K·STEAM SCHOOL

WITH METAVERSE

Korea + Science Technology Engineering Arts Mathematics

Chapter

01 Service: Introduction

1 Background of Curriculum Design
2 Project Summary: Structure of 'K-STEAM School' with Metaverse
3 K-STEAM School with Metaverse Differentiating Features
4 Curriculum Characteristics

02 Service: Course Introduction

1 Physical Education K-Dance (P.E. K-Dance)
2 Physical Education Breaking (P.E. Breaking)
3 Fusion Elective e-Sports

03 Service: Technology

1 Development of TMS (Training Management System)
2 3D Volumetric Video
3 Metaverse

04 Empirical Research

1 The Empirical Research at Woosong University
2 The Global Empirical Research Plan 2023

01

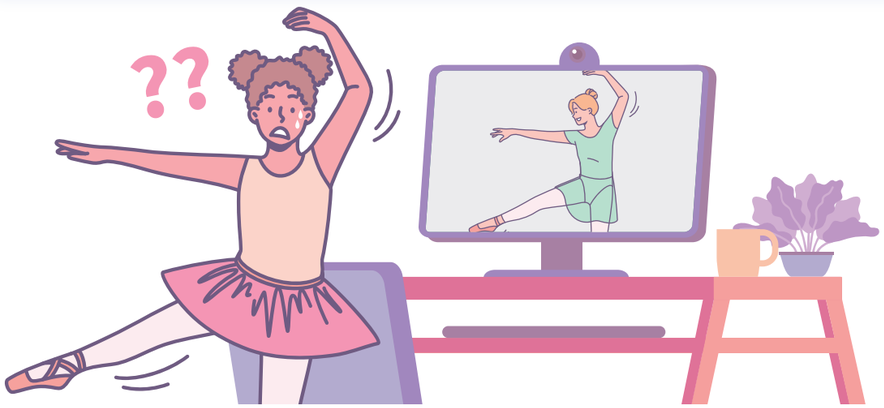
Service: Introduction

01 Service: Introduction

1 Background of Curriculum Design

Arts and Physical Education in Pre Covid-19 Era

Arts and Physical Education in Non-face-to-face Environment



Reasons to Select Arts and Physical Education Curriculum Development as National R&D Project

Needs in Technical Support

Necessary to develop technology of learner-teacher communication, learning management and evaluation for overcoming obstacles of practice based subjects in non-face-to-face environment

Needs in Industrial and Market Support

Necessary to reflect various demands due to online contents market expansion after Covid-19

Essential for the government to actively respond to the emergence of the online school model

Needs in the Government-level Policy Support

In line with Digital New Deal's education infrastructure digital transformation and non-face-to-face industry promotion

Crucial to develop digital literacy in non-face-to-face environment for digitally vulnerable social group

2 Project Summary:
Structure of 'K-STEAM School' with Metaverse

K·STEAM·SCHOOL
WITH METAVERSE

Definition of K-STEAM

'K-STEAM School' with Metaverse Service for Arts and Physical Education Learning Activity Support in Non-face-to-face Environment

Korea +

The Korean Wave Based Global Convergence Education with the Fields Where Korea Has Strength in

Science · Technology · Engineering · Arts · Mathematics

Needs - Education Contents
Branch 3 Performance-based Arts and Physical Education

WEDU COMMUNICATIONS

SM UNIVERSE

Commercialization Examples for Future Reference

Science	Technology	Engineering	Arts	Mathematics
Chemical Battery	Game Develop	Robot Building	Oriental Painting	Webtoon Math
	e-Sports		K-Dance Breaking	

Format - Contents Tutorial
Branch 2 Digital Literacy

i-Scream media · 아우름 Qurum · MOAZIO

- Developing Digital Literacy Education Model in Non-face-to-face Environment
- Developing 16 Lessons Curriculum and Module Based on PBL
- Developing Storytelling Interaction Contents Based on Various Countries' Literacy
- Operating Non-face-to-face Classes and Empirical Research

Structure - Platform
Branch 1 'K-STEAM School' with Metaverse Platform

Tekville 테크빌교육(주) · KETI · SUPER PiXEL 수퍼픽셀 · d·carrick CHARACTER·DIGITAL·CONTENT

- Social Learning Interaction Synchronization(2D/3D) Technology
- LMS Curriculum Management Technology
- CMS Contents Classification and Management Technology (Structured/Unstructured)
- LRS (based on Cloud) Learning Data Storing Technology (Structured/Unstructured)

Keit Korea Evaluation Institute of Industrial Technology

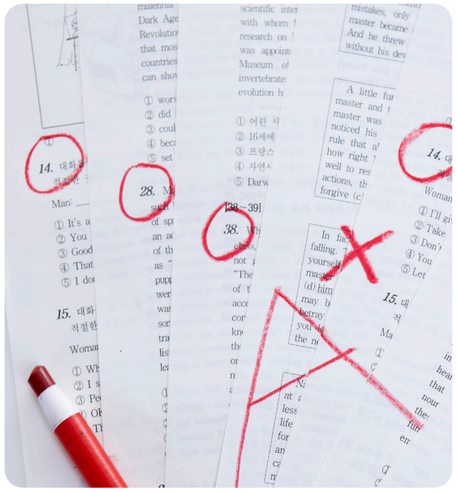
Project: Development of 'K-STEAM School' with Metaverse service for supporting non-face-to-face learning of arts and physical education, and interactive contents and platform technology

3 K-STEAM Metaverse School
Differentiating Features

*K-STEAM (Korea - Science, Technology, Engineering, Arts, Mathematics)

K·STEAM·SCHOOL
WITH METAVERSE

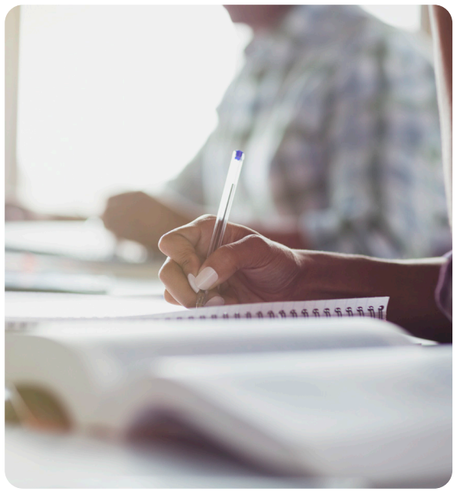
Credit



- Registered as a credit course of US Advantages Digital Learning Solutions accredited by ***Cognia**
- Operated the empirical research in 5 countries (Indonesia, Malaysia, Vietnam, China and Thailand) through Woosong University **Nano-PAMS** program

*Cognia is the world's best accreditation agency.

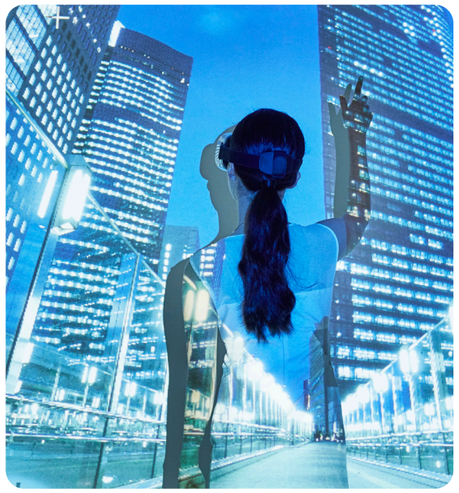
Progress-centered Assessment



- **AI Evaluation**
  Self-management Activity
  (Goal Setting, Reflection Note)
- **Appreciation Activity**
  (Self Review, Peer Review)
- **Progress Rate**
- **Video Assignment Submission**
  (Pretest, Unit Assignment, Posttest)

- Competency evaluation criteria differs by subject.

Realistic Demonstration



- Provides **multi-sided** videos
- Provides 3-dimensional **volumetric** contents in 360 degrees

K-STEAM

- Developing Global Convergence Education Subject collaborated with fields where Korea has its strength based on Korean Wave

4 Curriculum Characteristics

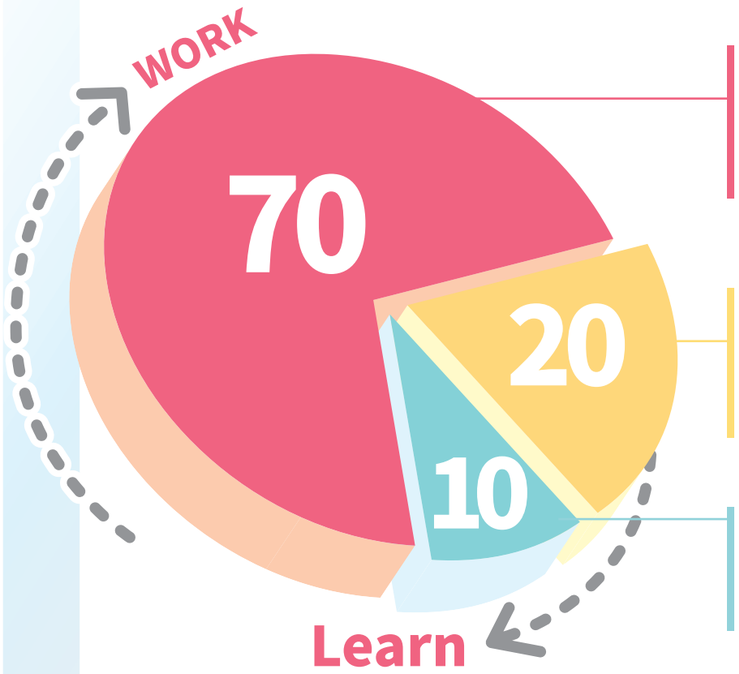
K·STEAM·SCHOOL
WITH METAVERSE

I. Performance-based Arts and Physical Education 70:20:10 Learning Model

✓ **70%** - Experiential / Experience
Learning and developing through day-to-day tasks, challenges and practice

✓ **20%** - Social / Exposure
Learning and developing with and through others from coaching, exploiting personal networks and other collaborative and cooperative actions

✓ **10%** - Formal / Education
Learning and developing through structured courses, reading and programs



'70' - Experience / Experiential Learning
New and challenging experiences
Solving problems
Reflective practice

'20' - Exposure / Social Learning
Communities, networks, and sharing
Coaching and mentoring
Feedback

'10' - Education / Formal Learning
Structured courses and programs

II. Results Oriented Backward Design Model

Existing Curriculum Design Model

Tyler's Curriculum Development Model (Tyler, 1949)

Determine Objectives ▶ Identify Experiences ▶ Structure Experiences ▶ Evaluate Effectiveness

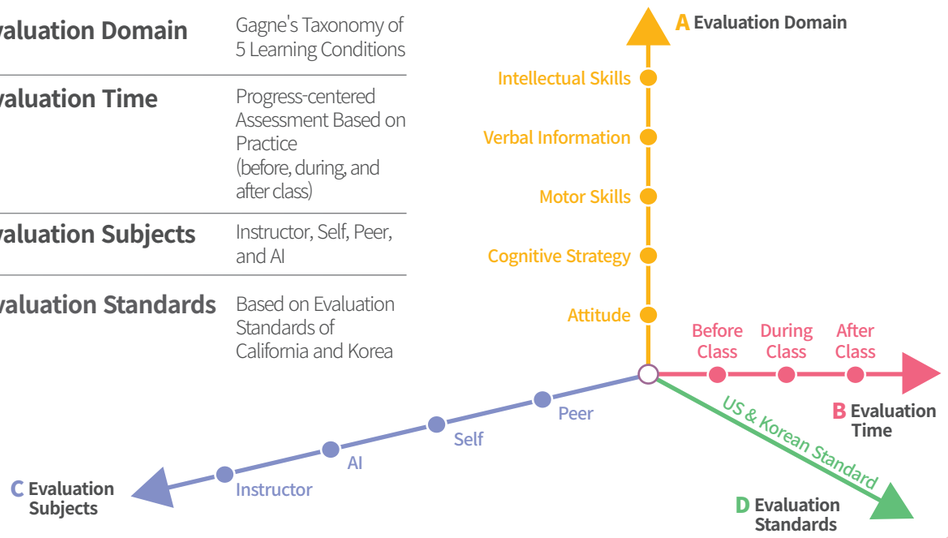
K-STEAM Curriculum Design Model

Unit Design and Development of Backward Process (Wiggins & McTighe, 2005)

Goal Setting	Evaluation Design	Learning Plan
Identify Desired Results	**Determine Acceptable Evidence**	**Plan Learning Experiences and Instruction**

III. Curriculum Characteristics

A Evaluation Domain	Gagne's Taxonomy of 5 Learning Conditions
B Evaluation Time	Progress-centered Assessment Based on Practice (before, during, and after class)
C Evaluation Subjects	Instructor, Self, Peer, and AI
D Evaluation Standards	Based on Evaluation Standards of California and Korea



Ⅳ. Progress-centered Assessment and Scoring System

Types	Activities	Times Auto-calculated	Unit Score Auto-calculated	Distribution Manually managed by instructor	Total Score Auto-calculated
Self-management Activity	Goal Setting				
	Reflection Note				
Appreciation Activity	Self Review				
	Peer Review				
Progress Rate	Out of 100%				
Video Assignment Submission	Pretest				
	Unit Assignment				
	Posttest				
Teacher's Evaluation	Teacher's Evaluation				
Total					100

- **T**ypes and activities of arts and physical education course practice are standardized, provided as a system and linked to the scoring system.

- **H**owever, since competencies for each course are different, it enables to define and edit core competencies when opening a course, and ensure that competencies are automatically reflected in the areas where competencies should appear among the above forms.

- **T**he evaluation system itself can be used equally for all arts and physical education course, and the progress-centered assessment activities provided by the system are provided so that instructors can select them at the curriculum composition stage and insert them as needed.

02

Service: Course Introduction

02 Service: Course Introduction

1 P.E. K-Dance

I. K-Dance Instructor

INNÉ YU

Education

- Dance, Seoul Institute of the Arts

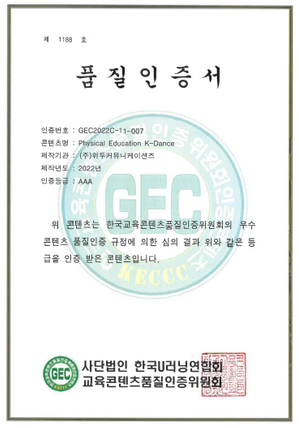
Experience

- FRZM Movement dancer
- 21 Jemma Lee promotion video dancer
- 21 Let's DMZ <2021 DMZ Concert> dancer
- 21 Culturehub - La MaMa E.T.C. monthly online performance <Downtown Variety> Seoul Institute of the Arts edition dancer
- 20 GyeonggiNaeilSquare Ansan AsYouthSpace promotion video dancer
- 20 Seoul Is Museum Media Arts <Beyond the Imagination> dancer
- 19 The Ansan Street Arts Festival closing ceremony <La Fura Dels Baus: NUUN> as Naira
- 18 Gyeongnam Miryang Yeongnamnu Pavilion <Miryang River Odyssey> performance dancer
- 17 Wanju Wild Food Festival celebration performance dancer
- 17 FIFA U20 World Cup Korea 2017 opening ceremony performance dancer
- 17 The 12th Jeonbuk Science Festival celebration performance dancer
- Teacher's License (Dance Practice)

II. K-Dance Progress-centered Assessment and Scoring System

Types	Activities	Times Auto-calculated	Unit Score Auto-calculated	Distribution Manually managed by instructor	Total Score Auto-calculated
Self-management Activity	Goal Setting	1	1	1	5
	Reflection Note	4	1	4	
Appreciation Activity	Self Review	3	0.3 (1/3)	1	5
	Peer Review	6	0.6 (4/6)	4	
Progress Rate	Out of 100%	30	2 (60/30)	60	60
Video Assignment Submission	Pretest	1	4	4	20
	By Each Unit	3	4	12	
	Posttest	1	4	4	
Teacher's Evaluation	Teacher's Evaluation	-	-	10	10
Total					100

III. K-Dance Quality Certification Evaluation



K-Dance Quality Certification Level AAA

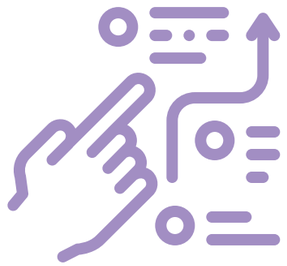
Raw Score	Quality Certification Evaluation Level Score
Above 95	AAA
Above 90	AA
Above 85	A
Above 80	BB

Certification General Review

- Appropriate font and color were used for general UI and design structure.
- Learning contents were properly structured to understand and experience theory and practice, and teaching and learning strategy for practice is appropriate.
- This course for foreigners provides friendly information and guidance so that foreign learners can participate in learning without difficulties.

K·STEAM·SCHOOL
WITH METAVERSE

Ⅳ. K-Dance Learning Goal and Learning Outcome



Learning Goal

- Strengthening physical fitness through K-Dance and basic exercise practice

Learning Plan

- Selecting various songs for K-Dance and operating a class by level
- Providing flexibility and muscle strengths focused contents for physical fitness

Learning Outcome

Developing K-Dance Competencies

- **Tense:** Accuracy of movement to beat and rhythm
- **Formativeness:** Accuracy of spatial location of each part of the body
- **Coordination:** Accuracy of movement power
- **Expressiveness:** Appropriateness of emotional expression
- **Instantaneousness:** The ability to display strong energy in a short period of time

K·STEAM·SCHOOL
WITH METAVERSE

V. K-Dance Operation and Evaluation Flow

Lesson 01	Lesson 02	Lesson 03—11	Lesson 12—20	Lesson 21—29	Lesson 30	
Overview	**Theory**	**Unit 1**	**Unit 2**	**Unit 3**	**Group**	**Final View**
Intro Pretest	K-Pop History K-Pop Genre Quiz	Introduction of 1st song and dance characteristics	Introduction of 2nd song and dance characteristics	Introduction of 3rd song and dance characteristics	Sharing Posttest	Grade Conformation
Assignment Submission 4 Reflection Note 1		**Training Sessions** X 6 times **Training Session Structure** 1 Warm-up 2 Fitness Activity 3 Dance Tutorial 4 Dance Practice 5 Cool Down	**Training Sessions** X 6 times **Training Session Structure** 1 Warm-up 2 Fitness Activity 3 Dance Tutorial 4 Dance Practice 5 Cool Down	**Training Sessions** X 6 times **Training Session Structure** 1 Warm-up 2 Fitness Activity 3 Dance Tutorial 4 Dance Practice 5 Cool Down	Assignment Submission 4 Reflection Note 1 Course Evaluation 0	**Final Grade**
		Assignment Submission 4 Self Review 0.3 Peer Review 1.3 (0.6x2) Reflection Note 1	Assignment Submission 4 Self Review 0.3 Peer Review 1.3 (0.6x2) Reflection Note 1	Assignment Submission 4 Self Review 0.3 Peer Review 1.3 (0.6x2) Reflection Note 1		

1 lesson = 90 minutes
Total 30 lessons

Teacher's Evaluation	Final View **Total 10 points**
Attitude	Goal Setting 1 pt X 1 time Reflection Note 1 pt X 4 times **Total 5 Points**
Appreciation	Self Review 0.3 pt x 3 times Peer Review 0.6 pt x 6 times **Total 5 points**
Progress	2 points per lesson x 30 times **Total 60 points**
Assignment Submission	4 points x 5 times **Total 20 points**

2 P.E. Breaking

I. Breaking Instructor

Jae-min Park

Education

- BA at College of Education (Physical Education) and Business School (Business Administration), Seoul National University
- MPP at Graduate School of Public Administration, Seoul National University
- In a master program, researching sport industry management at Georgetown University
- In a doctoral program, researching global sports management at Seoul National University

Experience

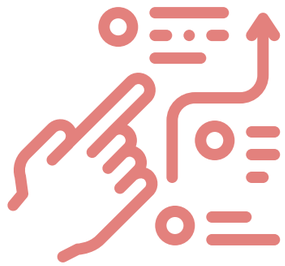
- Professor of the Division of Dance Arts, Seoul Arts College
- T.I.P Crew member
- International Judge and Instructor (Breaking) at Korean Federation of DanceSport
- Director of Korean Federation of DanceSport
- KBS Olympic Breaking commentator

II. Breaking Progress-centered Assessment and Scoring System

Types	Activities	Times Auto-calculated	Unit Score Auto-calculated	Distribution Manually managed by instructor	Total Score Auto-calculated
Self-management Activity	Goal Setting	1	1	1	5
	Reflection Note	4	1	4	
Appreciation Activity	Self Review	3	0.3 (1/3)	1	5
	Peer Review	6	0.6 (4/6)	4	
Progress Rate	Out of 100%	30	2 (60/30)	60	60
Video Assignment Submission	Pretest	1	4	4	20
	By Each Unit	3	4	12	
	Posttest	1	4	4	
Teacher's Evaluation	Teacher's Evaluation	-	-	10	10
Total					100

2 P.E. Breaking

III. Breaking Learning Goal and Learning Outcome



Learning Goal

- Strengthening physical fitness and movement skills through various movements

Learning Plan

- Selecting basic element of breaking
- Practicing basic fitness exercise for strengthening physical fitness

Learning Outcome

Developing Breaking Competencies

- **Tense:** Accuracy of movement to beat and rhythm
- **Formativeness:** Accuracy of spatial location of each part of the body
- **Coordination:** Accuracy of movement power
- **Expressiveness:** Appropriateness of emotional expression
- **Instantaneousness:** The ability to display strong energy in a short period of time

2 P.E. Breaking

Ⅳ. Breaking Operation and Evaluation Flow

Lesson 01	Lesson 02	Lesson 03—11	Lesson 12—20	Lesson 21—29	Lesson 30	
Overview	**Theory**	**Unit 1**	**Unit 2**	**Unit 3**	**Group**	**Final View**
Intro Pretest	Breaking Theory 1 Quiz	Breaking Theory 2	Breaking Theory 3	Breaking Theory 4	Sharing Posttest	Grade Conformation
Assignment Submission 4 Reflection Note 1		**Training Sessions** X 6 times **Training Session Structure** 1 Warm-up 2 Fitness Activity 3 Breaking Tutorial 4 Breaking Practice 5 Cool Down	**Training Sessions** X 6 times **Training Session Structure** 1 Warm-up 2 Fitness Activity 3 Breaking Tutorial 4 Breaking Practice 5 Cool Down	**Training Sessions** X 6 times **Training Session Structure** 1 Warm-up 2 Fitness Activity 3 Breaking Tutorial 4 Breaking Practice 5 Cool Down	Assignment Submission 4 Reflection Note 1 Course Evaluation 0	**Final Grade**
		Assignment Submission 4 Self Review 0.3 Peer Review 1.3 (0.6x2) Reflection Note 1	Assignment Submission 4 Self Review 0.3 Peer Review 1.3 (0.6x2) Reflection Note 1	Assignment Submission 4 Self Review 0.3 Peer Review 1.3 (0.6x2) Reflection Note 1		

1 lesson = 90 minutes
Total 30 lessons

Teacher's Evaluation	Final View **Total 10 points**
Attitude	Goal Setting 1 pt X 1 time Reflection Note 1 pt X 4 times **Total 5 Points**
Appreciation	Self Review 0.3 pt x 3 times Peer Review 0.6 pt x 6 times **Total 5 points**
Progress	2 points per lesson x 30 times **Total 60 points**
Assignment Submission	4 points x 5 times **Total 20 points**

3 Fusion Elective e-Sports

I. e-Sports Instructor

EunKyung Choi

Education

- Sungkonghoe University / Communication. BA
- Goldsmiths, University of London / Arts and Social Sciences. Diploma
- Goldsmiths, University of London / Television Journalism. MA
- Loughborough University / Communication Studies Political Economy of Communication. Ph. D.

Experience

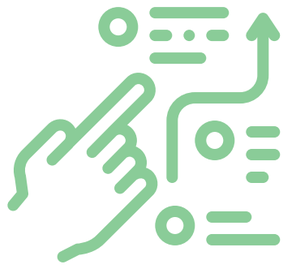
- Professor of Media Contents at Peace and Liberal Arts College, and e-Sports convergence at Graduate School of Hanshin University
- Pacific Asian Communication Association, President
- Published e-Sports textbook for Korean high school students
  - ‘e-Sports Psychology’ (Expected 2023)
  - ‘e-Sports Ethics’ (2022)
  - ‘e-Sports Practice’ (2021)

II. e-Sports Progress-centered Assessment and Scoring System

Types	Activities	Times Auto-calculated	Unit Score Auto-calculated	Distribution Manually managed by instructor	Total Score Auto-calculated
Self-management Activity	Goal Setting	1	1	1	5
	Reflection Note	5	0.8	4	
Appreciation Activity	Self Review	5	1	5	10
	Peer Review	5	1	5	
Progress Rate	Out of 100%	30	2	60	60
Video Assignment Submission	Video Submission	5	3	15	15
Teacher’s Evaluation	Teacher’s Evaluation	-	-	10	10
Total					100

K·STEAM·SCHOOL
WITH METAVERSE

III. e-Sports Learning Goal and Learning Outcome



Learning Goal

- Improving the perception of e-Sports as a community culture and expanding the viewpoint
- Strengthening communication and cooperation skills through collaborative play
- Developing a convergence subject for strengthening strategic thinking and creativity
- Improving the negative perception of parents against game

Learning Plan

- Based on League of Legends game play
- Experiencing the characteristics of physical education as a competitive sport and various profession roles
- Strengthening sportsmanship and teamwork through cooperative game play

Learning Outcome

Developing e-Sports Competencies

- **Reading Comprehension:** Ability to read and understand the core and conclusions of text
- **Critical Writing:** Ability to collect and analyze various information and organize critical evaluations in writing
- **Communication:** Ability to effectively express one's thoughts and feelings in various situations and to listen and respect the opinions of others
- **Judgment:** Ability to accurately understand and make decisions about various situations
- **Responsiveness:** Ability to quickly response in various situations

K·STEAM·SCHOOL
WITH METAVERSE

Ⅳ. e-Sports Operation and Evaluation Flow

Lesson 01—06	Lesson 07—13	Lesson 14—20	Lesson 21— 26	Lesson 27— 30	
Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Final View
Reflection Note 0.8				Training Sessions Assignment Submission 3 Self Review 1 Peer Review 1	Grade Conformation **Final Grade**
Theory Sessions X 6 times	Theory Sessions X 7 times	Theory Sessions X 7 times	Theory Sessions X 6 times	Training Sessions Assignment Submission 3 Self Review 1 Peer Review 1	
Reflection Note 0.8	Reflection Note 0.8	Assignment Submission 3 Self Review 1 Peer Review 1 Reflection Note 0.8	Reflection Note 0.8	Training Sessions Assignment Submission 3 Self Review 1 Peer Review 1	
				Training Sessions Assignment Submission 3 Self Review 1 Reflection Note 0.8	

1 lesson = 90 minutes
Total 30 lessons

Teacher's Evaluation	Final View **Total 10 points**
Attitude	Goal Setting 1 pt X 1 time Reflection Note 0.8 pt X 5 times **Total 5 Points**
Appreciation	Self Review 1 pt x 5 times Peer Review 1 pt X 5 times **Total 10 points**
Progress	2 points per lesson x 30 times **Total 60 points**
Assignment Submission	3 points x 5 times **Total 15 points**

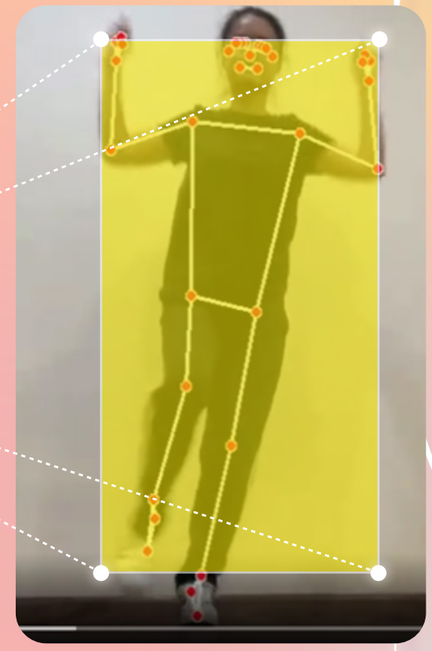
03
Service: Technology

1 Development of TMS
*TMS : Training Management System

I. AI Evaluation
Evaluating movement synchronization of teacher and learner

Teacher's Movement

Evaluating **movement synchronization** of teacher and learner



Learner's Movement

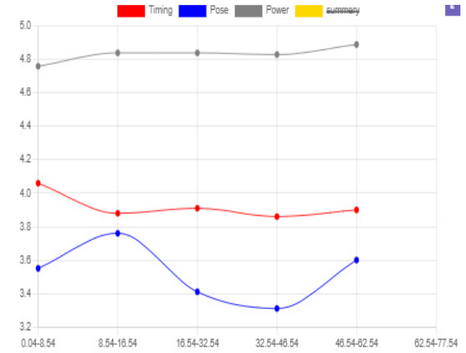
1 Development of TMS
*TMS : Training Management System

K·STEAM·SCHOOL
WITH METAVERSE

I. AI Evaluation
Evaluating movement synchronization of teacher and learner

- **Formativeness** Accuracy of spatial location of each part of the body
- **Tense** Accuracy of movement to beat and rhythm
- **Coordination** Accuracy of movement power

Submitted Learner's Assignment Video



AI Analysis

Evaluation Analysis Score

Criteria	AI Score
Pose Accuracy	3.59 / 5
Timing Accuracy	4.82 / 5
Power Accuracy	2.88 / 5
Summary	3.91 / 5

II. Goal Setting

Evaluation Contents	Goal Setting
Total Distribution	1 point out of 100
Evaluation Time	During lesson 1
Evaluation Method / Tool	Checklist / Writing
Point Awarded	When all fields are filled in and submitted

Goal Setting

♣ Before taking this class, how would you evaluate your performance ability?
(1= needs improvement, 5= excellent)

① 1 ② 2 ③ 3 ④ 4 ⑤ 5

♣ How long are you going to practice for this course in a week?
① Less than 30 minutes
② Equal to or greater than 30 minutes, less than 1 hour
③ Equal to or greater than 1 hour, less than 2 hours
④ Equal to or greater than 2 hours, less than 3 hours
⑤ More than 3 hours

♣ Check any factors distracting your online studying or practice.
① Other electronic device usage
② Talking
③ Outdoor activities
④ Zoning out
⑤ Difficulty of class

♣Short Answer
Write down your own goal you would like to achieve through this online course.
(Ex: I will submit all the given assignments.)

Write Here

Submit

1 Development of TMS
*TMS : Training Management System

K·STEAM·SCHOOL
WITH METAVERSE

III. Reflection Note

Evaluation Contents	Reflection Note
Total Distribution	• K-Dance, Breaking : 1 point per time • e-Sports : 0.8 point per time
Evaluation Time	• K-Dance, Breaking : end of each unit / lesson 30 • e-Sports : end of each unit
Evaluation Method / Tool	Checklist / Writing
Point Awarded	When all fields are filled in and submitted

Reflection Note

♣ Was the difficulty of this class appropriate?
① Strongly agree ② Agree ③ Neutral ④ Disagree ⑤ Strongly disagree

♣ Did you remove factors distracting your studying?
① Strongly agree ② Agree ③ Neutral ④ Disagree ⑤ Strongly disagree

♣ How much do you think your performance ability has improved?
① Significantly improved ② Improved ③ I don't know
④ Not improved ⑤ Significantly not improved

♣ Did you make an effort utill the end to complete the assigned tasks?
① Strongly agree ② Agree ③ Neutral ④ Disagree ⑤ Strongly disagree

♣ How long have you studied in a week including your practice?
① Less than 30 minutes
② Equal to or greater than 30 minutes, less than 1 hour
③ Equal to or greater than 1 hour, less than 2 hours
④ Equal to or greater than 2 hours, less than 3 hours
⑤ More than 3 hours

♣ Short Answer
Write down how you felt during the class activities such as what you enjoyed and what you struggled with.

Write Here

Submit

IV. Self Review

Evaluation Contents	Self Review
Total Distribution	• K-Dance, Breaking : 0.3 point per time (⅓point / time) • e-Sports : 1 point per time
Evaluation Time	• K-Dance, Breaking : end of each unit before self-reflection note • e-Sports : after video assignment submission
Evaluation Method / Tool	Checklist / Writing
Point Awarded	When all fields are filled in and submitted

Self Review

♣ Let's evaluate your performance.

Competency 1. Question (1= needs improvement, 5= excellent)
Needs improvement 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ excellent

Competency 2. Question (1= needs improvement, 5= excellent)
Needs improvement 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ excellent

Competency 3. Question (1= needs improvement, 5= excellent)
Needs improvement 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ excellent

Competency 4. Question (1= needs improvement, 5= excellent)
Needs improvement 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ excellent

Competency 5. Question (1= needs improvement, 5= excellent)
Needs improvement 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ excellent

Core competencies for each subject can be designated by the instructor in charge when opening the curriculum, and the designated core competencies are presented as indicators in the performance evaluation form.

♣ Short Answer
1.Write down the strengths of your performance and compliment yourself.

Write Here

2. Find out the weakness of your performance and write down the ways to improve it.

Write Here

Submit

1 Development of TMS
*TMS : Training Management System

V. Peer Review

Evaluation Contents	Peer Review
Total Distribution	• K-Dance, Breaking : 0.6 point per time (4/6 point per time) • e-Sports : 1 point per time
Evaluation Time	• K-Dance, Breaking : end of each unit before self-reflection note • e-Sports : after video assignment submission
Evaluation Method / Tool	Checklist / Writing
Point Awarded	When all fields are filled in and submitted

Peer Review

♣ Let's evaluate your peer's performance.

Competency 1. Question (1= needs improvement, 5= excellent)

Needs improvement 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ excellent

Competency 2. Question (1= needs improvement, 5= excellent)

Needs improvement 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ excellent

Competency 3. Question (1= needs improvement, 5= excellent)

Needs improvement 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ excellent

Competency 4. Question (1= needs improvement, 5= excellent)

Needs improvement 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ excellent

Competency 5. Question (1= needs improvement, 5= excellent)

Needs improvement 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ excellent

♣ Short Answer

1. Write down the strengths of your peer's performance and compliment him or her.

Write Here

2. Find out the weakness of your peer's performance and write down the ways to improve it.

Write Here

Submit

VI. Teacher's References

Teacher's References

♣ Student Activity Information

	Assignment	URL
1	Goal Setting	URL
2	Reflection Note	URL
3	Assignment 1~5	URL
4	Self Review 1~3	URL
5	Peer Review 1~6	URL

♣ Student Activity Information

Criteria	Description	Self performance review average score	Peer's performance review average score / unit	AI review average score
		5	5	5
Competency 1	Question	5	5	5
Competency 2	Question	5	5	5
Competency 3	Question	5	5	5
Competency 4	Question	5	5	5
Competency 5	Question	5	5	5

♣ Check below how students reflect on themselves.

1) Write down the strengths of your performance and compliment yourself.
2) Find out the weakness of your performance and write down the ways to improve it.

♣ Check below how peers reflect on this student.

1) Write down the strengths of your peer's performance and compliment him or her.
2) Find out the weakness of your peer's performance and write down the ways to improve it.

VII. Gradebook

Gradebook

Gradebook		Point	Submitted	Score	Total
① Self-management Activity	Goal Setting	1	1	1	5
	Reflection Note	1	4	4	
② Appreciation Activity	Self Review	0.3 (1/3)	3	1	5
	Peer Review	0.6 (4/6)	6	4	
③ Progress Rate	Lecture	2	30	60	60
④ Assignment Submission	Assignment	4	5	20	20
				Total System Score (①+②+③+④)	90
				⑤ Teacher's Evaluation	10
				Total Combined Score (①+②+③+④+⑤)	100

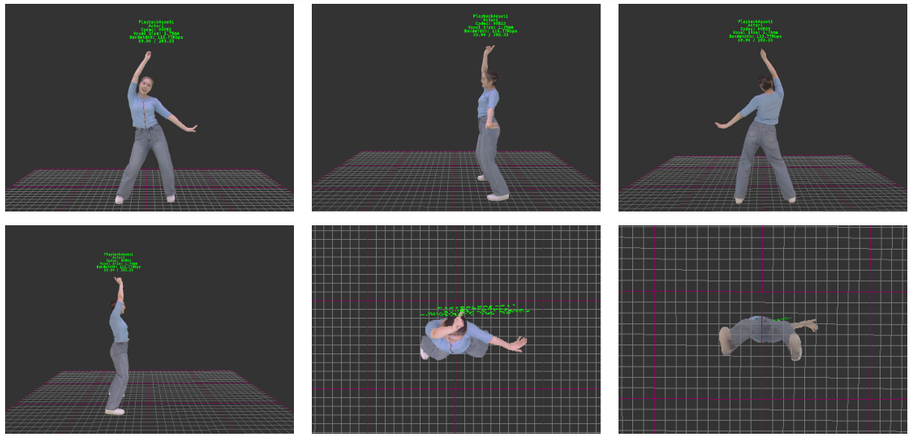
Submission

2 3D Volumetric Video

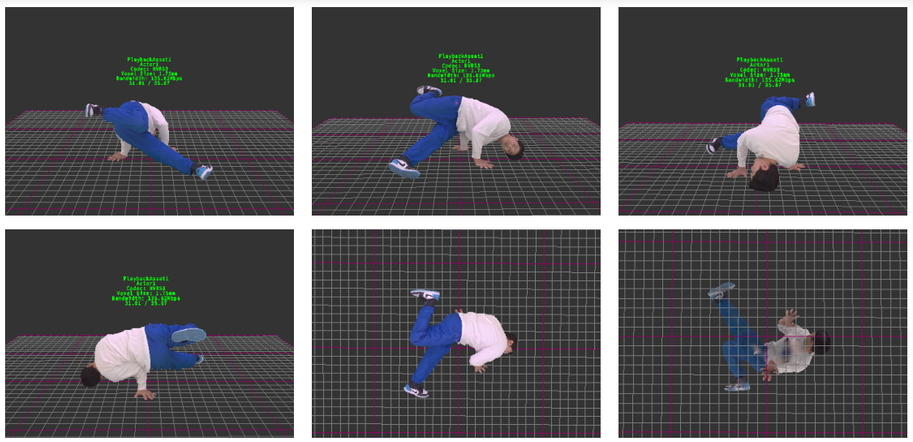
Filmed the object in 360° with 60 4K cameras at the Asia-largest **Volumetric Studio**, and produced 3D contents from **all directions**

Able to learn detailed movement by **360° rotation, zoom-in/out functions**

I. Production of K-Dance Volumetric Video

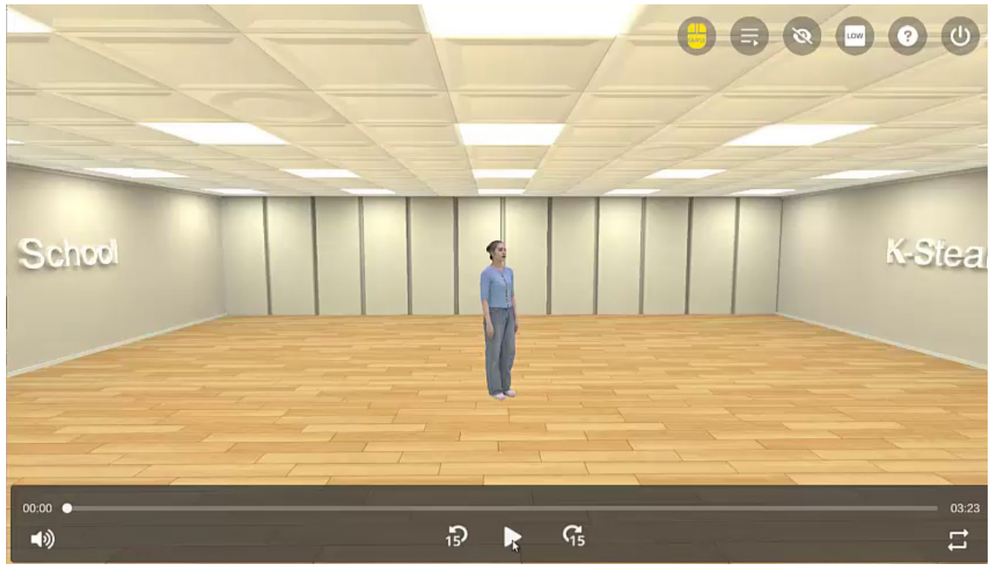


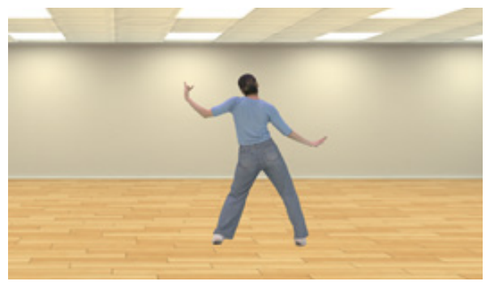
II. Production of Breaking Volumetric Video

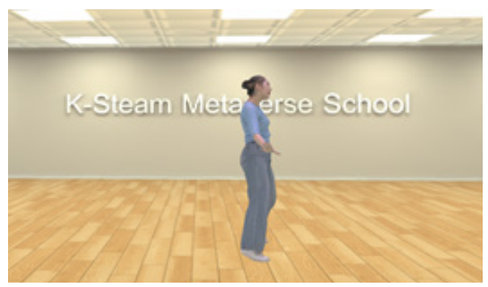


K·STEAM·SCHOOL
WITH METAVERSE

III. Providing Volumetric Viewer



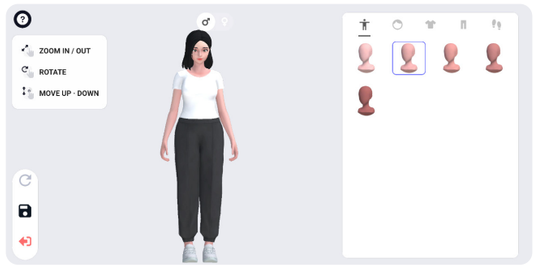




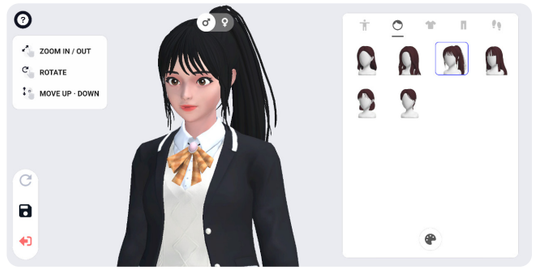
3 Metaverse

I. Providing K-STEAM Metaverse Avatar

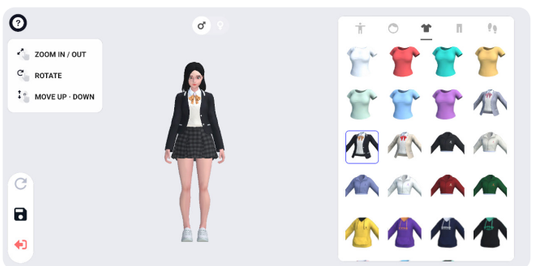
- Able to set personal space and avatar in the metaverse



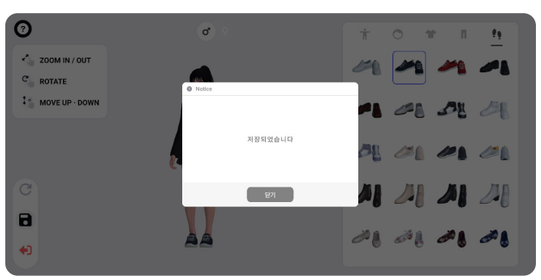
Setting - skin tone



Setting - clothes 01



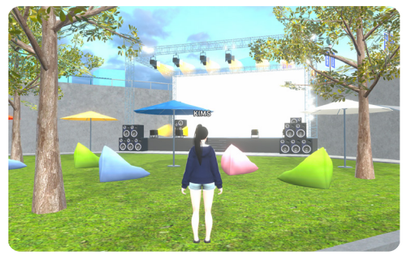
Setting - clothes 02

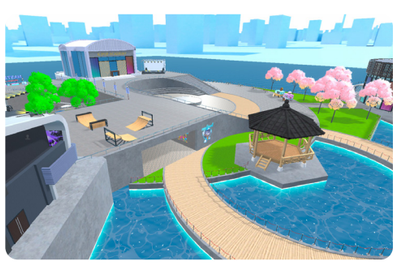


Save - personal space

II. Providing K-STEAM Metaverse Environment

- In a group environment, it is able to check students' submitted video and proceed peer performance review.





04 Empirical Research

1 The Empirical Research at Woosong University

I. Purpose

Receiving feedback from contents and system development process

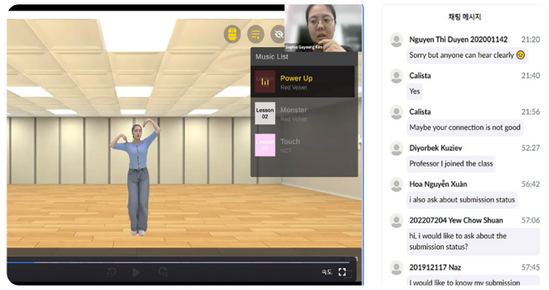
Nano-PAMS	Receiving feedback from contents and system development process
Course Name and Duration of the Research	Course Name: AI-Supported K-Pop Dance Class Duration of the Research: 2022.09.06 ~ 2022.12.13 2023.03.02 ~ 2023.06.14
Collaborated Universities	FTU (Vietnam) SYSU (China) UGM (Indonesia) UKM (Malaysia) TU (Thailand)
Researched Countries	Total 14 countries (Republic of Korea, Canada, France, Hungary, Mongolia, U.S.A., India, Uzbekistan, Nepal, China, Vietnam, Kazakhstan, Indonesia, Malaysia)

1 The Empirical Research at Woosong University

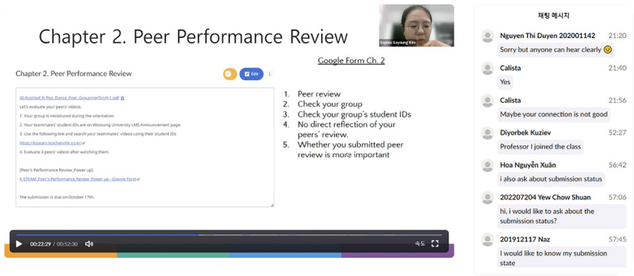
II. Research Operation

Woosong Univ. Nano-PAMS Real-time Classes

Real-time Classes

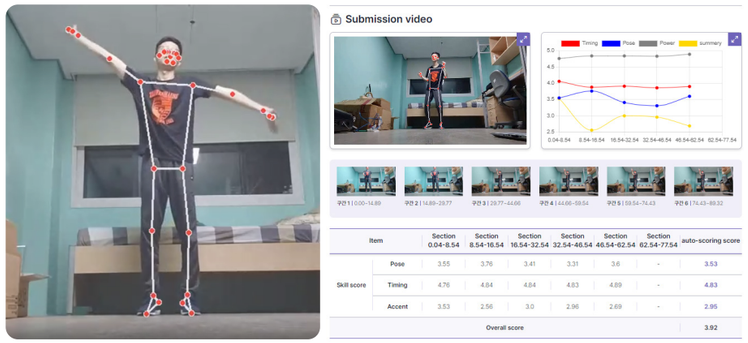


Volumetric Viewer Demonstration



Peer Performance Review Explanation

AI Evaluation Submission



Item		Section 0.04-8.54	Section 8.54-16.54	Section 16.54-32.54	Section 32.54-46.54	Section 46.54-62.54	Section 62.54-77.54	auto-scoring score
Skill score	Pose	3.55	3.76	3.41	3.31	3.6	-	3.53
	Timing	4.76	4.84	4.84	4.83	4.89	-	4.83
	Accent	3.53	2.56	3.0	2.96	2.69	-	2.95
Overall score								3.92

2 The Global Empirical Research Plan 2023

I. Expected Results through the Empirical Research

Research Goals

- Promoting global commercialization
- Operating the empirical research of three developed courses internationally and domestically
- Evaluating the educational effect, marketability, and technological effect

Expected Results

Educational Effect

Strengthening core competencies of K-Dance, Breaking, and e-Sports

Marketability

Securing the export possibility of performance-based arts and physical education courses

Technological Effect

Applying AI evaluation to assess a student's performance

K·STEAM·SCHOOL
WITH METAVERSE

You can contact us at **rnd@wedugroup.com** to join

This work was supported by the Industrial Technology Innovation Program (20014799, Development of Digital Twin school service for supporting non-face-to-face learning of art & physical education, and practice area) funded by the Ministry of Trade, Industry & Energy (MOTIE, Korea).