

Research Proposal

A Game-based Learning Curriculum Development in Museum-University Collaboration

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1. Keywords

Museum-University Collaboration, Museum Innovation Pattern, Co-creation, MetaDesign, Game-based Learning

2. Aim and Objectives of Research Activity

To make a difference to the development of the museum-university collaboration, possibly leading to new directions of innovation pattern.

To develop a innovative museum curriculum to attract a broad audience, special focus on ages from 14-30.

There are several sub-objectives of the research:

- (1) To strengthen the bonding with museum and university as a integrated community, then to introduce "Audience" as tone of the key aspect to create a new innovative culture.
- (2) Considering the limitation of accessibility of researchers and university to audience directly, the best approach is to develop a participatory relationship between museum and audience by certain public programmes. A co-design game-story workshop will be placed at a core position within a series of activities. A specific toolkit to facilitated the co-design workshop need to be developed.
- (3) To develop a museum curriculum based on narrative and game-based teaching model, combined with Internet information technology, can effectively solve the problems of limited museum education resources and insufficient staff, at the same time pay attention to the learning experience of teenagers.

3. Background

Driven by national policies, Chinese museums have experienced a decade of vigorous development. From the Notice on the Free Opening of Museums and Memorials Nationwide issued in 2008 to the Museum Regulations issued in 2015, the social service function of museums was clarified for the first time, “education” was given priority replaced original “research and collection”. Driven by the dual policy, statistics released by the State Administration of Cultural Heritage at the end of 2019 show that the number of museums, exhibitions and events, and the number of visitors have all grown rapidly. From 2010 to 2019, the number of museum visitors tripled from 409 million to 1.227 billion. This phenomenon has much in common with the explosive growth of the museum industry in the United States between 1965 and 1984. According to the American Association of Museums, the attendance has grown from 200 million double to 400 million and will reach 500 million a few years later. A large number of audience research were conducted by museums and scholars , and the relevant theories of museum experience were gradually formed during this period.

At the current stage, the educational problems of Chinese museums are obvious, which are caused by three aspects: on the surface, the curriculum form is single and simple, limited to tour, guide and lectures. This seemingly traditional educational form actually meet the needs of large-scale extracurricular activities of school groups (more than 100 students). In recent years, a new study model PBL, a problem-based learning curriculum has arisen, which has an obvious disadvantage, that is, it is more suitable for small class teaching (15-30 students). From the aspect of curriculum development, museum courses are mainly one-way approach. The institution has an official public education promotion department, which develops the curriculum independently according to the exhibition theme throughout the year. There is another way to solve the storage of course to bring in social resources and external experts to develop the curriculum. Schools are often not involved in curriculum development directly, but choose existing museum curriculum. There are some outstanding examples happened within some specialized colleges and universities who have their own museums. Taking the advantage of sharing the same main body, a two-way communication curriculum development mode was realized. For instant, Art and Design College has its own art museums, Business College has its own financial museum, etc. However, the author believes that the most fundamental reason remained in the cognitive level, that most of the public (teachers, students, parents) do not agree with the educational function of museums, museum visiting is more regarded as a new way of leisure and recreation.

The effectiveness of every educational institution is questioned, and museums are no exception. Unlike schools, museums struggle to articulate their educational mission. Thousands and Millions of visitors to the museum every day, from the elderly to the children, from individuals to groups, and each individual has different needs and expectations. The challenge for museums is how to serve a broad public adopting new forms of exhibitions or activities, and a Museum-School Collaboration as a

strategy pay attention the educational need of school groups (primary, middle, high school, and university).

Museum-School Collaboration is a special pattern for teaching and learning which integrates museums with schools into a scientific and systematic cooperation network in China, taking advantage of the expansion of educational activity space and the rich curriculum resources, in order to achieve the cultivation of all-round talents. In book *The Museum Experience* (Falk & Dierking, 1996), "museums" are defined as a wide range of informal educational institutions, including historical homes and sites; science and technology and nature centers; Aquariums, zoos, and botanical gardens; as well as the traditional art, history, and natural history museums.

Traditionally, Museum-School Collaboration is more like a form of cooperation in which museums provide extracurricular visiting courses for primary and secondary school students. There are few research and practical cases on the cooperation between museums and universities published. Higher education has remained a marginal collaborator compared to primary and secondary schools and to other forms of adult learning (Anne Boddington, 2014). This suggest the possibilities for partnerships between Museums, University and colleges have not be fully explored yet, especially in respect of the potential for generating innovation patterns of research and learning.

Theoretically, museum and university are the representatives of formal and informal education. There are a lot of benefits for museum university cooperation, like can obtain external resources, optimize resource allocation and even reduce the costs of research and exploration. However, in the process of cooperation practice, limited by resources and institutional management of both parties, many participants described the process of collaboration as time-consuming and difficult, and the cooperation results were not as significant as expected.

Based on a long-term research in museum education, this proposal seeks to build upon intriguing and exciting preliminary data collected from a 4-year museum-university collaboration project between Sep 2017 until Feb 2021, and looking for a series actions to make a difference to the development of the museum-university collaboration, possibly leading to new directions of innovation pattern or a comprehensively solution to solve the problems mentioned above. Museum-University Collaboration will eventually become one of the most important way of museum innovation, until these two communities reach the authentic collaboration. Empowering communities through co-creation will activate the transformation and iteration.

This research is aimed primarily at early researchers, practitioner and university students who have interested in applying participatory action research in community-based or university-based projects. It will also be useful for local service provider to

prepare proposals, establish a reliable action plan to get funding. In addition, the authors believed that this research will be useful to the staff of the research agencies, especially recently established funding organizations. Many of staffs have limited experience and knowledge on community art-based project. This research will provide a long term case study with multi-perspectives to help them allocating research funding effectively.

4. Theoretic Framework

In seeking an innovation idea to solve the problem we mentioned above, we employed the famous Tetracosm method from Metadesign and substituted with our own version called MeMUA.

Metadesign is a way of building contexts, which acknowledge that multi-intentions can co-exist through constantly dialogue between them. Inspired by Jolley's ontological system, the holotheme (Leo Jolley, 1969), metadesign employed the Tetracosm, a new design thinking tool, original proposed by Buckminster Fuller based on his *synergetic* philosophy of design. To create synergies through re-combination is considered as one of fundamental aims of Metadesign (John Wood, 2022).

The invention of interaction modes play crucial role as Metadesign act, and the Tetracosm is the conceptual visualization approach to Metadesign space construction. A tetrahedron (the minimum possible system in Synergetics) has four vertexes, represented four difference stakeholders or aspects in certain social context, six edges standing for six relationships, four faces as fours communities or industrial supply chains, which reform an overall quality of a culture or environment through designing new modes of interaction.

MeMUA is the revised version based on the constructional principle of the Tetracosm. Four key players of the museum-university collaboration are identified and replaced at the four vertexes of the tetrahedron. In general, the community members of a museum-university collaboration project can be simply classified into these four relationships. (1) Me, as a researcher, a design teacher, a mother, a participant, I have mulit-identity and different roles within this project. (2) Students and teachers from University may take part in this project. (3) Institutional employees from museum education department and volunteers formed the co-creation partnership. (4) Museum audiences is even more diverse, including K-12, K14 and K16 education section, individual family visitors, and so forth.

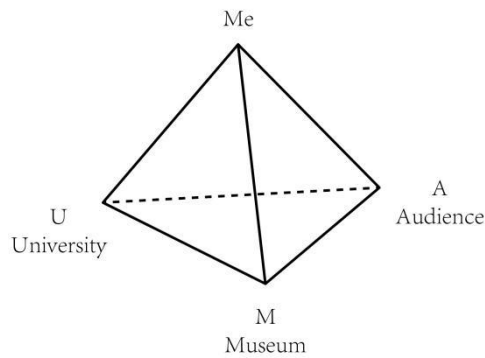


Figure 1: The MeMUA Conceptual Framework

In this proposal, a six-steps approach based on MeMUA will be applied in order to achieve the fundamental aim of empowerment of community. Firstly, as a project initiator, I built connection with museum proactively, and gained their truth based on a long-term museum-university collaboration project from Sep 2017 until Feb 2021. In step two, as a design teacher in university, I integrated museum-university collaboration project into curriculum design, which got administrative supporting and financial funding at the supervisor level. In 2019, a co-design workshop successful proceeding which became the landmark of the integration of museum and university communities. The significant outcome from previews action research is that Me-Museum-University constructed a triangle with strong research and development capability.

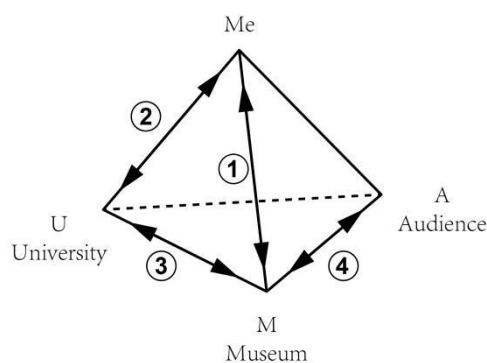


Figure 2: The First 4-steps approach of MeMUA Conceptual Framework

The next step of the research as one of the sub-objectives is to strengthen the bonding with museum and university as a integrated community, then to introduce “Audience” as the fourth key aspect to create a new innovative culture. Considering

the limitation of accessibility of researchers and university to audience directly, the best approach is to develop a participatory relationship between museum and audience by certain public programmes. A co-design game-story workshop will be placed at a core position within a series of activities, which we will further discuss in Research Design.

In theoretical assumption, we anticipate to build up a tetrahedron relationship from the sharp shape on the left side to the flat sharp on the right top side. The major characteristic is the role shifting of the researcher (Me) gradually subsided, then replaced by the strong influence the Museum-University-Audience community represented by the upscale size of the triangle at the bottom. Ultimately, the researcher (Me) seems to be away and left the community behind, but become a truth participant within the M-U-A community, reversely.

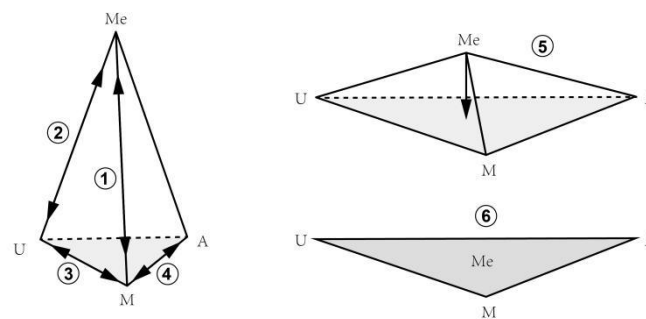


Figure 3: The Transforming through 6-steps approach of MeMUA Conceptual Framework

5. Research Questions

- What do community members regard Co-Creation as a powerful innovation tools?
- What are the community members' learning experiences and feelings during this research? What do they regard as powerful motives to sacrifice their spare time and continue to participate in curriculum development?
- Compared with traditional museum curriculum development process, what are the pro and con of new approach of Co-Creation?
- What are the expectation and motivation of museum attendance ages from 15-30?
- What are the learning experiences and feelings accompany when young people took part in the curriculum?
- Compared with traditional museum touring and guiding, what is the pro and con of game-based learning in relative with the degree of knowledge mastery and learning retention?

6. Methods

6.1 Data Collection

This research will use a mixed methods strategy. It will combine qualitative data gathered from focus groups, social media comments and participant's diary with quantitative data from questionnaire and learning data from background database generated automatically.

Initially, museum and university will recruit 12 participants with cross-discipline as co-research members. A series co-learning and co-design workshops will be conducted in order to generate a game-based learning curriculum. Four rounds qualitative research will be conducted to understand participants' perspective on Co-creation during the whole process, which aim to evaluate the potential on community empowerment.

Research Timing		Research Content	Method	Type of Data
Before	Before workshop	To understand the pre-comprehansive on co-creation	Questionnaire	Qualitative, text
In the Middle	After six times co-design workshop	To understand personal experience during the workshop	Learning Journal	Qualitative, text & image
Afterward	After curriculum validation test	To explore how participants perceive project outcomes and personal value realization and recognition	Focus group	Qualitative, audio record
Beyond	6 months later after research	To understand whether co-learning and co-creation has a potential impact on participants' work and daily life	1 to 1 Interview	Qualitative, audio record

Table 1 Four rounds qualitative research to understanding participant learning journal

A learning daily with special layout will be allocated to each participant to help them record their learning journey with diversity structure, like who did they meet at the workshop, any interested things or experience may happen during the process, what kind of new knowledge do then learn, any the reflection and suggestion would like to share within the team or just keep for themselves. On-site photos and colorful stickers will be provided as stimulus material to encourage participants' writing. By the end, two to three focus groups will be conducted based on the different opinion of their

original perspective on co-creation. The overall research aim to evaluate the effectiveness of co-creation in relative to community member capability building and empowerment.

In part two, a game-based learning curriculum based in mobile technology will go through validation test. Learning experience is one of the key attributions need to be investigate, which come from the data gathering from background database, questionnaire, social media comments and semi-construction observation. Teachers from collaborative high-school and university will be invited as gatekeeper to help us identify the suitable candidates to participate the course. Students aged from 15 to 22 will be selected to be representative in terms of the diversity composition (gender, social class, learning ability, urban /suburban /rural location).

Two types of learning groups will be assigned randomly in a sub-sample of 100 students from two collaborating schools. The first group students will comprise 25 young people from high-school and 25 people from university who apply game-based learning programme. A second group students with the same amount, acting as a comparative control group, who apply traditional way of touring and guiding. Semi-structure observation will be conducted to provide an elaborate description of students learning pattern based in different circumstances, such as how students interact with team members, exhibition objects and emotion expression.

At the end of the course, all students will be requested to join a quiz follow after the curriculum which contain with 2 sections, and 10 questions for each section. Another quiz will be conducted 14 days later to evaluate knowledge mastery and knowledge retention rate according to two learning model. The experimental group will be requested to provide further information in term of their learning experience.

A learning report in relative with students learning duration, problem solving ability, and learning achievement will be provided at the end of the game-based curriculum on students mobile phone, which generated automatically by background database. Students will be encouraged to share the report and personal experience on social media. A web-based questionnaire will be used, with students completing the questionnaire after the game. In spite the initial data sample is small, this questionnaire survey will provide constructive suggestions for improving the curriculum, such as the difficulty and length of learning, the fun and challenge of games, and the relevance and immersiveness of game-story.

	Experimental group	Comparative control group
Sample scale		
High-school students	25	25
University students	25	25
Data Collection A: Learning Experience Evaluation		
Semi-construction		

Observation (Qualitative, subjective)	√	√
Questionnaire (Quantitative, subjective)	√	×
Social media comments (Qualitative, subjective)	√	×
Learning data automatically generated from background database (Quantitative, objective)	√	×
Data Collection B: Knowledge mastery and knowledge retention rate evaluation		
A quiz follow after the curriculum (Quantitative, objective)	√	√
Another quiz conducted 14 days later (Quantitative, objective)	√	√

Table 2. different types of data collection between Experimental group and Comparative control group

6.2 Methodology & Analysis Strategy

Participatory Action Research is the core research methodology applied in this research. The primary principle of “democracy” will be integrated the overall process from participants recruitment, data collection, decision making process, even data analysis. Grounded Theory is a useful method when no existing theory that offers an explanation for a phenomenon in certain research area. Meanwhile, compared with PAR, the strength of Grounded Theory is the logical steps in handling data collection and processing data analysis.

There are three rounds of analysis will be conducted. Initially, all the still images, focus group video or audio record will be transcribed into text. Internal research team will conduct open coding line by line to catch the essence statement by using simplified key words. Beside thematic analysis, content analysis and discourse analysis will be applied to this research to provide multi-dimension discussion. Then, participants will be invited to do the validation check. The first section may contain with three people, who were showed the technique on the constant comparative process and start to provide feedback on the internal team coding. In another coding workshop, one of participants with coding experience from the first section will be invited as a co-moderator to guide the new group. These two coding section will be considered as new data to adjust the bias of researcher. A new theory related to museum-university collaboration innovation pattern will be built grounded on the community perspective.

7. Outcomes

There are 4 potential outcomes in this research,

- 1) To develop the MeMUA parttern as an Innovation Transformation Tool for museum-university collaboration in sustainable approach.
- 2) To develop a Toolkit for Co-design game-story workshop
 - Card
 - Mapping
 - Learning Journal notebook
 - Process
- 3) To develop an Evaluation Framework for Co-design workshop
- 4) To develop a game-based learning curriculum based in mobile technology.

8. Visual Reference

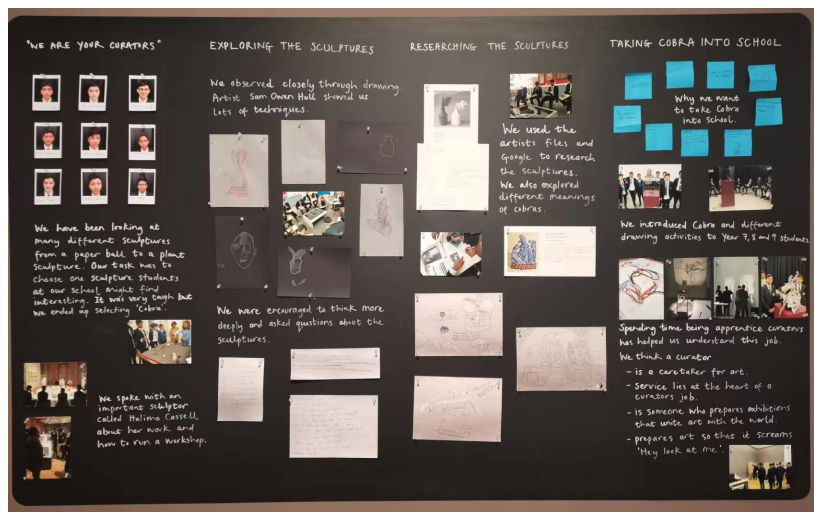
Workshop environment



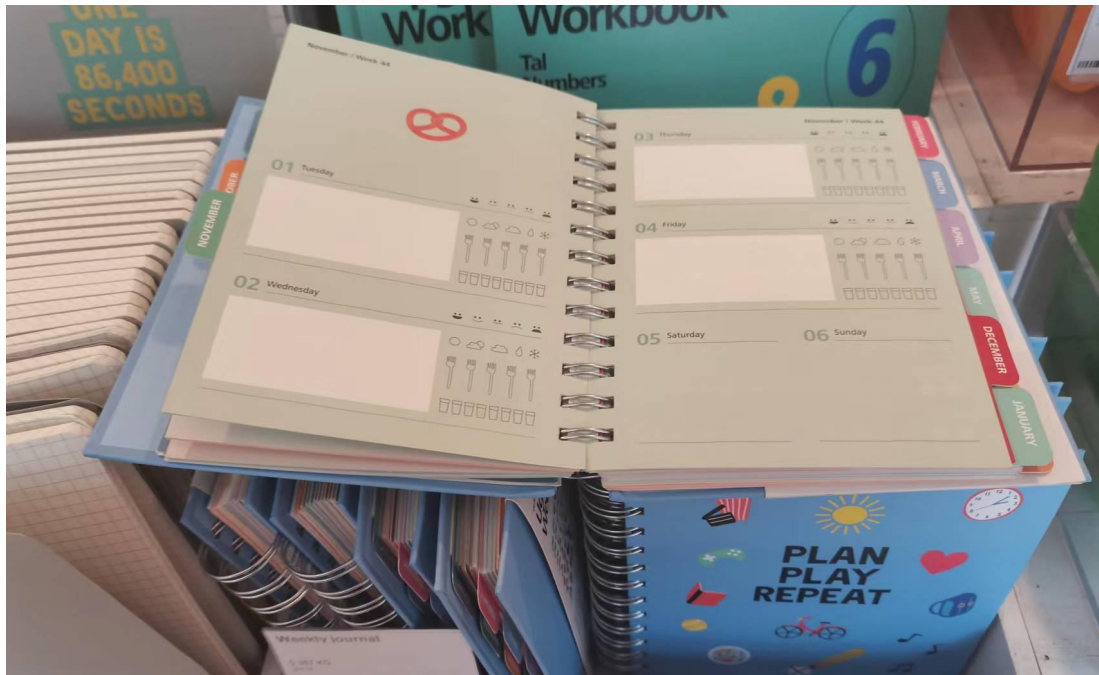
Research Tools Cart



Visual Mapping in the workshop



Participant Learning Journal Notebook



Co-Design Cards for game story creation



任务卡x12

人物卡x8

工具卡x8

A game-based learning curriculum based in mobile technology



APPLICATION FOR ETHICAL APPROVAL

In order for research to result in benefit and minimise risk of harm, it must be conducted ethically. A researcher may not be covered by the University's insurance if ethical approval has not been obtained prior to commencement.

The University follows the OECD Frascati manual definition of **research activity**: "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications". As such this covers activities undertaken by members of staff, postgraduate research students, and both taught postgraduate and undergraduate students working on dissertations/projects.

The individual undertaking the research activity is known as the "principal researcher".

Ethical approval is not required for routine audits, performance reviews, quality assurance studies, testing within normal educational requirements, and literary or artistic criticism.

Please read the notes for guidance before completing ALL sections of the form.

This form must be completed and approved prior to undertaking any research activity. Please see Checklist for details of process for different categories of application.

SECTION A: About You (Principal Researcher)

1	Full Name:	Wenyng Lu			
2	Tick all boxes that apply:	Member of staff:	☐	Honorary research fellow:	☐
	Undergraduate Student	☐	Taught Postgraduate Student	☐	Postgraduate Research Student ☒
3	Institute/Academic Discipline/Centre:	UWTSD			
4	Campus:	Swansea			
5	E-mail address:	2105636@student.uwtsd.ac.uk			
6	Contact Telephone Number:	07760746776			
For students:					
7	Student Number:	2105636			
8	Programme of Study:	Professional Art & Design			
9	Director of Studies/Supervisor:	Timi Olien			

SECTION B: Approval for Research Activity

1	Has the research activity received approval in principle? (please check the Guidance Notes as to the appropriate approval process for different levels of research by different categories of individual)	YES	☒	NO	☐
					Date
2	If Yes, please indicate source of approval (and date where known): Approval in principle must be obtained from the relevant source prior to seeking ethical approval	Research Degrees Committee	☐		
		Institute Research Committee	☐		
		Other (write in)	☐		

SECTION C: Internal and External Ethical Guidance Materials

	Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, location-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines. You may add rows to this table if needed.
1	UWTSD Research Ethics & Integrity Code of Practice ☒
2	UWTSD Research Data Management Policy ☒
3	<i>[List any other relevant documents here]</i> ☐

SECTION D: External Collaborative Research Activity

If there are external collaborators then you should gain consent from the contact persons to share their personal data with the university. If there are no external collaborators then leave this section blank and continue to section E.

1	Institution	GAFA
2	Contact person name	Zhen Qin
3	Contact person e-mail address	
4	Is your research externally funded?	YES ☒ NO ☐
5	Are you in receipt of a KESS scholarship?	YES ☐ NO ☒
6	Are you specifically employed to undertake this research in either a paid or voluntary capacity?	Voluntary YES ☐ NO ☒
7		Employed YES ☒ NO ☐
8	Is the research being undertaken within an existing UWTSD Athrofa Professional Learning Partnership (APLP)?	If YES then the permission question below does not need to be answered. YES ☐ NO ☒
9	Has permission to undertake the research has been provided by the partner organisation?	(If YES attach copy) If NO the application cannot continue YES ☒ NO ☐

Where research activity is carried out in collaboration with an external organisation

10	Does this organisation have its own ethics approval system?	YES ☐ NO ☒
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If Yes, please attach a copy of any final approval (or interim approval) from the organisation (this may be a copy of an email if appropriate).

SECTION E: Details of Research Activity

1	Indicative title:	Rethinking Game-based learning in Museum-University Collaboration: A South East China perspective		
2	Proposed start date:	Sep 2022	Proposed end date:	Sep 2023
	Introduction to the Research (maximum 300 words per section) Ensure that you write for a <u>Non-Specialist Audience</u> when outlining your response to the points below: <i>Purpose of Research Activity</i> <i>Proposed Research Question:</i> <i>Aims of Research Activity</i> <i>Objectives of Research Activity</i> Demonstrate, briefly, how Existing Research has informed the proposed activity and explain <i>What the research activity will add to the body of knowledge</i> <i>How it addresses an area of importance.</i>			
3	Purpose of Research Activity Theoretically, museum and university are the representatives of formal and informal education. There are a lot of benefits for museum university cooperation, like can obtain external resources, optimize resource allocation and even reduce the costs of research and exploration. However, in the process of cooperation practice, limited by resources and institutional management of both parties, many participants described the process of collaboration as time-consuming and difficult, and the cooperation results were not as significant as expected. In most of the situation, museum act as a dominant role to develop activities and educational programme, only a small amount of children and audiences gained the opportunity to attend the course. In this research we are looking for a proposal to make a difference to the development of the museum-university collaboration, possibly leading to new directions or to solving the problem. This research is aimed primarily at early researchers, practitioner and university students who have interested in applying participatory action research in community-based or university-based projects. It will also be useful for local service provider to prepare proposals, establish a reliable action plan to get funding. In addition, the authors believed that this research will be useful to the staff of the research agencies, especially recently established funding organizations. Many of staffs have limited experience and knowledge on community art-based project. This research will provide a long term case study with multi-perspectives to help them allocating research funding effectively.			
4	Research Question How to empower the partnership of museum-university to achieve authentic collaboration to solve the museum education dilemma? (this box should expand as you type)			
5	Aims of Research Activity			

	The aim is to make a difference development of the museum-university collaboration in community participatory approach. (this box should expand as you type)
6	Objectives of Research Activity There are several sub-objectives of the research: (1) To strengthen the bonding with museum and university as a integrated community, then to introduce "Audience" as tone of the key aspect to create a new innovative culture. (2) Considering the limitation of accessibility of researchers and university to audience directly, the best approach is to develop a participatory relationship between museum and audience by certain public programmes. A co-design game-story workshop will be placed at a core position within a series of activities. A specific toolkit to facilitated the co-design workshop need to be developed. (3) To develop a museum curriculum based on narrative and game-based teaching model, combined with Internet information technology, can effectively solve the problems of limited museum education resources and insufficient staff, at the same time pay attention to the learning experience of teenagers. (this box should expand as you type)
	Proposed methods (maximum 600 words) Provide a brief summary of all the methods that may be used in the research activity, making it clear what specific techniques may be used. If methods other than those listed in this section are deemed appropriate later, additional ethical approval for those methods will be needed. You do not need to justify the methods here, but should instead describe how you intend to collect the data necessary for you to complete your project.
7	Participatory Action Research is the core research methodology applied in this research. The primary principle of "democracy" will be integrated the overall process from participants recruitment, data collection, decision making process, even data analysis. There are three ways to collect qualitative and quantitative data: (1) A series workshops and activities will be conducted in this research, semi-structure interview, focus group and reflection writing are main methods to collect qualitative data from museum and university participants. Semi-structure interview (2) Semi-structure observation and a survey will be conducted by participants and communities member to collect quantitative data from audiences. We will proceed a comparative research with subject group(traditional learning) and experimental group (game-based learning). (3) Back database generated automatically during audiences playing and learning, which form a supplementary information of quantitative data. (this box should expand as you type)
	Location of research activity Identify all locations where research activity will take place.
8	Most of the locations are among the museum and university community as follow: (1) Guangdong Museum education center (2) Guangdong Museum coffee shop (3) Guangdong Museum exhibition rooms (4) Guangdong Museum visitor center (5) Seminar room in GAFA Mega City campus (6) Zangchaguan, a Tea House in Shenzhen City Dameisha Community (7) Wanke Center in Shenzhen City, including meeting room, conference room, community garden, roof garden. (8) A library in in Shenzhen City Dameisha Community

	(this box should expand as you type)
	Research activity outside of the UK If research activity will take place overseas, you are responsible for ensuring that local ethical considerations are complied with and that the relevant permissions are sought. Specify any local guidelines (e.g. from local professional associations/learned societies/universities) that exist and whether these involve any ethical stipulations beyond those usual in the UK (provide details of any licenses or permissions required). Also specify whether there are any specific ethical issues raised by the local context in which the research activity is taking place, for example, particular cultural and/or legal sensitivities or vulnerabilities of participants. If you live in the country where you will do the research then please state this.
9	All of the research will be conducted in mainland China partnership with three External Collaborative Research organization, Guangzhou Academy of Fine Arts (GAFA), Guangdong museum, Wanke Foundation. First, the author is the employee of GAFA, which means she need to follow the related administration and academic regulation (http://www.gzarts.edu.cn). Secondly, as this research project involves two funded sub-projects, the study will be carried out in accordance with the relevant provisions provided by the foundation (https://www.gdmuseum.com, http://www.vankefoundation.com) (this box should expand as you type)

10	Use of documentation not in the public domain: Are any documents NOT publicly available?	NO	☐
		YES	☒
11	If Yes, please provide details here of how you will gain access to specific documentation that is not in the public domain and that this is in accordance with the current data protection law of the country in question and that of England and Wales. There are some research documents provided by local foundation institution, which was protected follow by the internal confidentiality agreement. (this box should expand as you type)		

	Does your research relate to one or more of the seven aims of the Well-being of Future Generations (Wales) Act 2015?	YES	NO
12	A prosperous Wales	☐	☒
13	A resilient Wales	☐	☒
14	A healthier Wales	☐	☒
15	A more equal Wales	☐	☒
16	A Wales of cohesive communities	☐	☒
17	A Wales of vibrant culture and thriving Welsh language	☐	☒
18	A globally responsible Wales	☐	☒
19	If YES to any of the above, please give details:		
	(this box should expand as you type)		

SECTION F: Scope of Research Activity

	Will the research activity include:	YES	NO
1	Use of a questionnaire or similar research instrument?	☒	☐
2	Use of interviews?	☒	☐
3	Use of focus groups?	☒	☐
4	Use of participant diaries?	☒	☐
5	Use of video or audio recording?	☒	☐
6	Use of computer-generated log files?	☒	☐
7	Participant observation with their knowledge?	☒	☐
8	Participant observation without their knowledge?	☐	☒
9	Access to personal or confidential information without the participants' specific consent?	☐	☒
10	Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	☐	☒
11	Performance of any acts which may cause embarrassment or affect self-esteem?	☐	☒
12	Investigation of participants involved in illegal activities?	☐	☒
13	Use of procedures that involve deception?	☐	☒
14	Administration of any substance, agent or placebo?	☐	☒
15	Working with live vertebrate animals?	☐	☒
16	Procedures that may have a negative impact on the environment?	☐	☒
17	Other primary data collection methods. Please indicate the type of data collection method(s) below.	☐	☒
	Details of any other primary data collection method: (this box should expand as you type)		

If NO to every question, then the research activity is (ethically) low risk and **may** be exempt from **some** of the following sections (please refer to Guidance Notes).

If YES to any question, then no research activity should be undertaken until full ethical approval has been obtained.

SECTION G: Intended Participants

If there are no participants then do not complete this section, but go directly to section H.

	Who are the intended participants:	YES	NO
1	Students or staff at the University?	☒	☐
2	Adults (over the age of 18 and competent to give consent)?	☒	☐
3	Vulnerable adults?	☐	☒
4	Children and Young People under the age of 18? (Consent from Parent, Carer or Guardian will be required)	☒	☐
5	Prisoners?	☐	☒

6	Young offenders?	☐	☒
7	Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	☐	☒
8	People engaged in illegal activities?	☐	☒
9	Others. Please indicate the participants below, and specifically any group who may be unable to give consent.		
	Details of any other participant groups: (this box should expand as you type)	☐	☒

Participant numbers and source Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?		
10	How many participants are expected?	In term of the scope of participants, there are roughly five levels of participant engagement with the expected numbers as: (1) informed & involvement - to facilitate this research (20 people), (2) participate in research (100-120 people) (3) share leadership - participate in co-design workshop (20-40 people) (this box should expand as you type)
11	Who will the participants be?	Participants group as following list: (1) Students and teachers from GAFA (2) Museum Volunteers, Museum staffs, Internship (3) Museum Audiences (this box should expand as you type)
12	How will you identify the participants?	There two ways to recruited participants based on difference research purpose. (1) Internal Invitation. We will contact 2-3 teachers based on the relationship with high-school and university to invite a group of students aged from 16-23 to participate game-based learning course. Teachers will be the gatekeepers to help us identify the suitable candidates and get consent from parent who under 18. (2) For individual participants, they will be recruited publicly through community internal announcement and organization social media official account based on democracy principle. Community members with strong interested will be required to fill an application form and be selected based on their demographic characters, work experience and specialty, in order to form a cross-discipline participant co-design team. (this box should expand as you type)

Information for participants:		YES	NO	N/A
13	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	☒	☐	☐
14	Will you tell participants that their participation is voluntary?	☒	☐	☐
15	Will you obtain written consent for participation?	☒	☐	☐

16	Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?	☐	☐	☒
17	If the research is observational, will you ask participants for their consent to being observed?	☒	☐	☐
18	Will you tell participants that they may withdraw from the research at any time and for any reason?	☒	☐	☐
19	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	☒	☐	☐
20	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	☒	☐	☐
21	Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?	☒	☐	☐
22	If NO to any of above questions, please give an explanation			
<i>(this box should expand as you type)</i>				

	Information for participants:	YES	NO	N/A
24	Will participants be paid?	☒	☐	☐
25	Is specialist electrical or other equipment to be used with participants?	☐	☒	☐
26	Are there any financial or other interests to the investigator or University arising from this study?	☒	☐	☐
27	Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	☒	☐	☐
28	If YES to any question, please provide full details			
Q24, Five students from GAGA will be paid to support their final project. Because part of this research outcome will be transferred to a game with a potential youth social entrepreneur business model, part of the benefit generated from this project will be awarded to these group of students to support their degree show or start-up instead paid directly. Q26, This research will be divided into two sub-projects funding by two difference organization based on their community issue. Q27, Considering this research involved diverse participants and serve multi-objectives, I will release the related information to intimate stakeholders at different stage of the research. Mass information maybe confused the participants due to their lacking of research experience. <i>(this box should expand as you type)</i>				

SECTION H: Anticipated Risks

Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them.			
If you have completed a full risk assessment (for example as required by a laboratory, or external research collaborator) you may append that to this form.			
1	Full risk assessment completed and appended?	Yes	☒
		No	☐
2	Risks to participants For example: sector-specific health & safety, emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information		

	Risk to participants: Due to part of participants are under 18 years old high school students, there are some risk that it need time to communicate with their parent to get consent for joining the research. <i>(this box should expand as you type)</i>	How you will mitigate the risk to participants: To mitigate the risk to participants, I will communicate the research intention with the school teachers and consult them for appropriated process to recruit students and got consent from their parents. <i>(this box should expand as you type)</i>
3	If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or actually illegal is discovered in the course of a project, it may need to be disclosed to the proper authorities	
	There is no any sensitive topic or illegal activity involved into this research. <i>(this box should expand as you type)</i>	
4	Risks to the investigator For example: personal health & safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest	
	Risk to the investigator: There is no risk to the investigators. <i>(this box should expand as you type)</i>	How you will mitigate the risk to the investigator: <i>(this box should expand as you type)</i>
5	University/institutional risks For example: adverse publicity, financial loss, data protection	
	Risk to the University: There is no risk to the University. <i>(this box should expand as you type)</i>	How you will mitigate the risk to the University: <i>(this box should expand as you type)</i>
6	Environmental risks For example: accidental spillage of pollutants, damage to local ecosystems	
	Risk to the environment: There is no risk to the environment. <i>(this box should expand as you type)</i>	How you will mitigate the risk to environment: <i>(this box should expand as you type)</i>

	Disclosure and Barring Service			
	If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	YES	NO	N/A
7	Does your research require you to hold a current DBS Certificate?	☐	☐	☒
8	If YES, please give the certificate number. If the certificate number is not available please write "Pending"; in this case any ethical approval will be subject to providing the appropriate certificate number.			

SECTION I: Feedback, Consent and Confidentiality

1	Feedback What de-briefing and feedback will be provided to participants, how will this be done and when?
	For student participants, we will provide each student a individual learning report and teamwork

	report which generated automatically by computer. Furthermore, I will invite school teachers to participant the data analysis section to build up the game-based learning theory. (this box should expand as you type)
2	Informed consent Describe the arrangements to inform potential participants, before providing consent, of what is involved in participating. Describe the arrangements for participants to provide full consent before data collection begins. If gaining consent in this way is inappropriate, explain how consent will be obtained and recorded in accordance with prevailing data protection legislation.
	(1) At recruitment stage before providing consent, we will provide general information through community internal announcement and cooperation organization social media official account which contain research aim and objective, research content, recruited requirement, recruitment process, and information protection. (2) At the beginning of co-design workshop, further information related to the learning experience, co-design process, information protection will be provided by the moderator. (3) For students, teachers will be the gatekeepers to help us communicate the research process to potential participants and get consent from parent who under 18. (this box should expand as you type)
3	Confidentiality / Anonymity Set out how anonymity of participants and confidentiality will be ensured in any outputs. If anonymity is not being offered, explain why this is the case.
	During the data collection, data analysis, paper publication and exhibition, all the participants will be used with anonymity. During the co-design workshop, nick name will be encourage to use to protect their personal identity. According to a game-story co-design tool set designed by us, creating a personal identity is the first step to create a story, this character will represent the participants during the whole research. (this box should expand as you type)

SECTION J: Data Protection and Storage

	Does the research activity involve personal data (as defined by the General Data Protection Regulation 2016 "GDPR" and the Data Protection Act 2018 "DPA")?	YES	NO
1	"Personal data" means any information relating to an identified or identifiable natural person ('data subject'). An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person. Any video or audio recordings of participants is considered to be personal data.	☐	☒
	If YES, provide a description of the data and explain why this data needs to be collected:		
2	(this box should expand as you type)		
	Does it involve special category data (as defined by the GDPR)?	YES	NO
3	"Special category data" means sensitive personal data consisting of information as to the data subjects' – (a) racial or ethnic origin, (b) political opinions, (c) religious beliefs or other beliefs of a similar nature, (d) membership of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992), (e) physical or mental health or condition,	☐	☒

	(f) sexual life, (g) genetics, (h) biometric data (as used for ID purposes),		
	If YES, provide a description of the special category data and explain why this data needs to be collected:		
4	(this box should expand as you type)		

	Will data from the research activity (collected data, drafts of the thesis, or materials for publication) be stored in any of the following ways?	YES	NO
5	Manual files (i.e. in paper form)?	☒	☐
6	University computers?	☐	☒
7	Private company computers?	☐	☒
8	Home or other personal computers?	☐	☒
9	Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	☒	☐
10	"Cloud" storage or websites?	☒	☐
11	Other – specify:	☐	☒
12	For all stored data, explain the measures in place to ensure the security of the data collected, data confidentiality, including details of backup procedures, password protection, encryption, anonymisation and pseudonymisation:		
	The research will follow The UK GDPR requirement and uwtisd Data Protection Police. Manual files include co-design output, interview note, focus group note, meeting note, observation note which will be scanned and digitized immediately at the same day after research, then will be reserved in University office as original data. Digital data such picture, video-record, audio-record, questionnaire, on-line survey, reflection writing, will be stored in personal laptops of core research team with password protection. Feishu, an online electronic research notebooks, also will be used as an on-line co-work tool but be restricted access by core research team. We will only share specific data with intimate collaborate organization that is necessary to achieve its specific purpose. All data will be backup weekly in University Teaching Cloud which will be only accessed by myself with password and University Data Controller. All data will be anonymised and re-named after numbers when they are transferred to individual data files at the very beginning. There is contract sheet with personal information such as name, mobile phone, email address will be stored separately for further usage such as publication consent and exhibition consent. (this box should expand as you type)		

Data Protection			
	Will the research activity involve any of the following activities:	YES	NO
13	Electronic transfer of data in any form?	☒	☐
14	Sharing of data with others at the University outside of the immediate research team?	☐	☒
15	Sharing of data with other organisations?	☒	☐
16	Export of data outside the UK or importing of data from outside the UK?	☒	☐

17	Use of personal addresses, postcodes, faxes, emails or telephone numbers?	☐	☒
18	Publication of data that might allow identification of individuals?	☐	☒
19	Use of data management system?	☐	☒
20	Data archiving?	☐	☒
21	If YES to any question, please provide full details, explaining how this will be conducted in accordance with the GDPR and Data Protection Act (2018) (and any international equivalents, where appropriate):		
	Based on FAIR principles for data sharing, publicly funded research data are a public good and produced in the public interest. Such research data should be made openly available with as few restrictions as possible in a timely and responsible manner. Also this research due to multiple cooperation organization and co-researcher, sharing information and new knowledge is the vital way to empower the university and museum community. This project is funded by 3 organization in China. It is necessary to share data with related partner. However data will only share with specific purpose. All data will make sure contain no personal or disclosive information before transfer and sharing. <i>(this box should expand as you type)</i>		
22	List all who will have access to the data generated by the research activity:		
	Zhennan Lin, Zixi Huang (research assistant) <i>(this box should expand as you type)</i>		
23	List who will have control of, and act as custodian(s) for, data generated by the research activity:		
	Wenying Lu, Zhen Qin <i>(this box should expand as you type)</i>		
24	Give details of data storage arrangements, including security measures in place to protect the data, where data will be stored, how long for, and in what form. Will data be archived – if so how and if not why not.		
	Data will be storage in core research team personal laptop protected by password. Manual data will be storage in University (GAFA) Office with surveillance camera. Data will be backup in Feishu, a Chinese local on-line collaboration tool (https://www.feishu.cn/en/). Archived file will be stored in University (GAFA) Teaching Cloud only file creator and data controller can access to. <i>(this box should expand as you type)</i>		
25	Please indicate if your data will be stored in the UWTSD Research Data Repository (see https://researchdata.uwtsd.ac.uk/). If so please explain. <i>(Most relevant to academic staff)</i>		
	<i>(this box should expand as you type)</i>		
26	Confirm that you have read the UWTSD guidance on data management (see https://www.uwtsd.ac.uk/library/research-data-management/)	YES	☒
27	Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding	YES	☒

SECTION K: Declaration

	The information which I have provided is correct and complete to the best of my knowledge. I have attempted to identify any risks and issues related to the research activity and acknowledge my obligations and the rights of the participants. In submitting this application I hereby confirm that I undertake to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice which is published on the website: https://www.uwtsd.ac.uk/research/research-ethics/		
1	Signature of applicant:		Date:

For STUDENT Submissions:

2	Director of Studies/Supervisor:		Date:
3	Signature:		

For STAFF Submissions:

4	Academic Director/ Assistant Dean:		Date:
5	Signature:		

Checklist: Please complete the checklist below to ensure that you have completed the form according to the guidelines and attached any required documentation:

☒	I have read the guidance notes supplied before completing the form.
☒	I have completed ALL RELEVANT sections of the form in full.
☒	I confirm that the research activity has received approval in principle
☒	I have attached a copy of final/interim approval from external organisation (where appropriate)
☒	I have attached a full risk assessment (where appropriate) ONLY TICK IF YOU HAVE ATTACHED A FULL RISK ASSESSMENT
☒	I understand that it is my responsibility to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice.
☒	I understand that before commencing data collection all documents aimed at respondents (including information sheets, consent forms, questionnaires, interview schedules etc.) must be confirmed by the DoS/Supervisor, module tutor or Academic Director.

RESEARCH STUDENTS AND STAFF ONLY

All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk, with the title 'Ethical Approval' followed by your name. You will be informed of the outcome of your claim by email; therefore it is important that you check your University and personal email accounts regularly.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

This form is available electronically from the Academic Office web pages:
<https://www.uwtsd.ac.uk/academic-office/appendices-and-forms/>