The Key Components of University and Animation Industry Collaboration

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Abstract

This research aims to study the key components of collaboration between the university and Thailand's animation industry, which the country has seen a continuous potential growth. It is hopeful that the research result will lead to development to a core body of knowledge and mutual commercial benefits. The two sectors have different operating and processing systems; thus, their patterns require thorough examining in order that both parties achieve effective means of collaboration. This study employed a mixed-method design that combined qualitative research and quantitative research methods. The research began with documentary research to gather relevant information and adopt appropriate theories. Subsequently, focus group discussion was conducted to collect opinions and suggestions from representatives from university animation lecturers and experts in the animation industry in order to acquire patterns of a new product development (NPD) process under university and animation Industry collaboration. Questionnaires were also used to collect opinions from the three groups of participants: 1) 26 animation lecturers from 11 universities; 2) 390 animation students from 5 universities and 17 recent graduates who works in the animation industry, altogether 407 subjects; and 3) 18 experts in the industry from 14 animation firms. The information drawn from the questionnaires was processed and presented in percentage as statistical data for further studies. In addition, the new product development (NPD) process under university and animation industry collaboration was applied to produce commercial animation work with the aim of creating mutual profits and at the same time benefiting the field in terms of knowledge sharing to public. The animation work was evaluated for its qualities through a survey completed by the target audience of 60 people. During the animation production, participant observation method was utilized to examine the pattern of collaboration between the two parties to observe the process and collect the data to develop a conceptual model for collaboration between the university and the animation industry. Lastly, focus group discussion was employed for two sets of participants—10 animation lecturers and 10 animation students—in order to develop a conceptual model to enhance effective collaboration between the university and the animation industry.

Keywords: University Industry Collaboration, New Product Development, Creative economy, Design Management, Animation

1. Introduction

The creative industries play a very crucial role to develop Thailand's competitiveness in the global economy. The Thai government became greatly aware of the importance of the creative industries so it incorporated their strategies in the 11th National Economic Stimulus Scheme (2012-2016). In its section 6, it refers to approaches to fortify the structures of creative industry economy in a sustainable manner in order to drive the country's competitiveness in the international market (Office of the National Economic and Social Development Board, 2012). Based on the broad view of the Thai creative industries, the author is interested to develop the animation industry in particular because, according to the year 2009 report on Thai Digital Content Industry, the value of domestic animation industry showed a potential growth of 7.07% during 2008-2013. This was considered as one of the creative industries with high potential to generate foreign investment/revenue. In 2008, the industry highly generated an export value of up to THB 715 million. In April 2009, responding to the industry's high potential, the government approved its operating budget of THB 20,000 million for development of the framework for creative industry (Software Industry Promotion Agency, 2010). This shows the government's intentions to develop the creative industries in order to drive the country's creative economy. According to many studies on improving industries, it is found that the continuous growth and the industry stability derive from many factors, and one of them which is likely to bring about the success in the industry development is the improvement of body of knowledge through collaboration between the university, the industry, and the government. To achieve this, the university itself has to take the lead in the alliance to drive innovation (Etzkowitz, 2002). The research purpose of the key components of university and animation industry collaboration is to define elements and patterns of collaboration between the university and the animation industry with the aim of stimulating knowledge sharing, personnel development between the two sectors, creation of commercial animation works that could generate mutual profits, which in return would result in continuous and sustainable cooperation.

2. Literature Review

2.1 University-Industry Collaboration

Universities are regarded as the source that creates human resource, generates new business and drive innovation; they are considered the heart of knowledge based economy. Strategic alliance between the university and the industry is the key to innovation (Etzkowitz, H., Webster, A., Gebjardt, C. and Cantisano Terra B.R., 2000) as their collaboration enhances knowledge sharing, categorized into three groups as follows:

1) Knowledge sharing from the university to industry: the university generates the body of knowledge and passes it on by presenting the scientific research findings to the industry. For example:

- Presentation of the scientific research results through academic seminars, workshops, publications, patents, development of prototypes from the university
- Body of scientific knowledge overrun via channels such as employment for new graduates and training for the researchers from organizations in the industry.

2) Reciprocal knowledge sharing between the university and the industry through collaborative research and development projects, shared supervision in Ph.D. and Master's theses and the collaborative foundation of new companies.

3) The knowledge flow from the industry to the university: the industry determines the market needs as well as any product-related and manufacturing development problems. The process can be performed through the following channels:

- Sharing the findings from application of the body of knowledge via alternative channels such as conducting training for university members, engaging in collaborative research or serving as an advisor for the university.
- Sharing the findings from current technologies that enhance cost reduction by applying the scientific body of knowledge to meet the companies' demand. This can be achieved through conducting training for university members, engaging in collaborative research, or serving as an advisor for the university (Zawislak and Dalmarco, 2011).

The effective university-industry collaboration will lead to consistent knowledge flow, resulting in optimizing development of their technology efficiency. The knowledge sharing requires consideration for four factors: actors, channels, direction, and content.

The main component in the effective collaboration is a team with highly skilled personnel and their capability to create social or business relationship with the executives of companies or organizations who could mainly assist planning collaborative strategies among the alliance (Dooley and Kirk, 2007).

2.2 New Product Development (NPD) Process

The outcome from product development process is to release a company's new product to the market, approved by the executive(s). Throughout the process, there are many steps to filter risks or inefficiency of the product to ensure increased production competence (Huang, 2007).

One of the widespread product development theories is Stage-Gate Process, which divides product development procedure into five stages. In each stage, essential information and methods are collected to be carried on to the next stage. Each stage also acts as a checkpoint of quality control for product development, filtering and determining the end result of each step whether it is ready to proceed to the next step or it should be sent back for improvement or correction.

Stage-Gate Process begins with searching for ideas; they will be evaluated and developed through the five Gates and five Stages as follows:

Gate 1. Idea screening, Stage 1. Scoping,
Gate 2. Second screening, Stage 2. Building business case,
Gate 3. Go to development, Stage 3. Development,
Gate 4. Go to testing, Stage 4. Testing & validation,
Gate 5. Go to launch, Stage 5. Launch, which is followed by a post-launch review (Cooper, 2001)

The product development through the Stage-Gate process originated in NASA's project management in 1960s known as 'Phased Project Planning' which categorized the project management and development into 4 phases: 1) Preliminary analysis, 2) definition, 3) design, and 4) operation. There is a checkpoint between one phase to another to monitor errors within each phase (Stamm, 2008)

3. Methods

This research utilized a mixed-method design that combined qualitative research and quantitative research methodologies with the aim of studying the following objectives:

3.1 To Study the Circumstances in both the Animation Industry and the Animation Field Study in Thailand and to Develop a New Product Development Process (NPD) under University and Animation Industry Collaboration

3.1.1 Documentary Research was employed to Research for Information and Theories Relevant to the Study as Basic Knowledge for the Topic.

3.1.2 Focus Group Discussion

The (in-depth) interviews were conducted with a group of 4 animation lecturers and 4 experts in the animation industry. The questions for focus group discussion consisted of the following aspects:

- Basic knowledge of the lecturers and the experts
- The animation production process in the university and the industry
- The university-industry collaboration in developing human resource
- Their insights on a conceptual model of NPD process under university-animation industry collaboration
- Additional opinions and suggestions

3.1.3 Questionnaires

The information collected from documentary research and focus group discussion was used to design questionnaires A1, A2, and A3

- Questionnaire A1 was for 26 animation lecturers from 11 universities. The questions involved:1) teaching and learning styles 2) internship 3) thesis or senior project 4) extracurricular activities and 5) commercial collaboration

- Questionnaire A2 was for 390 animation students from 5 universities and 17 recent graduates who work in the animation industry, altogether 407 subjects. The questions covered 1) the participants' personal information 2) the university-industry collaboration 3) teaching and learning styles 4) internship 5) thesis or senior project 6) extracurricular activities 7) commercial collaboration.
- Questionnaire A3 was for 18 experts in the field of animation from 14 companies and 5 freelance experts, altogether 23 subjects. The questions covered 1) the participants' personal information 2) Their participation in the university's creating human resource 3) Their participation in supporting the university's activities. 4) The quality of the graduates 5) their collaboration in commercial animation production.

All the questionnaires were designed to study and understand the current situation in Thailand's animation field and industry. The information drawn from the research was further utilized to develop NPD Process under University and Animation Industry Collaboration, which would be subsequently developed to be the key components of university and animation industry collaboration.

3.2 Test/implement NPD Process under University and Animation Industry Collaboration by Suwannatat (2012) in the Animation Production

Research Instrument employed was participant observation during animation production, utilizing the concept of university-industry collaboration for knowledge sharing, which considers four factors: direction, actors, content, and channels (Dooley and Kirk, 2007).

1) Direction—the collaboration for knowledge sharing between Rangsit University and representatives from animation companies. Etzkowitz (2002) indicated that university-industry collaborative knowledge sharing could be performed through research and development projects.
2) Actors, or in this case, the team. NPD process under university and animation industry collaboration was utilized in the Red Cross Foundation for Friends in need of "Pa" Volunteers, with the purpose of publicizing the knowledge of sufficiency economy community, which involves organic farming, through the animation work/medium. After the project and its objectives had been indicated, actors were assigned to perform their tasks in accordance with NPD process under University and Animation Industry Collaboration (see table 1).

The duties of actors were as follows:

- Project Manager was a university lecturer (the first lecturer) from Rangsit University who was responsible for the project
- Instructor was another university lecturer (the second lecturer) from Rangsit University who taught animation classes
- Advisees were Rangsit University students who had recently completed their bachelor's degree in the animation field.
- Advisor was a designer with expertise in the animation field from Tomogram Studio Company.
- Content provider (1) was a representative from the Red Cross Foundation for Friends in need of "Pa" Volunteers, who was also the project investor.
- Content provider (2) was the team working in the area of organic farming, who was a content expert in the field.
- End user was the farmers who were the audience.

All the participants above were considered as representatives from the team that participated a meeting held for animation production. The duties of the actors were allowed be adjusted whether or not to participate in certain steps depending on the consideration of the lecturer who performed as the project manager. For example: Content providers (1) and (2), who represented the project investor and content expert, were asked to participate only in the processes of ideation, post development review and got to launch. End user, who represented the audience, was asked to take part only in the processes of ideation and Go to launch.
In this case, the animation production was finished within a short period of time in only two months; thus, the actors were asked to participate in only certain steps.

3) Content—the animation work's content produced for the Red Cross Foundation for Friends in need of "Pa" Volunteers, was organic farming
4) Channels—the utilization of the animation work by sharing the knowledge to the public. In this project, the animation work about organic farming was shared through the training for representatives from the organic farming leaders in the community.

3.3 Test for Approval for NPD Process under University and Animation Industry Collaboration, which has been Developed and Agreed to be a Pattern of Collaboration

3.3.1 Questionnaire (B) was used to ask the animation's target audience of 60 subjects selected through purposive sampling for their opinions after watching the animation work. The questionnaire consisted of three sections:

- The participants' personal information
- Patterns/styles of the animation work
- Content of the animation work

3.3.2 Two sets of focus group discussion: 1) 10 animation lecturers and 2) 10 animation students. The questions for focus group discussion were divided into two sections as follows:

1) Their opinions on NPD Process under university and animation industry collaboration
2) Their opinions on the patterns of collaboration

4. Data Analysis

Documentary Research method was employed in the related topics and the relevant information gathered was summarized to develop a conceptual model of NPD Process under University and Animation Industry Collaboration. The model was utilized to examine the content in Focus Group Discussion. The participants in the focus group discussion were representatives from animation lecturers and experts in the animation industry. The discussion was audio-taped and transcribed and the key findings were captured to identify and develop to be NPD Process under university and animation industry collaboration, which was proven to be practical and useful for animation production. During the animation production, the participants' behaviors and activities were examined to develop a new effective mean of university-industry collaboration.

The information drawn from documentary research and focus group discussion methods was used to create the questionnaires A1, A2, and A3 to collect information from three groups of participants: lecturers, students, and experts in the field of animation. Subsequently, quantitative research was conducted to present the information in percentage for developing an effective mean of collaboration between the university and the industry.

The animation work produced from NPD process under University and Animation Industry Collaboration was distributed to the target group. They completed the questionnaire B, which was to test whether NPD Process under University and Animation Industry Collaboration was acceptable among them.

Lastly, all the information gathered was applied to design the conceptual model for collaboration between the university and the animation industry. The conceptual model was also tested through focus group discussion by representatives from the lecturers and students to be developed as the Key Components of University and Animation Industry Collaboration, which was complete and ready for use in the industry.

5. Findings and Discussion

5.1 The Important Information Collected from the Questionnaires A1, A2, and A3

- Teaching and learning aspects

92.3% of the lecturers, 79.1% of the students, and 95.7% of the experts in the animation field agreed that they shared collaboration in teaching and learning

- Internship

83.5% of the students indicated that there were internship courses and cooperative education and 92% of the lecturers said their institutions offered internship courses and cooperative education

- Thesis or senior project

61.5% of the lecturers indicated that some problems arising from the industry were used as topics for thesis or senior project. 61.5% of them also said the industry experts were invited to serve as one of the thesis committee (38.5% said the university didn't invite any experts because of its location in upcountry). As for the students, 74.1% of them said problems arising from the industry were used as topics for thesis and senior project and 77.1% said the industry experts were invited to serve as one of the thesis or senior project committee. 78.3% of the experts indicated they were invited to participate as the thesis or senior project committee.

- Activities

80.8% of the lectures pointed out that there was collaborative support between the university and the industry. 74.7 % of the students said their institutions supported the university-industry collaborative activities and the most frequent ones were study visits to animation companies and workshop organized by the two parties. 60.9% of the animation experts said that they took part in the university's support for activities and the most frequent ones were animation workshops.

-Commercial collaboration

76.0% of the lecturers, 80.1% of the students, and 73.9% of the experts in animation said that there was no commercial collaboration. The high percentage implies that the commercial collaboration needs to be further developed and placed more importance.

-The information indicating satisfaction for the quality of new graduates

73.9% of the experts, which is considered a very high percentage, agreed that the recent graduates were underqualified. They pointed out that the graduates were unable to meet the industry's standards. When they got hired, they still needed to be trained with many steps in operating procedures because what they learnt from the program provided at their university was only basic knowledge which was not practical or somewhat useful in the industry.

The information collected reflects the connection in many aspects between the university and the animation industry; however, the quality of the students still does not meet the industry's standards. The researcher believes that collaboration for animation work should be supported to achieve mutual commercial benefits. The industry development still needs further collaboration with clearer patterns or goals. The commercial collaboration that is believed to brings about profits and sustainable development is for graduates who have just completed a Bachelor's degree to take part and get trained by the university lecturers and the animation experts performing as coaches to guide them through their internship while the participants will also receive wages from the project.

5.2 Information Gathered from the Questionnaire B

The participants were farmers: the majority (23.7%) was 60-69 years of age and 22% of them were 50-59. In terms of their highest education, 41.3% of the farmers finished middle school while 32.6% completed high school.

88.3% of the farmers found the animation cartoon for organic farming very interesting and enjoyable. 94.7% agreed that the animation patterns/styles were suitable and in accordance with the knowledge of organic farming. The questionnaire B confirmed the efficiency of NPD Process under University and Animation Industry Collaboration and the results from the animation production well presented the teams' collaboration and tasks/duties in each step (see table 2).

5.3 The Results from Focus Group Discussion of NPD Process under University and Animation Industry Collaboration and Patterns of University-Industry Collaboration

The test of acceptance were concluded from the lecturers and the students (the target group) who were expected to apply the animation production and the patterns of the university-industry collaboration. The content of the focus group discussion was divided into two sections as follows:

- The first section was NPD process under university and animation industry collaboration

Unanimous opinions received from the lecturers and the students showed that this process could be effectively utilized by the university and the industry to produce animation works.

As for the lecturers, they thought that this process fit better with animation that focused on the content or communication of the information accuracy rather than enjoyment or entertainment. The lecturers added that this process might need to be tested with a variety of animation works in a short or long term for further studies that were expected to provide higher efficiency in the industry. In addition, one of the advantages was that the lecturers could earn extra income from producing animation works and use them as a case study for developing their teaching styles.

The students felt that they were interested to participate in the animation production financed by the investors who were clients, lecturers, and animation experts.

They found that the animation production was practical and very good experience as the work could be shown to the target audience. In addition, they were happy with the extra income and the work could be used in their portfolios for their job applications in the future.

-The second section was collaboration pattern

The unanimous opinions from the lecturers and the students were that this process could result in the university-industry collaboration for commercial animation production. The students, the lecturers, the representatives from the industry, the representatives from the investors, and the representatives from the experts, who provided information and knowledge, have built their collaborative relationship that could lead to sustainable development in the industry and animation classes in the university.

Further, other suggestions from the lecturers were to reduce the teaching hours for the lecturers participating in the process in order to balance their workload. They suggested that the students participating be selected by their lecturer advisors and be recent graduates with a Bachelor's degree because, they believed, the degree requirement guaranteed their adequate knowledge in the animation field and equipped them with sufficient experiences before working as professionals.

The patterns of collaboration drawn from the study are the core components of the participants in the animation production, namely university, animation firms, content provider 1 (information and fund provider), content provider 2 (knowledge provider), and end user. The actors or representatives from the five groups altogether applied NPD Process under university and animation industry collaboration to produce the animation work (see figure 1).

6. Conclusion

The purpose of this study is to explore and search for the key components of university and animation Industry collaboration which is critical in the development of Thai creative economy. According to this research, the university-animation industry collaboration can be built through these three core elements:

- The Key Components of University and Animation Industry Collaboration
- NPD Process under University and Animation Industry Collaboration
- The actor’s activities in each step, along with the NPD Process under University and Animation Industry Collaboration

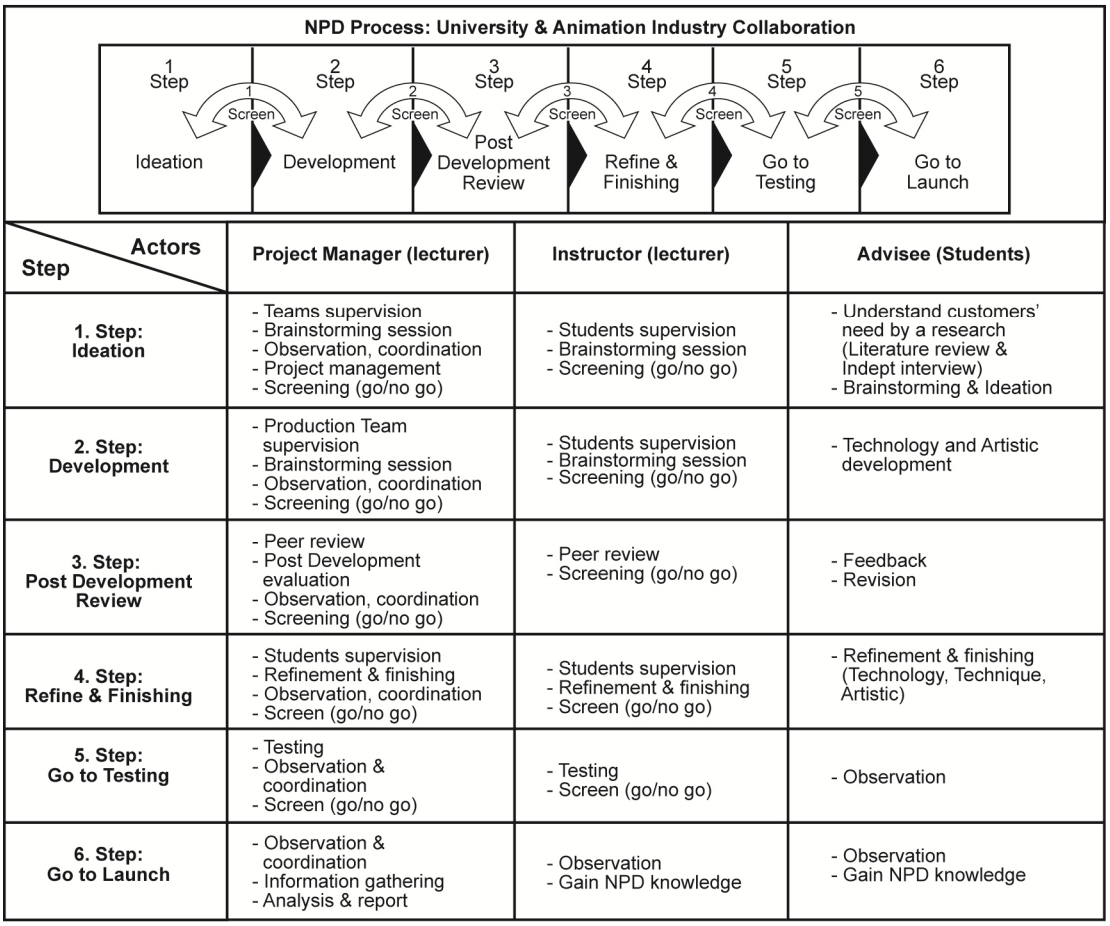
The results from the collaboration are the animation work that focuses more on the content and information than its entertainment and graphic techniques; knowledge sharing and networking relationship building between the university and the industry; commercialization that allows both parties to earn extra income and leads to sustainability in the animation industry.

NPD Process: University & Animation Industry Collaboration

PROCESS / ACTORS	1 Step: Ideation	2 Step: Development	3 Step: Post Development Review	4 Step: Refine & Finishing	5 Step: Go to Testing	6 Step: Go to Launch
	1 Screen	2 Screen	3 Screen	4 Screen	5 Screen	
	Pre Production	Production		Post Production		Launch
	Understand and meet customer's needs	Story structure, Modelling, Voice, Design, Animate	Peer review	Refine, Lighting, Rendering, Compositing, Mastergrade	Testing, Refine and Validation	Launch and post launch review
Project Manager (Lecturer)	●	●	●	●	●	●
Instructor (Lecturer)	●	●	●	●	●	●
Advisee (Students)	●	●	●	●	●	●
Advisor (Animation Expert)	●	●	●	●	●	●
Content provider(1) (Project investor)	●		●			●
Content provider(2) (Content expert)	●		●			●
End user (Audience)	●					●

The dots represent actors' collaboration in each step

Table 1: New Product Development (NPD) Process under University and Animation Industry Collaboration



Step \ Actors	Project Manager (lecturer)	Instructor (lecturer)	Advisee (Students)
1. Step: Ideation	- Teams supervision - Brainstorming session - Observation, coordination - Project management - Screening (go/no go)	- Students supervision - Brainstorming session - Screening (go/no go)	- Understand customers' need by a research (Literature review & Indept interview) - Brainstorming & Ideation
2. Step: Development	- Production Team supervision - Brainstorming session - Observation, coordination - Screening (go/no go)	- Students supervision - Brainstorming session - Screening (go/no go)	- Technology and Artistic development
3. Step: Post Development Review	- Peer review - Post Development evaluation - Observation, coordination - Screening (go/no go)	- Peer review - Screening (go/no go)	- Feedback - Revision
4. Step: Refine & Finishing	- Students supervision - Refinement & finishing - Observation, coordination - Screen (go/no go)	- Students supervision - Refinement & finishing - Screen (go/no go)	- Refinement & finishing (Technology, Technique, Artistic)
5. Step: Go to Testing	- Testing - Observation & coordination - Screen (go/no go)	- Testing - Screen (go/no go)	- Observation
6. Step: Go to Launch	- Observation & coordination - Information gathering - Analysis & report	- Observation - Gain NPD knowledge	- Observation - Gain NPD knowledge

Step \ Actors	Advisor (Animation expert)	Content provider(1) (Project investor)	Content provider(2) (Content expert)	End user
1. Step: Ideation	- Brainstorming & ideation - Screening (go/no go)	- Information providing - Funding	- Knowledge providing	- Information providing (Need & Background)
2. Step: Development	- Students supervision - Screening (go/no go)	-	-	-
3. Step: Post Development Review	- Peer review - Screening (go/no go)	- Comment - Peer review - Screening (go/no go)	- Comment - Peer review	-
4. Step: Refine & Finishing	- Students supervision - Screen (go/no go)	-	-	-
5. Step: Go to Testing	- Observation - Screen (go/no go)	-	-	-
6. Step: Go to Launch	- Observation - Gain NPD knowledge	- Observation - Gain NPD knowledge	- Observation - Gain NPD knowledge	- Observation - Gain NPD knowledge

Table 2: The actors' Activities in each step, along with the New Product Development (NPD) Process under University and Animation Industry Collaboration

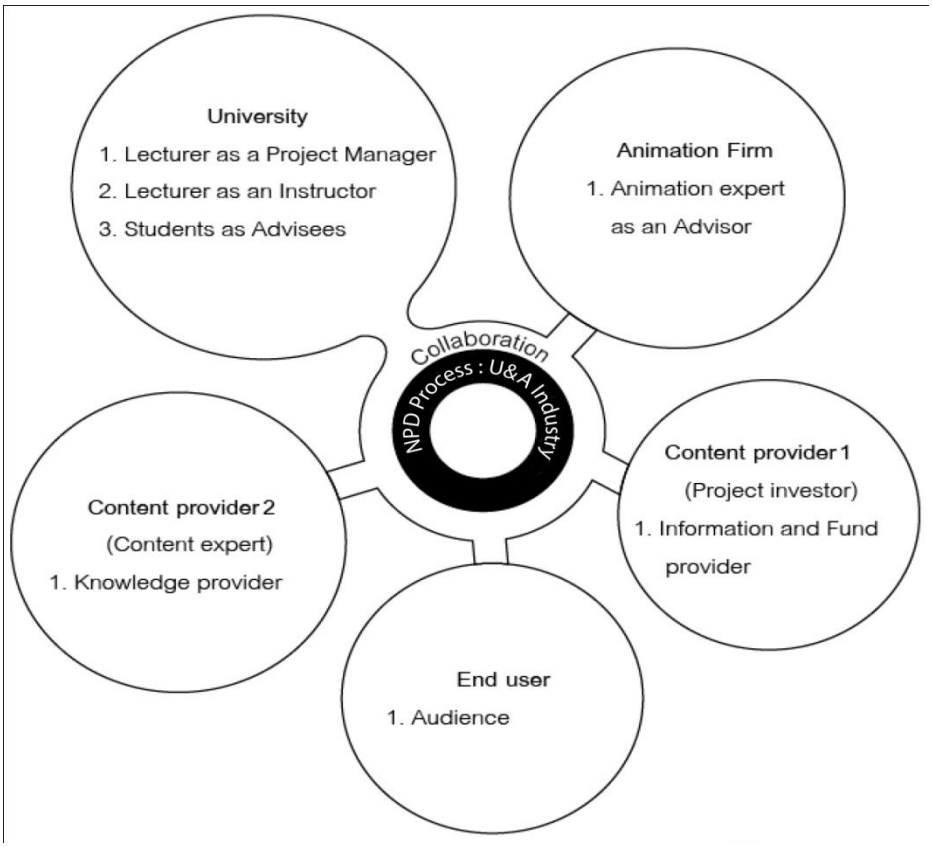


Figure 1: The Key Components of University and Animation Industry Collaboration, Five Groups Altogether Applied NPD Process under University and Animation (U&A) Industry Collaboration

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