Connected in cinema: educational effects of filmmaking classes on medical students

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Purpose: The purpose of this study is to explore what the students experienced in short filmmaking class performed to 1st grade premedical students of a medical school, and to trace educational effects of the class.

Methods: Taking a qualitative approach, the authors used semi-structured interviews to collect the data. This study employed the quota sampling method to purposefully select students to interview. Data coding and analysis were performed based on the grounded theory. The filmmaking experiences consistently described by the interviewees were labeled and reorganized into categories through the open, axial, and selective coding.

Results: The students experience the group filmmaking class as a participatory class. Learners also experienced the procedure of performing complicated group tasks according to detailed and scheduled processes. Participation leads to collaboration. Collaboration here is through communication and participation, not through mechanical cooperation. Students also experience various dimensions of communication. The students learned that successful performance of the group filmmaking process is enabled through consideration towards others, and experience a sense of connectedness resulting in a type of community spirit. Having fun and interest, finally, the students experience the sense of accomplishment and sharing through joint screening.

Conclusion: Students' shared experiences and their education effects of the filmmaking class can be explained in terms of the above mentioned seven closely intertwined categories. In this class, the students were able to express emotions they would not normally express. Through this, the students were able to find the true character and new aspects of their fellow students, forming intimacy, which led to a sense of belonging and connectedness.

Key Words: Undergraduate medical education, Popular culture, Motion pictures

Introduction

Films have been utilized in medical education in various ways. Reflecting on this point, Alexander [1] coined the term "Cinemameducation" in 1994 meaning utilizing movies in medical education. Films are an

effective tool to educate multi-sensory medical practices [1]. Medical education using films can be largely classified into methods of reflective, practical, and evaluative activities [2]: the reflective activities refer to watching films related to medicine for discussion or writing reports [3]; the practical activities can be referred to, for example, watching a film on doctor-

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patient relationship to practice the conversation with the patients; and the evaluative activities refer to watching a film of specific topic related to medicine and attempting to change the attitude of the viewer on the relevant topic [2,4–7].

As outlined, while film ‘appreciation’ is utilized in medical education through various methods, cases of employing film ‘making’ in medical education is very rare, though filmmaking has become easy with the advancement of technology. Anderson and Jefferson [8] proposed the conceptual framework required for explaining the usefulness of the filmmaking education while describing film education as two interdependent axes, i.e., appreciation and making (Fig. 1). Teaching about film attempts to improve the ability of aesthetic

control and aesthetic understanding; each constitutive concept is interactive here. Aesthetic control and aesthetic understanding are again connected to critical acceptance and creation. It is in this process of ‘creation’ that the advantages of filmmaking are demonstrated [8].

The process of filmmaking can intensify the students’ understanding of the subject of the film [9]. Also it can cultivate the creativity and imagination for the learners, i.e., the ability to understand the reality in new ways. In this process, the artistic sensitivity and aesthetic cognitive ability of the learner can be improved. In the process of materializing the topic of the film, moreover, learners tend to be motivated to learn knowledge related to the themes of the film [9–12]. As well, filmmaking is a team work that includes the arrangement and execution of different tasks in an effective and efficient manner. Thus, the filmmaking experience can foster participants’ task management skills. Since team filmmaking is possible only through cooperation, filmmaking has the characteristic of inducing participation [13]. In this context, the Film Education Commission in the Korean Cinema Association states that cooperative learning required in filmmaking “develops positive interdependency between the members helping each other, and is an alternative study method of enabling positive effects such as improvement of personal relationship and self-respect” [14] (Table 1).

Fig. 1. Conceptual Framework based on Michael Anderson and Miranda Jefferson

Table 1. General Experience Categories of the Learner in Filmmaking Class

	Experiences		
	Individual	Social	Media use
Detailed experience category	<ul style="list-style-type: none"> • Sensitivity development • Aesthetic cognition • Self-motivation & enthusiasm • Creativity, imagination • Problem-solving situation • Fun & interest^{a)} • Experience a sense of accomplishment^{a)} 	<ul style="list-style-type: none"> • Participation^{a)} • Collaboration^{a)} & responsibility • Communication methods^{a)} • Consideration for others & community spirit^{a)} • Decision-making situation • Efficient & logical design on the work flow^{a)} 	<ul style="list-style-type: none"> • Use of digital media • Understanding of visual grammar • Understanding of media

^{a)}Our findings.

Team filmmaking with these advantages can be utilized more actively when considering the urgent issues of the contemporary medical education. Contemporary medical education needs to employ various methods (1) that are effective for the current generation accustomed

to visual culture [15], (2) in order to train doctors who have the ability to communicate in various methods [16,17], (3) cooperating with the medical professionals of various occupational teams, displaying appropriate planning and time management abilities [18]. In this

Table 2. Timetable and Context of the Short-Film Making Education

Subject	Task	Week	Educational contents	Learning outcomes
Film theory	Approach to films	1-2	<ul style="list-style-type: none"> · Introduction of film genre classification/ customs of main genre · Appreciation of various film genre · Film genre grammar learning · Study of basic grammar in film work 	<ul style="list-style-type: none"> · Explaining film genre, history, and cultural implications · Explaining social implications inherent in the genre film · Explaining audio-visual expression in narrative space through 10 smartphone image cuts
Lecture on filmmaking	Filmmaking I, pre-production	3	<ul style="list-style-type: none"> · Essential knowledge acquisition of pre-production through work exercise · Consideration of detailed process on pre-production: the role of each process is identified. · Production book developed for production 	<ul style="list-style-type: none"> · Making the production book and scenario book through examining short film case · Understanding of production book/visual material, staff, casting, filming location, equipment and film art, and so forth · Selection of scenario topic for each team
	Filmmaking II, production	4	<ul style="list-style-type: none"> · Acquire production knowledge through the 'making-movie' of actual filmmaking · Consideration on the detailed process of production: the role of each process is identified. · Development of basic production book/ documentation of each process and communication 	<ul style="list-style-type: none"> · Explaining production book and scenario book for filmmaking · Creating actual production book/visual material for production, finding staff, casting and filming location, and production of equipment and film art · Development of production book (team activity): scenario book, production table, scene analysis table, filming schedule, budget, and so forth
	Filmmaking III, post-production	5	<ul style="list-style-type: none"> · Consideration on the detailed process of post-production and re-review on the role of each process · Study on the use method of video editing software for post-production 	<ul style="list-style-type: none"> · Understanding of audio and sound editing, music selection, and sound effect planning · Understanding of using video editing software for post-production · Submit production book including pre-production scenario book before the class
Film making	Student-led filmmaking	Free filming (10 wk)	<ul style="list-style-type: none"> · Short-film making using smartphone 	<ul style="list-style-type: none"> · Scenario feedback by the professor · Complete & submit revised scenario · Sequential completion of pre-production production post-production
Film screening	Screening & postscript presentation	6	<ul style="list-style-type: none"> · Screening of all completed films for each team · Postscript presentation · Feedback exchange 	<ul style="list-style-type: none"> · Discussion on the various stage of the filmmaking · Discussion on the significance of cultural collaborative work, film subject and creative result · Discussion on the reality and film/film sharing

Fig. 2. Summary of the Short-Film Making Coursework

context, our school offered to 1st grade premedical students 6 times of filmmaking classes over 6 weeks, 100 minutes each, using the integrated art, music & physical education course. Sixty-five 1st grade premedical students were divided into eight teams. The final task of the filmmaking class is for each group to produce a free-genre short film within 10 minutes using smart-phone. In week 6, all students gathered to appreciate the films together (Table 2, Fig. 2). In what follows, authors specifically explore the experiences of the students on filmmaking classes and educational effects implicated in the activities.

Methods

1. Study design (participants and data collection)

This study takes a qualitative approach. Qualitative methods in this research are performed to discover concepts and categories in raw data, creating explanatory schemes for the object of the research [19]. The qualitative methods adopted in this study focus on meaning production, highlighting the “perceptions of

local actors from inside” [20]. Authors used semi-structured interviews as the primary method to collect the data. This study employed the quota sampling method to purposefully select students to interview. In quota sampling, a type of purposeful sampling methods, researchers purposefully identify groups or subgroups of people, and then decide samples of people to proportionally meet the ‘quota’ [21]. The reason for using the quota sampling method was to include in the study students who played various roles in movie making in a balanced manner. Seventeen students, out of 65 were finally sampled to conduct semi-structured interviews, i.e., three from directing, three from scenario writing, five from acting, three from editing, and three from shooting. Participants were mostly asked questions about varied experiences and characteristics of the movie making project compared to other group activities. Other questions were asked to elicit students’ experience of the filmmaking. Each interview lasted about 45 to 60 minutes. The detailed research procedures were submitted to and approved by the Institutional Review Board of College of Medicine, The Catholic University of Korea (MC18EESE0080). Written informed consent was obtained from research participants.

2. Data analysis

Data coding and analysis were performed based on the grounded theory. In terms of grounded theory, the terms, concept, and categories describing the subject of the study have ‘emerging’ aspects, and the researcher establishes explanatory schemes on the subject of the study through the open, axial, and selective coding, aiming at theoretical saturation [19]. Authors reviewed the interview transcription multiple times. The ‘film-making experiences’ consistently described by the interviewees were labeled and reorganized into categories. Labeling and categorizing the raw data is done through the open and axial coding, and finally, related categories are reorganized around overarching interpretive schemes through the selective coding. In this process, the authors modified and improved the labeling and categorization through cross-check and re-review on the raw data [19].

Results

Data analysis shows that students’ shared experiences in the filmmaking class and their educational effects can be explained in terms of the following seven closely intertwined categories (Table 1). The term ‘effects’ in this paper does not refer to the numeral relationship between an independent variable and differential variable, which is strictly defined in quantitative research. The term “effects” in this paper is used in a comprehensive sense to signify that certain phenomenon has impact of something. In terms of the type, cause and degree of the experience, the experience categories emerge, thus result from the characteristic of special task, i.e., the group filmmaking. Educational effects of the class can be traced within these categories.

1. Experience of participation

In light of participation, the 6 weeks of short-film making and screening class are clearly distinct from other knowledge-based classes. Since the result of participation can be visibly verified and shared with all other students by the screening session, the shared experience of the intensive participation is amplified among the students. On this point, a student referred as follow:

“Instead of expressing knowledge like other tasks, we write our own story lines, direct our own production, edit and do all the stuff ourselves. And finally we all watched our faces on the screen to share our appreciation. Imagine...it was a different kind of participation.”

The reason that the students can experience varied dimensions of participation from the process of filmmaking is partly because of the modern technological environment. One student said as the following:

“A member doing shooting actively presented opinions such as ‘how about changing this scene like this?’ or ‘how about moving this item to that side?’ He loved to talk about other things than shooting. Actors did too.”

One reason of the ‘on the spot’ participation is that members of the production scene can check the results of the filming thanks to modern digital filming equipments. Unlike past movie production using film, now everyone at a shooting location using a digital device can instantly check the images on the spot, give feedback together, and then apply new ideas right in the field. As such, the modern digital media environment has brought about a major change in the timing, degree, scope, and subject of participation in the filmmaking process. In

this sense, students experience new stage of participation in the filmmaking class. The ‘participation’ students experience here is one that requires complex plans.

2. Experience of thorough planning and work process

Due to the complex and comprehensive nature of the filmmaking process, filmmakers must precisely design the overall shooting plan and workflow. During the film production process, students experience the opportunity to organize and execute optimal workflows by efficiently arranging various resources, activities and performance processes in discrete stages. One student said,

“For example, if you have to work on a different knowledge-based joint task in the order of 1, 2, 3, 4, 5, 6, and you missed 2 and 3, you may add 2 and 3 later. But in the case of film work, if you missed the second and third scenes and want to take them again, it is very difficult because you have to match the actors’ clothes and even the weather or the place and members’ schedule. It really needs careful planning.”

It may be true of all the joint tasks that the detailed planning and execution sequence of task performance is of significant importance. In filmmaking, however, students experience more clearly that this sequence is sometimes hardly reversible.

3. Collaboration experience among team members

The task of filmmaking requires well-established and efficiently executed workflows. In the filmmaking class, task-oriented interaction, i.e., collaboration is mandatory among the group members. Students here experience a qualitatively different aspect of collaboration through group filmmaking, i.e., one going beyond

mechanical collaborations. First, collaboration in the filmmaking process is not an imaginary collaboration through messenger, but realistic and experiential face-to-face collaboration occurring in a specific location. An interviewee explained:

“Writing can be done alone, but the film is a collaborative work. So all staff members should cooperate. When shooting a movie, all eight members must be present in the field. Two or three people should be holding a recording cell phone; one should be in charge of the sound. Some should be holding a reflector. Several members must act and another must check the storyboard and direct during the film shoot. There can be no one idling away.”

Collaboration here is not mechanical one resulting from the size of the task, but one through communication and participation. A student in charge of screenplay writing stated:

“When writing the scenario, I had to consider the actors and the cameramen in my group, and the editing process. Making a movie was a job together and I cannot just emphasize my taste. I had to get all the consent of the staff; I had to do it because of the nature of the work I was doing.”

As a result, in the process of filmmaking, students experience a unique dimension of collaboration that requires consideration of the characteristics of each other. In this regard, students experience communicative collaboration close to empathic cooperation, rather than mechanical collaboration.

4. Experience of communication

Students participating in the filmmaking experience

various dimensions of communication. One student who acted said as follows, pointing out it was an opportunity to newly look back at their facial expressions and communicative attitudes.

“In the script, it just says “making an angry look”. But there are too many ways to express it. You should choose one of them, and then make the angry face. Looking at my face on the screen, I came to think about what kind of facial expressions I usually live in.”

In addition, experiencing acting was a good opportunity to practice unfamiliar emotional expressions:

“In the script, there was an expression that I normally would not show, so I had to practice that expression. While practicing the expression which is unfamiliar to me, I was able to train myself on expressing the emotions that I normally would not do.”

Along with the experience of communication through emotional expression, students reconsider the efficiency of verbal/nonverbal expressions and experience in reality that there can be various ways of conveying meaning and messages. One student who was in charge of shooting says:

“In the script, it was written like “Time goes back to the past”. I was considering whether to express this verbally, but I put a scene of the clock turning backwards, and it all perfectly worked out.”

Experience in collaboration and communication leads to mutual consideration and the formation of community spirit.

5. Consideration for others and community spirit

Through the filmmaking class, students experience the importance of considering others and community spirit. A student who wrote the scenario remarks:

“We actually chose our genre based on the characteristics of the members. When we made our storylines, we made it in a direction that the characteristics of our members represented well.”

During the production stage again, the filmmaking class provides opportunities to learn about consideration towards others. A student who was in charge of directing notes:

“It was important to listen to the actors and the cameraperson before I directed them. I listened to them, integrated with my thoughts, and then gave them some instructions. Strangely, scenes did not come out properly without such consideration.”

Students experienced a certain ‘community spirit’ through this consideration, collaboration and participation. On this point, a student explains:

“At first, my group members were not close to each other. As I filmed the movie together, I was able to see the parts I had not seen each other, and I felt intimacy as I watched the unexpected sides of my friends. As we created a short movie, we felt that our group was a small community. I would call it “a sense of belonging.”

Along with a serious experience such as a community experience, students also experience fun and interest in the filmmaking.

6. Fun and interest

The collaborative filmmaking class is experienced as a fun one. A student pointed out:

“Honestly, it was a difficult task. But now that I look back, the filmmaking class was a very fun project.”

There are many reasons that the students felt fun in the filmmaking class. Students say that they found it interesting to see the results of the expression change from text and acting to moving images on the screen. A student who participated in writing the scenario said:

“It was really fun to see that the scenario that I wrote was converted into actual moving pictures. I think if I ask my friends to read my scenario, they would not read it. But when I asked them to see a movie made out of scenario I wrote, most of them saw it and had interest. Films have good accessibility and are interesting.”

There was also a student who pointed out that they felt great fun in the changes in the acting of the actors.

“The script says actors do express love, but they were actually doing their filmmaking ‘project’. It was funny and awkward. But through the instruction by the director, I could see the actor’s emotional immersion and their acting started to change.”

7. Experience the sense of accomplishment and sharing: experiencing the advantages of popular art

Cinema is a popular art, and the basic purpose is to show the film to the people. The goal of this filmmaking class was also to show the films together in the week 6 class time, and this ‘joint screening’ grants

considerable amount of motivation to the students. A student depicted as follows:

“We also felt like we would be rewarded ‘if the people watching our film will have fun,’ and thinking about the interesting reaction of the viewers was a great motivation.”

Experiencing the sense of accomplishment and sharing through joint screening is an important point in this filmmaking class [22]:

“Not all people read, laugh and applaud to the project that I did. But for the film, many of my friends came to see it, and we all watched together and laughed. So I had the pleasure to have the experience that the film made by our team can give laughter and touch others’ hearts. Anyway, it was because of the joint screening. If our films were just in the hard drive of our computer, it probably was not as memorable as the joint screening.”

Discussion

Since there are no preceding studies on medical education utilizing filmmaking, this study took the perspective of comprehensive observations of the experiences of the students in the process of film ‘making,’ using an exploratory manner. Authors also traced the educational effects of the filmmaking class while categorizing students’ experiences of the class. The generalization of this study’s findings can be limited due to the quota sampling employed and the ‘subjectivity’ of the experiences.

Due to the limitation of the length of the manuscript, authors mainly introduced positive statements from the interviewees about the seven experience categories.

Table 3. Experience Categories and Students' Related Statements

Experience category	Positive statements	Statements indicating limitations
Experience of participation	"Instead of expressing knowledge like other tasks, we write our own story lines, direct our own production, edit and do all the stuff ourselves. And finally we all watched our faces on the screen to share our appreciation. Imagine...it was a different kind of participation."	"Of course, there was still someone who offered no opinion."
Experience of thorough planning and work process	"If you missed a few scenes and want to take them again, it is very difficult because you have to match the actors' clothes and even the weather or the place and members'schedule. It really needs careful planning."	"No matter how thorough the plan was, I had no experience, so the unexpected things kept popping up. Sometimes the background of the footage was too strange. Or the camera man ran with the camera to shoot the actor running, and the screen was so shaky that I didn't know what to do. There were many cases where the plan could not be carried out properly."
Collaboration experience among team members	"Writing can be done alone, but the film is a collaborative work, so all staff members should cooperate. When shooting a movie, all eight staff members must be present in the field."	"Our group have tried to cooperate, but nevertheless we tend to rely on some key members at the end. As the screening date neared, especially the sound and scene editors did a lot of works. We couldn't help it because we were not good at using the editing program."
Experience of communication	"In the script, there was an expression that I normally would not show, so I had to practice that expression. While practicing the expression which is unfamiliar to me, I was able to train myself on expressing the emotions that I normally would not do."	"Sometimes there was a need for loving communication. Coincidentally, people who are at odds with each other have been placed in the same group. So the actors had difficulties in empathy and experienced the limits of communication."
Consideration for others and community spirit	"As we created a short movie, we felt that our group was a small community. I came to have a sense of belonging."	"There were also groups that were hard to feel the community spirit. In some cases, the members who did not get along were in one group and eventually had problems in collaboration and communication. Members of our group ended up thinking of each other as just people who performed the same task."
Fun and interest	"The script says actors do express love, but they were actually doing their filmmaking 'project'. It was funny and awkward. But through the instruction by the director, I could see the actor's emotional immersion and their acting started to change."	"I think I've been focusing only on making it fun, so I've only copied the trendy movie styles."
Sense of accomplishment: advantages of popular art	"Not all people read, laugh and applaud to the project that I did. But for the film, many of my friends came to see it, and we all watched together and laughed. So I had the pleasure to have the experience that the film made by our team can give laughter and touch others' hearts."	"Movie making was still a given group project. I can't deny that was one of the many class tasks. We made a movie simply to pass the class."

There were also negative statements from students, however, and the representative negative statements are listed in Table 3. Regardless of the negative or positive statements, they indicate a particular category of experience classified into seven in the foregoing section.

Negative statements still play a role in revealing students' experience categories, and the authors have presented seven experience categories by coding both positive and negative statements.

With regard to negative statements, it is also clear that

this type of filmmaking class has limitations and difficulties. Though the class offered five sessions teaching detailed filmmaking techniques, there were cases in which students began the project without sufficient knowledge and skills about the techniques required for filmmaking. This problem caused heavy workloads for students who are good at using editing software at the final editing stage. Since the class has not sufficiently informed students of concrete problems frequently occurring in shooting locations, in some cases students could not use their time more efficiently in the production phase. Furthermore, as a result of setting the screening time near the final exam, students did not get enough opportunities to improve the film's final quality due to the pressure of other exams. Meanwhile, the selection of genre and topic was fully dependent on the autonomous choice of the students, and as a result, most final films were only parodies of the present commercial films. In addition, if the group includes members who are at odds with each other, problems with filmmaking progress and empathy in acting can occur. Based on this, some improvements can be made such as (1) students' organizing their own groups, (2) more effective and practical filmmaking computer software training, and (3) joint screening well before the final exam period.

As there are few studies related to filmmaking and medical education, however, the basic analysis presented in this study can be the foundation for future studies on medical education related to cinema. Also, exploring the relationship between medical education and filmmaking supports the view of the narrative medicine, a practical combination of humanities and clinical medicine [23,24]. In terms of the narrative medicine perspective, illness is the collapse of a patient's plot about the life that the patient has constructed, and treatment is to bring the collapsed plot back to the patient's life. Here narrative exchange is essential for treatment, and the doctor's nar-

rative competence is crucial in the exchange. Narrative competence essentially refers to a doctor's ability to listen and understand patients' story of illness experiences [25,26]. The important thing in the competence is attentiveness to stories of patients and therapeutic emplotment, i.e., reorganizing the patient's narratives into the causal relationship of medically significant events and representing them [27,28]. This competence is not formed by itself, but must be developed through training and practice. Here, making a movie is to 'emplot' and represent reality as a story through an attention to a certain reality. Thus the 'story-listening' and 'story-telling' ability is crucial in movie making. In this way, filmmaking class aiming at 'story-listening' and 'story-telling' abilities is closely linked to the study and implementation of the narrative medicine.

For follow-up studies, benefits of the filmmaking class to the study and performing of the epic (narrative) medicine can be fully researched. Also the experiences of the students should be more segmentalized, and the relationships among the experiences should be defined in detail. The detailed effects of the filmmaking class should also be measured using a quantitative method, and a content analysis of the films produced by students would be a meaningful addition.

In one interview, a student stated that the film they had made with their friends had been repeatedly viewed, especially when there were difficulties in their school life. In medical schools, where a competitive atmosphere dominates, it is not easy for students to fully reveal their personality, emotions, and feelings to each other while in competitive relationships. The filmmaking class can be particularly advantageous in overcoming this situation. Freed from the burden of a competitive environment and the elevated spirit of high culture, the students were able to express emotions they would not normally express; unexpectedly, they could reveal themselves as

friends and colleagues. Through this, the students were able to find the true character and new aspects of their fellow students that had been difficult to perceive in the competitive environment. Intimacy and friendships were formed, and this led to a sense of belonging and connectedness that the students commented on. This is important because (1) intimacy and friendship are valuable for their own sake and (2) intimacy, feelings of solidarity, and a sense of connectedness with colleagues can be good solutions for the so-called burnout and feelings of loneliness experienced by medical students, which is currently a serious issue [29–31]. Enriched by a sense of connectedness, the various positive experiences that students have through filmmaking can become a meaningful foundation for them to grow into good doctors.

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