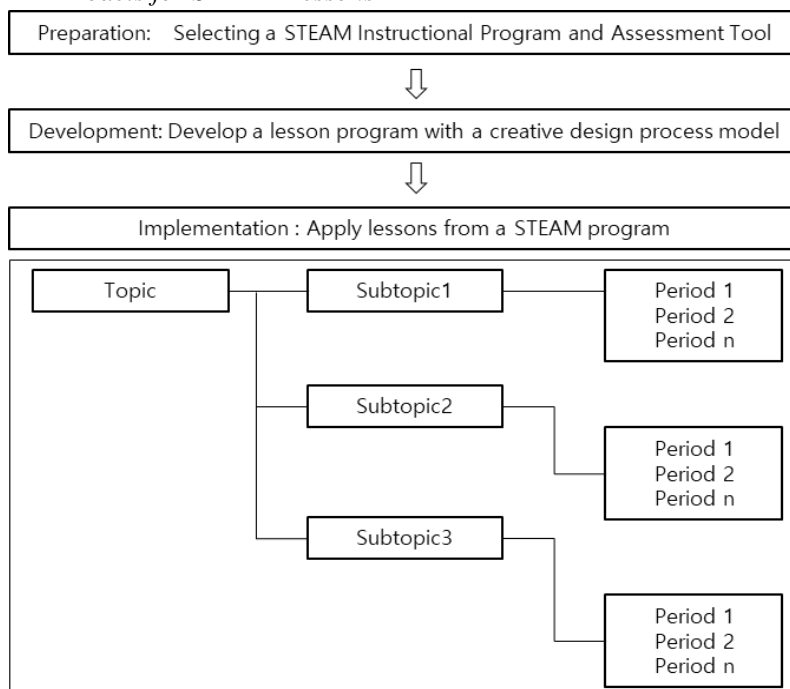
### STEAM Lesson Design Process

There are a number of different teaching models for STEAM, including the PDI model (Mager, 1967), the ADDIE model (Seels, 1994), and the PDIE model (Kim, 2011). However, the PDI model, which is a three-step

<sup>3</sup> The term “arts” encompasses not only the fine arts of music, art, and physical education (dance), but also all subjects that deal with human beings, such as law, psychology, morals, ethics, history, national languages, literature, and Chinese characters.

model of preparation→development→improvement, has the disadvantage of missing the execution stage of the lesson. The ADDIE model, which is a five-step model of analysis→design→development→execution→evaluation, has the disadvantage of missing the preparation stage and the analysis stage. Kim's PDIE model, which was designed by taking the advantages of both models and securing the disadvantage that the design phase is complex and difficult for teachers to use, is presented as a STEAM learning framework to proceed with the design process of STEAM lessons. For further details, please refer to Kim (2012, pp. 92-193). In particular, Kim's PDIE model is widely used in the development of teaching materials for STEAM education in elementary and secondary schools. The PDIE model introduced by Kim is shown in Table 2.

Table 2

*Steps for Adapting PDIE Models for STEAM Lessons*

## Refining topics

		Select learning criteria	
		Present the situation	
		Creative design	
		Emotional experiences	
Topic	Subtopic 1	Period 1	
		Period 2	
		Period n	
	Subtopic 2		

## Lesson plans

## Subtopic 1

## STEAM lesson objectives

## Teaching and learning activities

Integrative thinking  
 Creative design  
 Emotional experiences  
 Knowledge elements  
 Introduction  
 Deployment  
 Closing

---

## Evaluation

### Evaluating STEAM lessons

<ul style="list-style-type: none"> <li>• Assessment practice (student assessments, class assessments)</li> <li>• Complete the evaluation by considering when to evaluate, what to evaluate, and how to evaluate</li> </ul>		
When to evaluate	-Pre-lesson assessments -In-class assessments -Post-class assessments	Subject to evaluation -Learners -Colleagues -Teachers -Others
Evaluation topics	-Integrative thinking -Creative design -Emotional experience -Knowledge	
Evaluation terms	Evaluation methods	
Structured response questions	-Essay type -Descriptive type -Portfolios	-Perfect type -Other -Artwork -Schematic plans -Opening maps -Recordings
Learning outcomes	-Lab reports -Learning activity reports -Project reports	-Role play -Labs -Presentations -Other
Learner performance	-Discussions -Learning activities -Team interactions -Information gathering and analysis	-Class discussions -Course statements -Other
Face-to-face courses	-Verbal questions -Observations -Interview	



Improving STEAM programs



Completing a STEAM program

---

The procedural model for the creative design phase of STEAM learning is organized into four stages: problem recognition, design, creating, and evaluation (Figure 3).

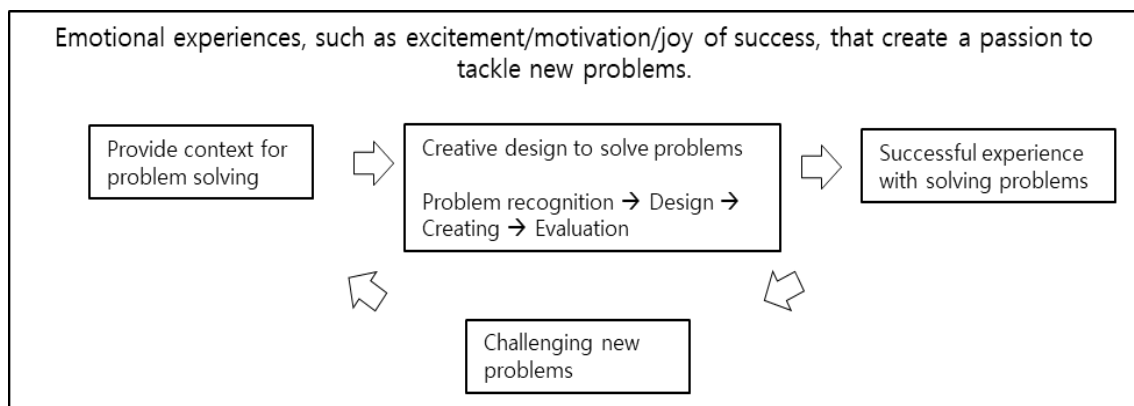


Figure 3. Procedure of the creative design phase STEAM learning framework.

**Problem recognition.** It is essential that students are able to identify and recognize real-world problems as such, that is to say, as problems to be solved. This should be done in a way that is relevant to the learning

objectives and content. It is necessary to define the roles of the learners in the problem situation. Learners should be assigned a role that immerses them in a realistic, problematic situation that they may encounter in their future professional lives. When performed, this role should result in the expected learning outcomes. Additionally, it is crucial to ensure that the manner in which the problem situation is presented, such as in print, video, or newspaper articles, is more concrete, realistic, and engaging for the learner.

**Design.** The establishment of a STEAM topic, which encompasses content elements from the domains of science, technology, engineering, art, and mathematics, is a crucial initial step in the planning process. This entails defining the type of lesson to be implemented, which can range from a self-paced lesson where students work individually to a collaborative lesson where students work together. A STEAM lesson plan for a given topic is structured into three phases. The first phase, the introduction, is designed to spark interest and identify the problem. The second phase, the unfolding phase, allows students to independently or collaboratively solve the problem. The third phase, the wrap-up phase, is used to complete the students' work and celebrate their success. It is necessary to prepare the classroom tools that learners will require for the classroom activities. In particular, the teacher should act as a facilitator, providing direct guidance and access to the information and tools that students require to complete their tasks.

**Production.** The process entails the organization and synthesis of information and materials presented in the context of solving the problem presented in the STEAM lesson plan. It also involves the selection and completion of the final comprehensive product for each group. It is crucial to assess the knowledge, information, and experiences of the learners throughout the process of creating the final products. This allows them to gain a sense of cooperation, confidence, and accomplishment through integrated thinking, creative thinking, self-directed learning, collaborative learning, and emotional experiences gained during the production process. The final products may serve as learning outcomes for problem-solving in real-world contexts, such as mind mapping, video production, and the creation of household items using apps that integrate STEAM subjects. At this juncture, each group will present the results and outcomes of the learning process and engage in an emotional experience of pride, accomplishment, satisfaction, and camaraderie as a result of completing the product.

**Evaluation.** The assessment of STEAM education encompasses a range of methodologies. The assessment methods available include essays, narratives, culminating assessments, self-assessments, peer assessments, reflective journals, and a variety of other approaches that can be tailored to align with specific learning outcomes, learner performance, and different face-to-face processes.

### **Jumong Myth Teaching and Learning Model Using STEAM**

The content of the convergence class<sup>4</sup> that I created served as the foundation for a teaching and learning model that is centered on students' own activities. The learning activities are divided into four stages: introduction, development, and summarization.

To illustrate the multifaceted nature of Jumong, it is first necessary to view the Marvel film *The Avengers*. This can be followed by an introduction to the characters from the film: Hawkeye, the ultimate archer; Iron Man,

---

<sup>4</sup> Korea Teachers' University—Convergence Education—Time to Build Humanities Session 10: Jumong, a Creative Convergence Talent From the Stars.



the brilliant mind; and Thor, the god of thunder who rules the rivers and sky. As the son of the Emperor of Heaven and the only son of Hundred, he is the guardian of nature, ruling over the rivers and the sky. He is a true hero who is superior to the Avengers because he can do all three. As the inaugural activity in the developmental phase of the lesson, students are tasked with recording their comprehension of the multifaceted nature of the Jumong myth and the narrative structure of the hero's life on an activity sheet and creating a mind map of Jumong's life using an app.

The second activity is to ascertain the afterlife beliefs of the Goguryeo people, who were fascinated by the celestial realm. The Deokheung-ri Tomb Mural depicts the stars in the night sky of Goguryeo 1,600 years ago. In this activity, students will investigate the relationship between the carved figures and constellations depicted in the Deokheung-ri tomb murals and the Jumong myth.

The third activity is to further explore and summarize Goguryeo's alliance system based on the understanding of our own faith, Mugyo and Jecheon rituals, and to create a Jumong folding fan with images and slogans from the Jumong myth.

The final organizational step is to define the concept of Korean mythology and to create one's own mythology. By synthesizing the various facets of the Jumong myth, we have endeavored to elucidate the fundamental tenets of our nation's history, academia, religion, and art. Through this process, students will develop their own understanding of the concept of Korean mythology and internalize it. Subsequently, students will create their own myths and express them in real life, based on the sacredness and transcendence of Korean myths. They will engage in literary and artistic creation activities, which will serve to integrate the learning experience and facilitate the discovery of one's identity.

### Curriculum Standards for Integrated Education Integrating Jumong Mythology With STEAM

In accordance with the Jumong Myth Teaching and Learning Model presented above, identify the content-specific performance standards for this lesson, as depicted in Figure 4.



Figure 4. The 2015 revised curriculum achievement standards.

#### Literature.

- Engage in literary activities with the understanding that a literary work is a structure in which the parts and the whole have an organic relationship.
- Focus on how the prongs are shaped according to their characteristics.

#### Korean.

- Organize the presentation so that key information stands out.
- Write using descriptive methods that match the characteristics of an audience.
- Draw on their own life and experiences to write something that moves or entertains their readers.
- Write using a variety of expressions that reveal thoughts, feelings, and experiences.

**Chinese characters.**

- Answer the question correctly and explain the content and topic.
- Develop a proper understanding of our traditional culture contained in the Han writing system, and form an attitude to use it as a driving force for the creation of a new, future-oriented culture.

**History.**

- Understand the development of prehistoric cultures in the Korean Peninsula and other parts of the world, focusing on changes in tools, and make inferences about the lives of prehistoric people based on artifacts and ruins.
- Understand the founding process of the Gojoseon and Three Kingdoms periods to recognize the origins of our history, and explore various sources to understand the societies of the Gojoseon and Three Kingdoms periods.
- Analyze the life of the various countries that were established in Manchuria and the Korean Peninsula based on the Iron Age culture.

**Art.**

- Apply a variety of sculptural elements and principles to express themselves creatively.
- Organize and plan the steps and sequence of production.

**Science.**

- Know human hereditary traits and methods of genetic research, and be able to represent human heredity using a family tree.
- Know how to find the distances of stars and compare the surface temperatures of stars by color.
- Describe the shape, size, and composition of our Milky Way galaxy.

**Math.**

- Understand the concept of sets and be able to represent sets.
- Understand the inclusion relation between two sets.
- Understand the concept of a function and understand its graph.

**Technology & home.**

- Identify real-world problems, generate ideas, and solve them creatively utilizing divergent and convergent thinking techniques.
- Understand problems related to emerging technologies and creatively explore, implement, and evaluate solutions.

**Engineering.**

- Experience the interdisciplinary problem-solving approaches addressed in engineering through the engineering design process.
- Understand the need to integrate engineering with other disciplines and knowledge.

**Jumong Myth Chronological Teaching & Learning Lesson Plan**

Table 3

*Specific Lesson Plans*

Period (45 m)	Topic	Teaching and learning activity content
1-2	The multifaceted nature of Korean mythology and the afterlife	-Understand the multifaceted nature of Korean mythology (history, religion, scholarship, art, and mythology). -Understand the afterlife in Korean mythology

Table 3 to be continued

3-4	Rediscovering Gojumong, the eponymous heroic and charming man of Goguryeo	-Understanding heroic mythology narrative structure graphically -Utilize the Jumong Myth app to create a Jumong Myth mind map
5-6	Jumong Mythology and Deokheung-ri Tomb Mural Constellation Tour	-Explore the sun, moon, and six constellations in the Deokheung-ri Tomb murals to understand their relationship to the Jumong myth
7-8	“Korean Mythology is ( )” Internalization and creating their own mythology	-Organize and present the concept of “Myth is ( )” based on the Jumong myth so far -Create their own myth and internalize the sacredness and fantasy of Korean mythology through the expression of their own mythology

### Jumong Myth Teaching and Learning Syllabus by Chapters

Table 4

#### Period 1-2

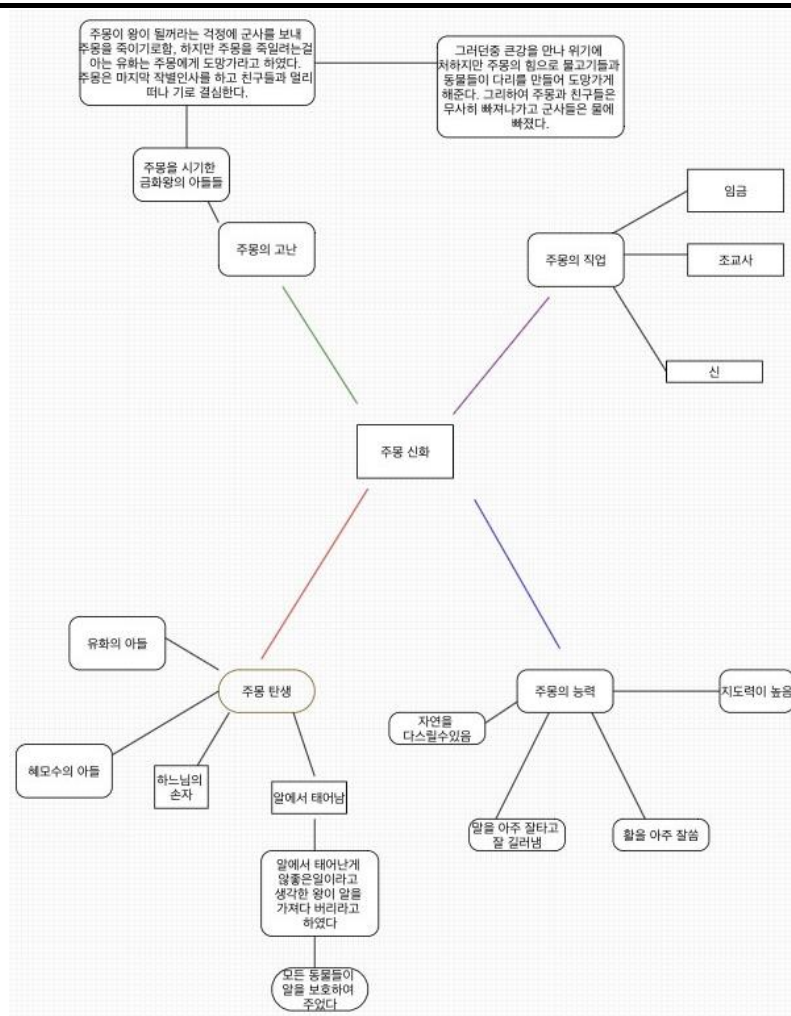
Learning objectives	They can rediscover Jumong, the eponymous heroic and charming man of Goguryeo
Core competencies	<p>■ Problem-solving skills ■ Creativity □ Critical thinking skills □ Citizenship skills ■ Communication skills □ Self-directed learning skills ■ Information literacy skills ■ Ecological and humanistic sensitivity □ Basic learning skills</p> <p>◆ Introduction (watch the movie <i>The Avengers</i>): Introduce Gojumong as a true superhero by comparing his abilities to those of Hawkeye, the God of Thunder, Iron Man, and Thor, the God of Thunder in <i>The Avengers</i>.          ◆ The concept of 史實 (fact) and 寫實 (plausible narratives) is introduced, and the Goguryeo people believed that Jumong was a real historical figure as the founder of Goguryeo, and the preface of the Tomb of King Gwanggaeto Taehae is introduced as an authentic source.          -The introduction presents the problem in relation to real life and creates interest.</p>
Lesson flowchart	<p>◆ Organize the group and carry out the activities.</p> <p>-Activity 1. Complete the narrative structure of the hero myth by graphing it.          -Activity 2. Explore the meaning of the Jumong Mythology and summarize it on the activity sheet.          -Activity 3. Download the Jumong Mythology app and create a mind map of the Jumong Mythology.</p> <p>◆ Present the mind map of Jumong Mythology using the organizer app.          -Present the Jumong Mythology mind map using the app to understand the narrative structure of Goguryeo's founding myths and heroic myths and understand the concepts of 史實 (fact) and 寫實 (plausible narratives).          Complete the Jumong Mythology mind map using a mind mapping app available for download on your smartphone.</p>
Help	-From the movie <i>The Avengers</i> (2012)

Activity photos



-Jumong Myth app mind mapping in action

## Results



-Jumong Myth app and app mind map completed

Table 5

Period 3-4

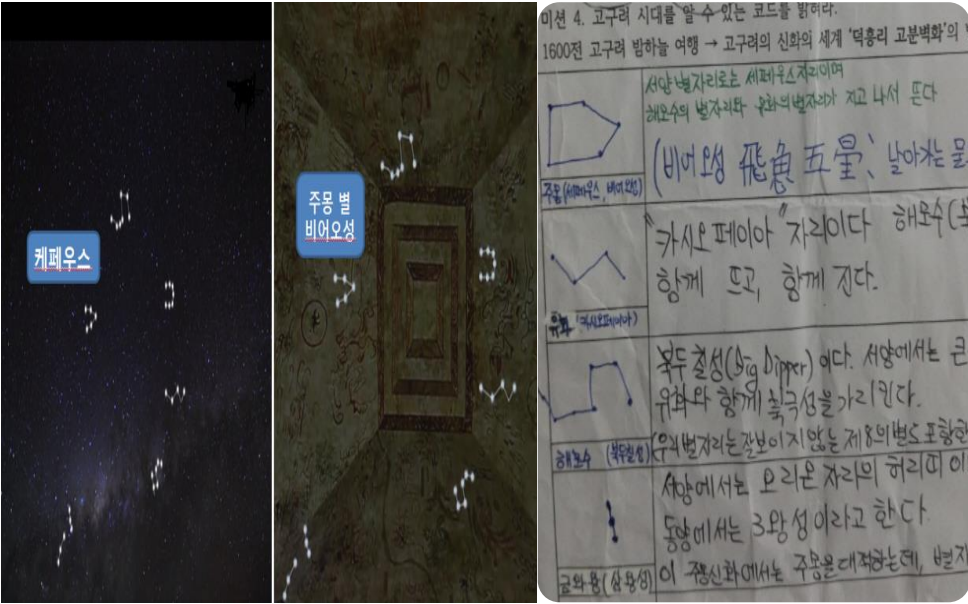
Learning objectives	Correlations between the Jumong myth and the constellations in the Deokheungri Tomb Mural
Core competencies	<p>■ Problem-solving skills ■ Creativity □ Critical thinking skills □ Citizenship skills ■ Communication skills □ Self-directed learning skills ■ Information literacy skills ■ Ecological and humanistic sensitivity □ Basic learning skills</p> <p>◆ Introduction (watch the Jumong Mythology video of the 88th episode of History Journal that day): View the murals of Deokheung-ri Tomb and the night sky in 1600 Goguryeo, and learn that the Goguryeo people admired the heavens and saw no difference between heaven and earth, life and death. The Goguryeo people also had a worldview of unity and harmony and strongly believed that the heavens were close to them and wanted to live in them forever, so the sky and astronomy were very familiar to them.</p> <p>-Introduce the problem in a real-life context and make it interesting.</p> <p>◆ Deployment: Organize the deployment modules and perform the corresponding activities.</p> <p>-Activity 1. Explore and organize the constellations engraved in the Goguryeo cultural code “Deokheung-ri Tomb Mural”.</p> <p>-Activity 2. Identify the relationship between the sun, moon, and six constellations carved in the Deokheung-ri Tomb Mural and the Jumong myth.</p> <p>-Activity 3. Understand what the sky meant to the Goguryeo people and what the Goguryeo view of the afterlife was.</p> <p>◆ Wrapping up: Present the relationship between the sun, moon, and six constellations in the Deokheung-ri Tomb murals and the Jumong myth.</p> <p>-The Goguryeo people have a strong belief in the heavens as an object of admiration and want to live in it forever, and they have a mythical worldview of one fusion and unity, where life and death are not different.</p> <p>-Always have students have their smartphones, colored pencils, and writing utensils ready.</p>
Lesson flowchart	<p>-Always give a reminder of the next lesson to build anticipation.</p> <p>-KBS History Journal Day 88: The Myth of Jumong</p>
Help	
Activity photos	 <p>-Constellations in the Goguryeo night sky circa 1600 and Deokheung-ri Tomb Mural, Deokheung-ri, and a student activity sheet</p>



Table 6

Period 5-6

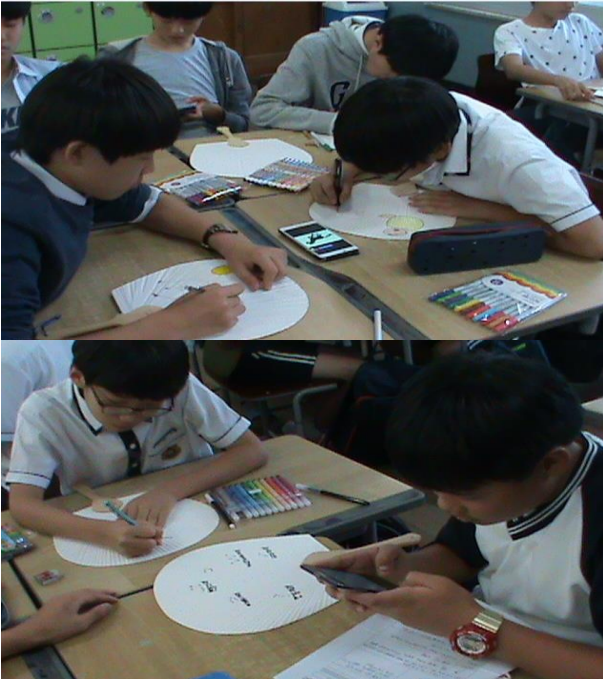

Learning objectives	Identify the Goguryeo Alliance and create a Jumong Mythical Fengliu fan
Core competencies	<p>■ Problem-solving skills ■ Creativity □ Critical thinking skills □ Citizenship skills ■ Communication skills □ Self-directed learning skills ■ Information literacy skills ■ Ecological and humanistic sensitivity □ Basic learning skills</p> <p>◆ Introduction (watch the Jumong Mythology video for History Journal Day 88): Watch the Goguryeo Alliance system and learn that the Jecheon ritual of the Goguryeo Alliance is rooted in the indigenous Korean primitive faith of Mugyo.</p> <p>◆ What are our native religions and how did the Goguryeo Jecheon ceremony work?</p> <p>-Introductions make the problem relevant to real life and create interest.</p>
Lesson flowchart	<p>◆ Deployment: Organize the deployment modules and perform the corresponding activities.</p> <p>-Activity 1. What are our native religions and organizing them by exploring the Goguryeo Jecheon ceremonial alliance?</p> <p>-Activity 2. Create a “Jumong Fengyudo” fan with pictures and sayings from the Jumong myth.</p> <p>◆ Present the process and accomplishment of making a Jumong Fengyudo fan (peer review—utilize rubric).</p> <p>-The experience of experiencing firsthand the accuracy, objectivity, and thoughtfulness of peer review is fulfilling.</p>
Help	<p>-Buying Korean paper fans: <a href="http://www.ivyart.co.kr/index.html/">http://www.ivyart.co.kr/index.html/</a></p> <p>-KBS History Journal Day 88: The Myth of Jumong</p> <p>-Peer Review Rubric Evaluation Sheet</p>
Activity photos	 
-Jumong Feng Ryu-do activity and the finished Jumong Feng Ryu-do paper fan	

Table 7  
Period 7-8

Learning objectives	Present the concept of Korean mythology and create their own mythology
Core competencies	<p>■ Problem-solving skills ■ Creativity □ Critical thinking skills □ Citizenship skills ■ Communication skills □ Self-directed learning skills ■ Information literacy skills ■ Ecological and humanistic sensitivity □ Basic learning skills</p> <p>◆ Introduction (internalization process): Based on the Dangun myth and Jumong myth, students will present their concept of what they think Korean myths are and their impressions of various activities.</p> <p>-Introductions present the problem in a real-life context and make it interesting.</p> <p>◆ Deployment: Organize the deployment modules and perform the corresponding activities.</p>
Lesson flowchart	<p>-Activity 1. Organizing Korean mythology concepts.</p> <p>-Activity 2. Create their own mythology through the process of internalizing Korean mythology.</p> <p>◆ Present their concept of Korean mythology and the creation of their own mythology (peer review—utilizing rubrics).</p> <p>-Feel a sense of accomplishment from experiencing firsthand the accuracy, objectivity, and thoughtfulness of peer review.</p>
Help	-Peer Review Rubric Evaluation Sheet
Activity photos	 <p>-A myth is a (myth). → It's the culmination of a mysterious story.</p> <p>-Myths are (convergent). → This is because myths from history, religion, literature, and art coexist.</p> <p>-Myths are (imaginary). → It is a fantasy that never really happened.</p> <p>-A myth is a (symbol). → Myths were created by people in the past, but they are still used today as archaic words. I think we just need to know what the pixels in mythology symbolize.</p> <p>-Myth is (bibimbap). → A myth is a collection of many things, so we can say that it is bibimbap.</p> 

-Jumong Mythology's various activity results and finished work QR code (<http://m.site.naver.com/0mriw>)

To help students solve the various problems of the Jumong myth, the convergent education STEAM teaching and learning model was used to create a sequence of group and individual assignments, as well as rubrics, peer assessments, self-assessments, peer-to-peer assessments, and reflective assessments. The problem-based activities that students were required to complete in groups and individually provided intellectual experiences that deepened and broadened their learning through the background knowledge they gained and the progress they made in completing their deliverables.

A peer assessment rubric is created for each lesson to evaluate individual student work and to share what the group has accomplished together. In addition, the following rubric is designed to be used for the purpose of enjoying a sense of accomplishment and camaraderie with each other by performing well in the related activities of motivation and problem solving to achieve positive learning goals.

Table 8

*Jumong Mythology Chapters Evaluation Rubric*

Evaluation types		<input type="checkbox"/> Written essay ■ Oral presentation <input type="checkbox"/> Discussion/debate ■ Project <input type="checkbox"/> Experiment/laboratory <input type="checkbox"/> Portfolio <input type="checkbox"/> Report evaluation ■ Observation evaluation ■ Self-evaluation ■ Other: Collective evaluation				
Core competencies	Create a Jumong Mythical Feng Shui Fan Assessment Content Rubric	Evaluation score				
		5	4	3	2	1
Creativity	How well does Jumong's story unfold?					
	Does the author use imagination to characterize the characters?					
	Is the story well organized?					
Art	Is the characterization of the character well done?					
	Does the design composition have personality?					
	Does it inspire and delight the viewer?					
Core competencies	Create a Jumong Mythical Feng Shui Fan Assessment Content Rubric	Evaluation score				
		5	4	3	2	1
Illusory/divinity	Is the myth's narrative structure well organized, with a beginning, middle, and end?					
	Is the divinity and fantasy associated with the gods well portrayed?					
	Are the mythological sites well placed in the myth?					
Aesthetics	Is the mythology descriptive?					
	Is the literary beauty well expressed?					
	Does it move the viewer?					

Table 9

*Core Competency: Problem Solving*

Self-assessment content	5	4	3	2	1
1. Did I correctly identify the narrative structure of the Jumong myth and the multifaceted nature of Korean mythology?					
2. Did I correctly identify the research topic related to the Jumong myth?					
3. Did I actively participate in group activities?					
4. Did I listen attentively to the presentations of other group members?					

Table 10

*Problem-Solving, Collaboration, and Character*

Our collective assessment	5	4	3	2	1
1. Did my group accurately identify and share the Jumong myth exploration topic?					
2. How well did our group fulfill their roles in problem solving?					
3. How well did our group perform the related activities?					
4. Did my group actively engage all members in the relevant activities each time?					
5. How well did my group collaborate in problem solving?					



Table 11

*Problem-Solving, Collaboration, and Character*

Collection name	Evaluate other collections	5	4	3	2	1
( ) collection	Did you perform the activity with a good grasp of the inquiry topic and present it well?					
( ) collection	Did you collaborate well when addressing the topic of inquiry?					

**Educational Implications of the Jumong Myth Using STEAM**

Korean mythology is a distinctive genre that incorporates various stylistic elements, representing a valuable cultural legacy of Korea. STEAM was employed as a pedagogical approach to reconstruct the enigmatic and revered Korean myths in a multidisciplinary manner, aligning with contemporary times. The educational value of STEAM learning, comprising eight sessions, is as follows: Firstly, students can recognize the necessity for integrated education that combines Korean mythology and STEAM, narrowing the negative perception and distance from classical literature and creating a healthy and positive reinterpretation of classical literature that fits the current era. Secondly, by understanding the organic complexity of Korean mythology and the multifaceted nature of Korean mythology, students can broaden their appreciation of literary works and practice creative thinking. Third, by graphing the narrative structure of the hero and mind-mapping the life story of Jumong, the founding myth of Goguryeo, students will develop detailed, accurate, and extended thinking using non-literal knowledge of mathematics and engineering. Fourth, by studying the constellations inscribed on the murals of the Deokheung-ri tomb and finding their relationship to the Jumong myth, students will develop comprehensive thinking through scientific and historical artifacts. Finally, based on the understanding of Goguryeo's Jecheon ritual, the Jumong Mythical Fengyu also cultivates artistic thinking through fan making. Through these harmonious convergence class activities, we will be able to expand our thinking, foster desirable personality, establish our self-identity as a win-win, and redefine the value of our existence with the knowledge and perspective of positively reinterpreting classical literature.

**Conclusion**

We are currently living in the era of artificial intelligence (AI) during the 4th Industrial Revolution. The acceleration of this era has become so rapid that it raises the question of whether Korean classical literature can still fulfill its role as a character education that cultivates human virtues. Learners are increasingly demanding to learn how to actively utilize knowledge, and teachers are demanding a new teaching paradigm. In light of the increasing unpredictability of contemporary problem situations, learners are increasingly in need of skills such as creative design and problem-solving in order to navigate, select, and utilize the information they require.

STEAM education, which focuses on developing students' ability to be creative and self-directed problem-solvers in a given situation, is the most effective constructivist learning method in this social trend.

The educational approach known as literary education places a strong emphasis on the value of learners engaging in collaborative and independent work. This approach is designed to help learners gain a deeper understanding and appreciation of literary works, as well as to facilitate their engagement with a range of life experiences. Ultimately, this enables learners to apply these insights and experiences to their own lives. Classical literature, in particular, is of great educational significance because it reveals the life and sentiments of the time, and at the same time, it is a vital link that allows us to discover ourselves and discover each other in the present.

The Jumong myth is a remarkable narrative that incorporates elements of divinity, fantasy, and heroic structure, and is well-known to students. However, it has been overlooked due to a lack of awareness and indifference towards Korean mythology. In order to address this issue, the Jumong myth was selected as the subject of this study. The themes presented in the Jumong myth offer sufficient educational value to learners by reconstructing a sufficient number of elements to attract interest and attention.

This study, based on the content of Jumong, summarizes the theoretical materials necessary for problem solving in exploring topics related to Jumong mythology. It also presents a teaching and learning model for the overall theory and application process of STEAM and the educational significance of the Jumong mythology using STEAM. This is an effective learning method while implementing active problem solving, and a teaching and learning process plan and educational significance for each stage. This model was proposed as a potential alternative for teaching Korean mythology, and further research could be conducted to design a range of engaging problem-solving and teaching/learning models that utilise STEAM. It can be posited that STEAM classes in schools will be more effective when the basic learning attitudes of students who have engineering skills, such as the ability to search the Internet and create mind maps using apps, and the role of the teacher as a facilitator to make the students' problem-solving process more meaningful while remembering the overall flow of the STEAM class are harmonized. This study anticipates further investigation into the potential of STEAM to enhance the quality of classical literature education in the long term.

## References

- Bang, M., Park, H., Hwang, J. M., Jung, W. S., Cho, S., & Yoon, N. (2019). *High school literature*. Seoul: Mirae N Publisher.
- Choi, W., Park, J., Kwak, K., Park, S., Park, C., Seo, K., ... Young, J. (2019). *High school literature*. Paju: Changbi Publisher.
- KBS History Journal. (2015.08.30). That day. Retrieved from <https://shorturl.at/16Ox2>
- Kim, I. (2008). *The myth of the Goguryeo constellation*. Seoul: Sakyejul Publisher.
- Kim, J. (2012). *STEAM pedagogy*. Paju: Yangseowon Publisher.
- Kim, K. (2002). *The founding of Goguryeo: Reclaiming the myth of Jumong*. Paju: Changbi Publisher.
- Kim, Y. H., & Kim, J. (2017). Analysis of the status of STEAM education research papers in Korea. *Journal of the Korean Society of Industrial Education*, 42(1), 142-145.
- Korea National University of Education and Training. (2022). *Knowing and using converged education correctly, time to build up humanities literacy, 10th period, Jumong from the stars, a fusion of creativity*. Seoul: Korea National University of Education and Training.
- Lee, D. (2015). Development and application of a procedural model for the creative design phase of STEAM education. *Journal of the Korean Society of Technology and Education*, 15(1), 158-165.
- Lee, E. (2015). Classic literature, clothed in art. *Gwangju Educational Research*, 15, 106-109.
- Lee, E. (2016). Meet Jumong from the stars. *Korean Language Education Together*, 122, 93-98.
- Lee, E. (2017). The founding of Goguryeo: Reclaiming the myth of Jumong. *Gwangju Educational*, 85, 22-23.
- Lee, E. (2019). *Topic selection, where are we? Gwangju free school year information compass, scholarship resources*. Gwangju: Gwangju City Office of Education.
- Lee, H. N. (2015). Understanding STEM/STEAM education and teaching and learning methods. In *015 KAIST STEAM Advanced Program Training Manual*, 3 (pp. 51-55). Ministry of Education, Korea Foundation for the Advancement of Science & Creativity, KIST.
- Lee, J., Lee, K., Oh, T., Park, S. Y., Lee, S. K., Sun, J. W., ... Han, C. W. (2019). *High school literature*. Seoul: Visang Publisher.
- Lee, S. H. (2015). Understanding STEAM lesson design. In *2015 KAIST STEAM Advanced Program Training Manual*, 2 (pp. 24-28). Ministry of Education, Korea Foundation for the Advancement of Science & Creativity, KIST.
- Ministry of Education. (2015). *Notice: Elementary and secondary curriculum overview and curriculum bulletin*.
- Na, K. (2005). *Korean mythology*. Incheon: Haneol Media Publisher.
- Shin, J., & Choi, E. (2015). *Curriculum design and application for STEAM convergence education*. Paju: KYOYOOKBOOK Publisher.