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Effects of Aquatic Training on the Job Related Physical Fitness and Pulmonary Function on Fire Fighters in KOREA

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Abstract

The purpose of this study is to investigate the effect of aquatic exercise on the job re-lated physical fitness and pulmonary function ability of fire fighters, and to confirm that the improvement of work performance and breathing ability of fire fighters can be achieved through aquatic exercise. In order to accomplish this purpose, the subjects were selected from 30 fire fighters working at C city, and the effects of the aquatic exercise on the work job related physical fitness and pulmonary function ability of fire fighters were as follows. The participants were divided into two groups: Exercise group(n=15) and Control group(n=15). The aquatic training for 12 weeks. The results of this study were as follows: First, As for the job related physical fitness, there were significantly increased in Grasping power, sit-up, seated hip adductor stretching, back strength, standing long jump and 20m round trip running in the exercise group. Second, As for the gait Ability, there were significantly increased in speed and steppin the exercise group. As conclusions, this study confirmed that the aquatic training could improve the job related physical fitness and pulmonary function of fire fighters. However, there is a need for more specific exercise programs to be developed for the continual improvement of athletic performance in aquatic training along with further studies to confirm the physiological benefits of those programs.

[Keywords] *Aquatic Training, Job Related Physical Fitness, Pulmonary Function, Fire Fighters Physical Fitness, Fire Fighters in Korea*

1. Introduction

The rapid development of modern society brought about the rapid development of urbanization and the overall development of society. However, the population concentration, the large scale of the buildings and the increase of the dangerous goods facilities have become another disaster factors[1]. Demand for fire fighting services to protect people's lives in a disaster area is increasing day by day. According to the report of the National Emergency Management Agency in 2014, it is reported that the field activities of fire fighting officers such as rescue has increased by 9.8% annually since 2000[2]. The field activities of fire fighting officers, who

are in charge of urgent rescue activities and fire suppression at the disaster site, are complicated and diversified in a violent environment, and the types of accidents in this environment are more unpredictable[3]. These factors have special job characteristics of fire fighters who should act in the bad conditions that increase the frequency of risk factors[4].

This is categorized as the special conditions of the fire activity conditions and environment, distinct characteristics of the physical risk environment of the job performance ability itself and the major fire fighting work in the field of fire by moving, ventilating and investigating, ladder work, forced entry and rescue factors[5]. In addition, job-related

tests that are recommended by the National Fire Protection Association (NFPA) for job performance tests related to fire fighting activities include hose advance[6], forcible entry, hoist climb, victim rescue, and stair climb are recommended as basic job performance tests[7]. This indicates that the energy metabolism rate of fire suppression activities during the typical fire fighting activities is high when compared with the general sports form[8]. However, it can be predicted that the level of physical strength, such as cardiorespiratory ability, muscle strength, and muscle endurance, will be changed by various causes in the process of fire fighting activity[9]. In this way, the specific job characteristics of the fire fighter made the fire fighter show the ability to transcend human physical and mental limitations. For this, advanced countries such as USA, UK, Canada, Japan have developed physical strength test system and physical fitness program scientifically and systematically. In addition, it is composed of physical fitness test items to test job performance related to the characteristics of fire service by each country and city. In most countries, the measurement standard of physical fitness test is not discriminated on the basis of age, sex, and physical strength condition, and the same measurement standard is applied to perform the fitness test. Also, researches on fire work performance and physical fitness tests are being carried out continuously[10]. However, in Korea, there is a lack of research on the physical strength of fire fighters[11], and there are limitations in quantitative and qualitative aspects to be used as a basis for establishing clear grounds.

In this way, the importance of physical strength for fire fighters and the necessity of strengthening of physical strength have been continuously raised. The purpose of the fire fighter strength test is also to promote the physical strength and the effectiveness of performing fire fighting such as rescue

etc[12]. through personal fitness test. In addition, although separate management is required to maintain fitness that is suitable for performing work activities during the performance period of the field activities, the physical management of the fire fighting team is totally limited to the individual due to the uniqueness of working environment and work structure, and the organizational management is insufficient[13][14]. Therefore, the purpose of this study is to investigate the effect of water exercise on the performance of the fire fighters' work performance and respiratory ability, and to provide basic data for improving the work performance and respiratory ability of fire fighters who are required to perform work in various job environments.

2. Materials & Methods

2.1. Subject of study

This study was conducted from June, 2016 to September, 2016, for 30 fire fighters who have not participated in the aquatic exercise program for 12 months and have no medical illness. Participants were selected as participants who fully understood the purpose of the experiment and were willing to volunteer for the experiment, and it is performed after completing study participation agreement. The participants were divided into two groups using aquatic exercise group(AEC, n = 15) and non - exercise control group(CG, n = 15) through random sampling. In the initial study group, 25 subjects participated in the study. However, subjects were excluded from the group(AEG/9 persons, CG/6 persons) due to personal problems and lack of exercise. Accordingly, The number of subjects per group was adjusted to 15. There was no significant difference between the two groups. The physical characteristics of the subjects were as shown in <Table 1>.

Table 1. Physical characteristics of subjects M±SD.

	Age(yrs)	Height(Cm)	Weight(Kg)	BMI(kg/m ²)
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Aquatic exercise group (N=15)	34.26±6.24	172.64±6.14	68.83±8.32	22.13±2.34
Control group (N=15)	33.82±6.52	173.12±6.82	69.24±7.16	22.66±2.42

2.2. Measure and method

2.2.1. Method

2.2.1.1. Job related physical fitness test

The physical strength of work performance was based on the verification method of physical strength of fire fighting officers. The measurement variables are as <Table 2>.

Table 2. Job related physical fitness test.

Items	Measuring tools	Manufacture company
Seated hip adductor stretching	DW-782	Deawoo sports industry (Seoul, Korea)
Sit-up	DW-731E	
Grasping power	DW-701	
Back strength	DW-702	
Standing long jump	DW-770	
Shuttle run	Shuttle run counter	

2.2.1.2. Pulmonary function ability test

Pulmonary function ability tests were performed in a sitting position using Cardio Touch 3000S(BIONET). For accurate measurements, sufficient explanations and demonstrations were made to understand the subjects and then measurements were made. The pulmonary function ability tests were performed on the basis of the inspiratory reserve volume(IRV), the expiratory reserve volume(ERV), the slow or relaxed vital capacity(SVC), and the forced vital capacity(FVC). Each test was carried out three times and the average value of each measurement was recorded.

2.3. Data process

For the data processing of this study, the mean and standard deviation of all data collected using SPSS 20.0(window statistical package) were calculated, and the significance test before and after the experiment in the group was conducted by Paired t-test. And the independent sample t-test was used for the pre-test and before and after-test of

significance for verification of identity between groups. The significance level was $p < .05$. The significance level was $p < .05$.

3. Results

3.1. Change in job related physical fitness variable

<Table 3> shows the change of the work performance variable according to the aquatic exercise. Changes in strength variables in AEG group were statistically significant in all variables of grasping power of left hand($P = .000$), grasping power of right hand ($p = .000$), sit-up($p = .000$), seated hip adductor stretching($p = .000$), back strength($P = .000$), standing long jump($p = .026$), and 20m round trip running($p = .000$). There was no statistically significant difference in CG group. In addition, there was no statistically significant difference in all variables in the preliminary examination of the group differences of the work physical fitness variables according to the aquatic exercise. In the post test, there was statistically significant difference in all variables of grasping power of left hand($P = .000$), grasping power of right hand

(p = .000), sit-up(p = .000), seated hip adductor stretching(p = .000), back strength(P

= .000), standing long jump(p = .026), and 20m round trip running(p = .000).

Table 3. The change of job related physical fitness M±SD.

Items	Groups	Pre	Post	t*	
Grasping power	L	AEG(n=15)	40.18±9.28	49.72±8.22	-11.327+++
		CG(n=15)	38.82±10.82	39.21±9.39	-0.337
		t**	0.966	8.228+++	
	R	AEG(n=15)	41.36±8.62	56.02±6.88	-16.824+++
		CG(n=15)	41.68±9.66	41.32±9.22	0.274
		t**	0.430	10.017+++	
Sit-up	AEG(n=15)	41.93±8.61	54.66±8.03	-14.429+++	
	CG(n=15)	42.92±8.28	43.11±7.22	0.455	
	t**	-1.122	-9.166+++		
Seated hip adductor stretching	AEG(n=15)	11.63±10.88	16.26±4.22	-4.002+++	
	CG(n=15)	12.33±3.21	13.07±2.82	0.340	
	t**	-0.688	-5.884+++		
Back strength	AEG(n=15)	56.83±0.76	63.42±0.51	6.887+++	
	CG(n=15)	55.88±0.95	56.91±0.89	0.126	
	t**	-0.322	-6.885+++		
Standing long jump	AEG(n=15)	214.96±15.88	232.22±17.77	-12.997+++	
	CG(n=15)	212.67±16.92	214.23±11.54	-1.330	
	t**	-0.922+++	-13.022+++		
20m round trip running	AEG(n=15)	46.75±8.76	56.83±6.80	-15.006+++	
	CG(n=15)	47.75±8.91	48.83±10.29	-0.178	
	t**	-0.678	-12.216+++		

Note: * Paired t-test between pre- and post-values in a group

** Independent sample t-test' results between pre- and post-values in both groups

+, ++, and +++ mean $P < 0.05$, $P < 0.01$, and $P < 0.001$, respectively.

3.2. The change in pulmonary function ability

<Table 4> shows the changes in variables of functional respiratory capacity according to the aquatic exercise. Changes in respiratory capacity variables in AEG group were statistically significant in all variables of IRV(P = .000), ERV (p = .000), SVC(p = .000) and FVC (p = .000). However, there was no statistically

significant difference in the change of respiratory ability of CG group in all variables. In addition, there was no statistically significant difference in all variables in the preliminary examination of the group differences of respiratory capacity variables according to aquatic exercise. However, there was a statistically significant difference in all respiratory capacity variables of IRV(p = .000), ERV(p = .000), SVC(p = .000) and FVC(p = .000) in post test.

Table 4. The change of pulmonary function ability M±SD.

Items	Groups	Pre	Post	t*
IRV	AEG(n=15)	1.82±0.25	1.92±0.14	-10.366+++
	CG(n=15)	1.79±0.15	1.72±0.22	0.627
	t**	0.862	12.547+++	
ERV	AEG(n=15)	0.74±0.07	0.91±0.06	-9.335+++
	CG(n=15)	0.71±0.12	0.73±0.03	-1.222
	t**	1.382	-9.865+++	
SVC	AEG(n=15)	3.03±0.12	3.24±0.14	-5.669+++
	CG(n=15)	3.04±0.11	3.06±0.11	-0.889
	t**	-0.426	-4.986+++	
FVC	AEG(n=15)	2.21±0.21	2.51±0.16	-7.767+++
	CG(n=15)	2.20±0.33	2.22±0.21	-1.656
	t**	1.006	-6.966+++	

Note: * Paired t-test between pre- and post-values in a group

** Independent sample t-test' results between pre- and post-values in both groups

†,††, and ††† mean $P < 0.05$, $P < 0.01$, and $P < 0.001$, respectively.

4. Discussion

The purpose of this study is to compare the effects of aquatic exercise programs on job related physical fitness and pulmonary function ability of 30 fire fighters (15 in the aquatic exercise group and 15 in the control group), and as a result, I'd like to discuss as follow.

Athletic ability and work ability are expressed according to job related physical fitness. However, according to scholars, the physical strength is defined in various ways according to the age. Seok[15] is a comprehensive concept that includes physical, mental, social, and spiritual aspects not merely physical aspects. This is the sum of all the abilities that are the basis for living this life. Physical strength is composed of active physical fitness which is necessary force for activity and fitness for protection which is the physical strength that adapts to the change of climate and resistance against invasion of germs. However, in most of the studies, physical fitness is measured by cardiovascular endurance, body composition, muscle strength, muscle endurance, flexibility, and agility etc[16]. In this study, the 6 of occupational

fitness and the 4 of functional respiratory capacity were measured in order to improve the chronic diseases and work efficiency of the fire fighter due to excessive work stress and decreased exercise function. As a result, the change of the work performance variable after the aquatic exercise was improved in the AEG group in grasping power of left hand and right handed, sit-up, seated hip adductor stretching, back strength, standing long jump, and 20m round trip running. This is consistent with the results of the study of fire fighters' ability to improve their work performance[17], and it supports that the improvement of the fire fighter's physical strength is effective on the ability to carry out fire fighting tasks[18]. In addition, in this study, respiratory ability was measured in addition to physical strength improvement of fire fighters. The results showed that all variables of IRV, ERV, SVC, FVC were improved in AEG group. This is consistent with the results of the study that water exercise is effective in improving respiratory function[19], and it supports the study that aquatic exercise is effective in improving aerobic exercise capacity[20].

These results suggest that aquatic exercise can contribute to the physical fitness and respiratory ability of fire fighters, reduce job stress of fire fighters, and reduce the incidence of metabolic syndrome and stressful diseases of modern people (Seung - 2004). However, there is no research on the contribution of exercise to the performance of fire fighters, and it is necessary to develop systematic mutual programs which improve the job skills of fire fighters and physical strength.

5. Conclusion

The purpose of this study is to investigate the effect of aquatic exercise on the job related physical fitness and pulmonary function ability of fire fighters, and to confirm that the improvement of work performance and breathing ability of fire fighters can be achieved through aquatic exercise. In order to accomplish this purpose, the subjects were selected from 30 fire fighters working at C city, and the effects of the aquatic exercise on the work job related physical fitness and pulmonary function ability of fire fighters were as follows.

1. The changes of the job related physical fitness of the AEG group according to the aquatic exercise were statistically significant in all the variables of the grasping power of left and right hand, sit-up, seated hip adductor stretching, back strength. The changes in stamina variables in CG group were no statistically significant difference in all variables.

2. Changes in respiratory capacity according to aquatic exercise showed statistically significant differences in all variables of IRV, ERV, SVC, and FV. The changes in respiratory capacity of CG group were no statistically significant difference in all variables.

The results of this study suggest that aquatic exercise is an effective exercise for fire fighters' work job related physical fitness and pulmonary function ability. It is thought that the development of professional fitness training program to improve the health variable due to the job stress and job ability will improve the job performance of fire fighters.

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Risk Management Plan for SAFETY of Sport Facilities in Republic of KOREA

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Abstract

As growing the size of sport industry, every person has witnessed a dramatic rise in the popularity of various forms of sport activities such as fitness, water sport, outdoor sport, bike, ball games, etc. Participation in sport programs is a natural way for most people to be physically active, and the opportunities to take part in organized sports have increased markedly during the last decades. However, participation in sport activities increases the risk of sports and facility-related injuries because risks are inherent in sport and even the safest programs can never avoid accidents and injuries. As the increase in participation of sport activities over the years, it is widely believed that sports injuries are becoming more and more prevalent - across all age groups in nationwide. Without the well-developed risk management plans, however, poorly run programs could result in a negative reputation as well as a financial loss for the organizations. The use of appropriate risk management strategies is the best way to reduce the risk from occurring in the first place. According to the previous study, existing a formal risk management plan in sport organization can reduce the injury rates of participants and improve quality of service for participants of sport programs. In addition, a risk management plan can reduce money paid for loss claims as well as maintain the safety of services.

Therefore, the purpose of study is to explore the impact of risk management, to discuss risk assessment and analysis, to addresses the need for risk assessment at sport facilities, and finally to describe the sport-specific risk management plan(RMP) developed while conducting research through the literatures for sport professions to reduce the risks and hazards anticipated in so that the sport organizations could avoid unforeseeable litigation, defamation, financial loss, accidents and injuries of personnel.

The D.I.M. process should be used as an effective way to establish a proper risk management plan that will assist organizations in decreasing unwanted losses. This process consists of three steps as follows: 1)developing RMP, 2)implementing RMP, and 3)managing RMP. Developing a risk management plan, the first step of the D.I.M. process consists of three detailed stages: 1)Identifying risks, 2)Classifying risks, and 3)selecting methods of treatment for the risks. The next step in the D.I.M. process consists of implementing the risk management plan. Implementation means communication with all employees and the risk manager should impart to them that communication is critically important in order to put the risk management plan into practice. The final component of the D.I.M. process is to manage the RMP. In the managing the RMP step, hiring or selection of a risk manager or a risk management committee, providing the risk manager or committee with the authority to lead, and providing employees with the opportunity for continual input into the RMP are executed. The last process for RMP is risk management audit to review their process through a good feedback system. A risk management audit is a formal review of the plan that attempts to cover all pertinent legal aspects of the organization.

Managing risk is to make the question "What if" and always have an answer for it. Sport related facility supervisors, program providers, or instructors have the responsibility to follow policies, consider all possible risks or take precautions and appropriate safety measures in order to reduce financial or personnel risks.

[Keywords] Safety, Injury, Risk Management Plan, D.I.M. Process, Sport Facility

1. Introduction

Recent estimates describe sport industry as one of the fastest growing industries in the Republic of Korea, encompassing over \$43 billion dollars[1]. As growing the size of sport industry, every person has witnessed a dramatic rise in the popularity of various forms of sport activities such as fitness, water sport, outdoor sport, bike, ball games, etc. They enjoy sport activity because it is frequently associated with health benefits and is widely recommended as a proactive behavior not only to reduce the risk of several diseases such as diabetes, cardiovascular diseases, and obesity but also to increase the happiness in their life[2]. Participation in sport programs is a natural way for most people to be physically active, and the opportunities to take part in organized sports have increased markedly during the last decades[3].

However, participation in sport activities increases the risk of sports and facility-related injuries because risks are inherent in sport and even the safest programs can never avoid accidents and injuries. The fact that an injury occurs does not mean that someone is liable. The law does expect, however, that sport administrators develop risk management and loss control programs to ensure a safe environment for all who participate in sport. Risk management has become a crucial part of the overall sport programs. It is as important as budgeting, scheduling, insurance coverage, eligibility, equipment and facility management, contracts, and other duties[4]. Risk management should help those who direct the sports program comply with their legal duties, provide safe programs and enable sport personnel to defend themselves and their programs in the event of a lawsuit[5].

As the increase in participation of sport activities over the years, it is widely believed that sports injuries are becoming more and more prevalent - across all age groups in nationwide[6]. Without the well-developed risk management plans, however, poorly run programs could result in a negative reputation as well as a financial loss for the organizations[7]. The use of appropriate risk management strategies is the best way to reduce the risk from occurring in the first place[8].

According to the previous study, existing a formal risk management plan in sport organization can reduce the injury rates of participants and improve quality of service for participants of sport programs. In addition, a risk management plan can reduce money paid for loss claims as well as maintain the safety of services[9].

Risk management is an issue that has been addressed continuously in the sport profession as evidenced by many books such as Risk Management in Sport and Recreation[10], Law for Recreation and Sport Managers[11], and Risk Management in Sport: Issues and Strategies[4]. Sport administrators have identified the need for risk management and developed methods for managing potential risk in sport activities through these books and journal articles. Administrators of sport facilities are giving considerable attention to employees, visitors, property and information party because of increased litigation alleging negligence on the part of instructors, teachers, coaches, administrators of sport program, and other program leaders[12].

Therefore, the purpose of study is to explore the impact of risk management, to discuss risk assessment and analysis, to address the need for risk assessment at sport facilities, and finally to describe the sport-specific risk management plan developed while conducting research through the literatures for sport professions to reduce the risks and hazards anticipated in so that the sport organizations could avoid unforeseeable litigation, defamation, financial loss, accidents and injuries of personnel.

2. The Importance of Risk Management

Risk management is a crucial factor for the best procedures of sport administration since it could predict and even avoid unwanted situations such as accidents, injuries or even losses[13].

Wong & Masteralexis(1998) termed it as “a management strategy to maintain greater control over the legal uncertainty that may wreak havoc on a sport business”(p.90)[14].

The important function of risk management is to reduce physical or financial loss or damage in nature. In the field of sport, risk management has been used to combine the traditional corporate interest of limiting financial risk in the sport industry, providing for maximum customer safety. By reducing the injuries to the participants, the business at the same time reduces its financial exposure. When a well-developed risk management plan is implemented, the potential for unpleasant litigation should be diminished. In addition to personal injury claims, several sport fields have also come under close investigation as a result of sport-related litigation in recent years. Many of these lawsuits could have been prevented by the implementation of an effective risk management plan[15].

Sport professionals have been exposed to a new society that has become enchanted with litigation during the last decades, and a trend to which many professionals in the sport field have fallen victim in criminal actions or civil lawsuits. Society will not tolerate inappropriate behavior or unsafe conditions, and sport administrators must develop an awareness of the hazards for themselves. A strategic risk management plan will help to control and reduce the risks that confront sport administrators[15].

3. Risk Management Plan(RMP)

3.1. D.I.M. process for risk management

Ammon(2003) suggested that the D.I.M. process should be used as an effective way to establish a proper risk management plan that will assist organizations in decreasing unwanted losses. This process consists of three steps as follows: 1)*developing* RMP, 2)*implementing* RMP, and 3)*managing* RMP[15]. Figure 1 illustrates that the procedures and steps for each risk management plan.

3.2. Developing the RMP

Developing a risk management plan, the first step of the D.I.M. process consists of three detailed stages: 1)Identifying risks, 2)

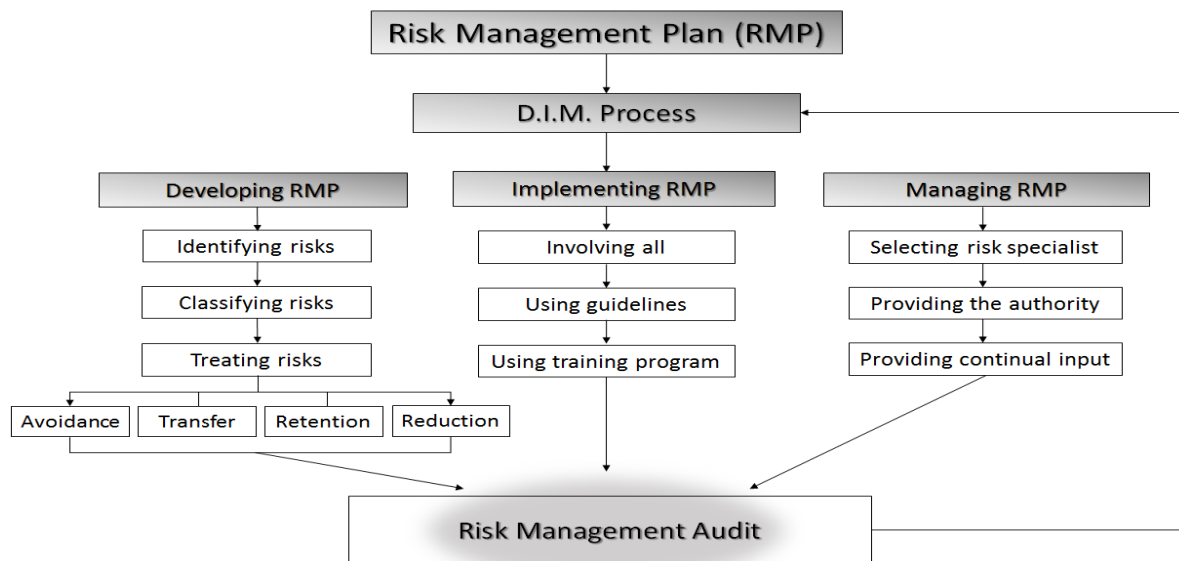
Classifying risks, and 3)selecting methods of treatment for the risks.

The identification stage is one of the key aspects of developing a successful risk assessing model. If the sport administrators want to control risk in the program, they must first identify those risks what those are and how they generated. Risks are present in all sport facilities and events. Each event activity is different and has its own unique risks or areas of potential loss. Monitoring these risks, therefore, needs to be constant and ongoing[15].

The purpose of the classifying risks stage is to determine how often(frequency) the risk may occur and the degree(severity) of the potential loss arising from the risk. Once the various risks have been identified, the risk manager takes each of the identified risks and evaluates them in terms of frequency and severity. The frequency of the risk is dependent of the number of times the risk or loss is likely to occur. The risk manager will view each identified risk and assign a frequency of “high – medium – low”. The severity of the risk is determined by the intensity of the potential injury and/or the degree of the threat to the financial stability of the organization. It is classified as “catastrophic – critical – moderate – low”. The level of severity and the frequency are determined by the risk managers, based on their expertise derived from experience and training. It is important to remember that both financial loss as well as personal injury losses need to be considered in classifying risks[16].

The final stage in the RMP is to determine a treatment for each identified and classified risk. A treatment is method used to reduce, control, manage, or eliminate financial risks and bodily injuries. There are four treatments available to the risk managers. They are *avoidance* of the risk, *transfer* of the risk to another party, *retention* of the risk by the sport organization, and *reduction* of the risk through efforts to reduce the various types of hazards.

Figure 1. Risk management plan(RMP)[11][15].



The type of treatment a risk manager uses for the identified and classified risks depends on the nature of the risk and the likelihood of the risk occurring. Although it is sometimes difficult to determine the appropriate treatment, a risk matrix can assist in this identification process. This risk treatment matrix

<Table1> gives the sport manager guidance regarding the treatment needed for any given risk. The manager, having identified and categorized each risk, should then refer to <Table 1> for the appropriate treatment[15].

Table 1. Risk treatment matrix[15].

		Severity of injury			
		Catastrophic loss	Critical loss	Moderate loss	Low loss
Frequency of risk	High	Avoidance	Avoidance	Transfer / Reduction	Transfer / Retain / Reduction
	Medium	Transfer / Avoidance / Reduction	Transfer / Avoidance / Reduction	Transfer / Reduction	Retain / Reduction
	Low	Transfer / Reduction	Transfer / Reduction	Transfer / Retain / Reduction	Retain / Reduction

Avoidance means that these activities should not be included within the content of sport program or they should be discontinued if they are presently being offered.

Risks should be avoided when they could cause a catastrophic or critical loss with medium or high frequency. Ideally, a risk manager should identify these risks before the accidents occur and avoid them completely[15].

Transfer is the shifting of the liability or responsibility for loss from the service provider to another party. This second type of risk treatment, transfer, occurs when two conditions exist: 1)the risk of loss is not so substantial as to warrant the avoidance of the activity, and 2)the risk is greater than the organization can assume on its own.

The best way is to transfer the risk to someone who is willing to take the risk. The purchase of appropriate insurance coverage is important means of transfer[16].

Waiver, the use of independent contractors, and indemnification clauses are another types of transfer. A waiver is a document that allows a person to voluntarily give up the right, by contract, to sue another person (usually sport service provider) for their negligence. The signer of the waiver(participant) agrees to accept the risks of harm caused by another's actions(provider)[17].

An independent contractor is a person or business that contracts to perform a specific task for a service provider. The independent contractors provide expertise and are generally free to perform tasks as they see fit. They could be team doctors, referees, personal trainers, or sport instructors[16].

Indemnification clauses are clauses in a contract that provide for one party to indemnify or reimburse the other for loss. Such clauses are generally included in equipment and facility rental contracts. For instance, an organization leasing a facility generally agrees contractually to indemnify the facility owners against any loss or litigation resulting from the event[15].

Retention of risks means that the organization keeps the risk and assumes financial responsibility for certain injuries or financial losses that may occur. Retention is often preferred for minor or insignificant risks. Retaining these risks is often less expensive than buying insurance to cover them. That's why sometimes retention is termed self-insurance[18].

The last treatment and arguably the most important, is the reduction of risks. *Reduction* involves trying to reduce or restrict the risks, therefore diminishing the number of lawsuits[19]. There are nine major areas in which risks may be reduced: 1)competence of personnel, 2)conduct of services, 3)the participants, 4)maintenance, 5)environmental milieu, 6)warnings, 7)standards, 8)information/documentation system, and 9)public relations[20].

3.3. Implementing the RMP

The next step in the D.I.M. process consists of implementing the risk management plan. Implementation means communication with all employees and the risk manager should impart to them that communication is critically important in order to put the risk management plan into practice. Therefore, the first stage of implementing the RMP is to involve all employees in the D.I.M. process. Allowing and encouraging the employees to make suggestions will increase the effectiveness of the RMP[16].

The second stage in implementing the RMP is the use of printed guidelines outlining risk reduction techniques. Guidelines include: 1) the organizational layout and operation, 2) personnel and organizational management, 3) rules and regulations of the business, 4)responsibilities of various employees, 5)correct methods of documenting record and reports, and 6)emergency procedures[16].

The third stage in implementing the RMP is the utilization of a sound training program. These instructional periods help identify specific employee training needs that have arisen since the initial employee orientation meetings[15].

3.4. Managing the RMP

The final component of the D.I.M. process is to manage the RMP. The first stage in managing the RMP is accomplished through the hiring or selection of a risk manager or a risk management committee. Many sport organizations will not hire one individual to take on the responsibility of a risk manager. Due to the limit of budget, sport organizations often divide the responsibilities among a group of employees or assign one person the role of risk manager in addition to his other duties. Once risk manager or responsible party chosen, they should monitor the risk management plan, implement changes, assist in fostering a genuine risk management attitude among other employees, conduct inspections, review accidents, and supervise in-service training[20].

The second stage in managing the RMP is to provide the risk manager or committee

with the authority to lead. This authority should be described in the policy statement of the organization because it provides a foundation for the RMP. Approval by the management of an organization is important since the policy statement should clearly delineate the responsibilities of the risk manager. The statement should outline and define the authority of the person responsible for carrying out the RMP[16].

As employee input is crucial for the initial risk management policy, the third stage in managing the RMP is to provide employees with the opportunity for continual input into the RMP. Including employees on the risk management committee is a possible source for this input. The continual success of RMP mandates that employees, supervisors, and managers on all levels have the ability to interact with each other. Additionally, anyone else whose expertise may improve the quality of the RMP should be included in the overall risk management process. The size of the committee could depend on the overall goals and size of the organization[18].

4. Risk Management Audit

Risk management plan is a total system that cares the safety of sport facilities for participants and service providers. It is more than safety checklists. It should be the systematic analysis of sport facilities for potential risks or risk exposures and then setting forth a risk management plan to reduce such exposures[21]. A well-developed risk management plan analyzes all potential risks that an organization faces and selects the optimal method to treat each.

It is important to recognize that every risk management plan is unique and must be developed specifically for each particular sport organization, facility, and service. It should have totally different requirements to maintain the safety of facility in between youth and adult program. All appropriate components should be included in the risk management plan[22].

In the final process for risk management plan is risk management audit to review their

process through a good feedback system. A risk management audit is a formal review of the plan that attempts to cover all pertinent legal aspects of the organization. The audit involves a complete checkup of the risk management plan executed and trying to fine and figure out some problems, difficulties, or misconduct. It includes more than what is typically thought of as a risk management plan[22].

Right after the risk management process are done by appropriate risk managers or committee members, they need to study the policies and procedures specific to their areas of expertise. They can share interest areas and should collaborate in their evaluation. The committee members should then come together and discuss each part individually with input from all members. As agreement on one area is achieved, the members addresses the next item in the audit. Finally, the committee should come to agreement on all aspects of the audit and prepare recommendations to the upper administration [22].

The process of audit should be able to develop and refine risk management plan flawless in order to make the sport facilities safe and also improve the organization's protection from the unwanted litigation.

5. Conclusion

Risks are constantly changing and shifting due to the activities and programs employed by various organizations. Therefore, risk assessing model must also evolve and fluctuate, they are never static. Once the RMP is put into place, it should be assessed on an annual basis and sometimes more frequently depending on the type of risks[16].

Risk management is a necessity for sport manager and administrator today. Even though many risks can be identified, classified, and treated, some hazards will still exist and accidents will occur. It is impossible and unrealistic to expect a risk manager to eliminate all injuries and financial losses. However, by developing an extensive risk management plan, implementing the plan, and bestowing

the authority to manage the plan upon a concerned risk manager, sport administrators can diminish a number of dangerous risks[15].

To conclude, managing risk is to make the question “What if” and always have an answer for it. Sport related facility supervisors, program providers, and/or instructors have the responsibility to follow policies, consider all possible risks or take precautions and appropriate safety measures in order to reduce financial or personnel risks[23]. Prudent and carefully developed risk management plan would work for them.

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First Aid Training for Child Care Teacher in Republic of KOREA

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Abstract

This study was performed to provide the basic data for first aid management by identifying the degree of education on the infant first aid of child care teacher.

The concept of first aid in the child care facilities is the basic first aid by the child care teacher, the discoverer, when the emergency occurs and is the process to protect the condition of infant, and to prevent the aggravation and additional damage until receiving the support of the medical expert or the treatment in the hospital. The first aid refers to the skill to performed with hands without special medical equipments or tools and since the pain is reduced, economical damage is minimized and most all, the secondary damage is prevented with simple basic treatment, it is required. Therefore, as one of the emergency medical treatments, the first aid is not only to help temporarily to prevent the danger of life or significant aggravation of symptom until receiving better treatment in the hospital but also include the acts to call 119 and to help recovering without medical treatment to prevent the significant aggravation. As such, if one perceives the emergency and knows first aid, he/she may save the life from death and can enhance the quality of life

The first person who discover the emergency in the child care facilities is the child care teacher and should be educated so that can provide the important help in the emergency by identifying the emergency through the periodic education without receiving professional first aid training. As a first responder, the faster the action of the child care teacher the greater influence on the prognosis of the infant can be granted.

Although the type of accident varies slightly by research, mostly the wound such as fall, bump, bleeding, fracture, sprain, dislocation, high fever, fall, etc. is reported. Therefore, through the type of emergency, the child care teacher always needs to observe and protect the infants.

As seen above, this study suggests as follows.

First, the infant first aid mode for child care teacher should be developed and distributed. General first aid training is important. Particularly, the first aid for infant should guide the characteristics of the infant's developmental phase. In addition, through the education of accident type and the treatment training by common symptom, the child care teacher can respond to the emergency.

Second, the first aid training system should be distributed systematically in the national level.

Third, the first aid training for the child care teacher needs the changes of the education strategy

[Keywords] *First Aid of Child Training System, Child Care Teacher, Treatment Training, Nurse, Republic of Korea*

1. Introduction

Entering into modern society, the rate of infant's using the child care institution is being increased gradually by the increase of

working couple and the diverse changes in social structure. In addition, as the free infant care policy is implemented for all social classes in 2012 enabling the subsidy, the number of infants attending the child care center is being increased regardless of employment of parents. According to the child care statistics of Ministry of Health and Welfare at the end of 2015, the infants aged 2 years or less attending the child care center was 864,596 occupying more than half of total 1,452,813 children subject to child care[1]. So, the part considered important as much as educational aspect not only for the toddler but also infants is the security and it should have priority rather than the educational aspect. If living and activities in the child care center is not safe, the education and living in the institution are insecure and it is hard to maximize the effect of education.

The security of the infants in our country is revealed well in 2nd Basic Plan for Mid- and Long-Term Child Care or Article 1 of Infant Care Act. That is, The healthy and safe living of the infants was emphasized with vision of "happy children and respected children"[1]. Therefore, preventing the safe accident effectively in all the child care facilities is the most important task to be done and responsibility of the child care employees[2][3][4].

Infants are in the development phase having curiosity on the surrounding environment and the objects and have strong impulse to explore. However, since the results cannot be foreseen as their motor skills are not developed enough or the development of their physical function is not sufficient such as ability to maintain balance, etc. and the lack of knowledge on the dangerous situation that the accident may occur or of the ability to judge the situation, the possibility of accident always exists. In addition, since the accident of infants is the problem connected directly to life and living, it should be dealt with in the preventive level. Moreover, since the infants do not have sufficient ability to control or change given situation and do not assess the risk accompanied with their act, the adults should protect them from the risk of accident by providing the safe environment and appropriate supervision[5].

Currently, the cause of incident of child death was represented as unknown cause or lack of rapid first aid[6], and among the accidents, the safety accident in the child care center is gradually increased showing higher compared to the advanced countries. That is, the mortality of children less than 15 years old during recent 10 years in the safety accident is high with average 631.9 persons/year and the mortality of children aged 0 ~ 14 years in the safety accident in 2009 was ranked top 3rd in the OECD member countries and corresponded to 8.7 persons per 100 thousand population higher than the average 5.6 persons[7].

According to the research on the safety and health of child care teachers in Australia[8]. 41% of the kindergarten teachers and 28% of the general child care teachers experienced the safety accident working in the child care facilities[9]. Therefore, as there is great possibility to occur diverse safety accident related to the job of child care teacher, U.S.A and Australia enable to respond to the emergency situation by providing that one or more teacher who can provide the CPR or first aid should be deployed in the infant facilities[10]. However, since for the Infant Care Act, which provides to employ the nurse or nurse aid only in the child care facilities caring more than 100 children, it is not obliged to employ the qualified manpower specialized in nursing in more than 90% of the child care facilities where the children are not reached to 100, they should rely on the child care teacher's competence to respond to the safety accident. Currently, in our country, the first aid training for the child care teacher is performed based on Clause 1 of Article 20 of Enforcement Ordinance of Infant Care Act[11] and recently, Korea Occupational Safety and Health Agency implements the 16 hours of education with the lecture "Safety Cultural Leader Training" for the teachers of early childhood educational institutions and other educational organizations such as fire station, local education office, Korea Transportation Safety Authority, Private Kindergarten Association, etc. are implementing the education and training but since 54% of them are mainly performed focusing on the lecture[12], the educational strategy that the child care

teacher can respond to the actual situation required the first aid is required[13].

2. Background

2.1. First aid training for child care teacher

The concept of first aid in the child care facilities is the basic first aid by the child care teacher, the discoverer, when the emergency occurs and is the process to protect the condition of infant, and to prevent the aggravation and additional damage until receiving the support of the medical expert or the treatment in the hospital. The first aid refers to the skill to performed with hands without special medical equipments or tools and since the pain is reduced, economical damage is minimized and most all, the secondary damage is prevented with simple basic treatment, it is required[14]. Therefore, as one of the emergency medical treatments, the first aid is not only to help temporarily to prevent the danger of life or significant aggravation of symptom until receiving better treatment in the hospital but also include the acts to call 119 and to help recovering without medical treatment to prevent the significant aggravation. As such, if one perceives the emergency and knows first aid, he/she may save the life from death and can enhance the quality of life.

2.2. Emergency at child care facilities

In the investigation for recent 3 years by Lee Ji-Sun[12], which research on the actual situation on the first aid ability from 19 child care facilities and 217 child care teachers, the injuries represented in order of fracture, sprain, dislocation, symptoms related to body temperature, fall, bitten by insect, hiccup, dental damage and respiratory obstruction and in the research of Nam Yoo-Jung[13] who research the type of accident and content analysis from the 16 child care facilities at Seoul, Gyeonggi-do and Daejeon and 599 safety accident reports, the injuries represented in order of abrasion, contusion, laceration, sprain, dislocation, dental damage, hyperemia, fracture, cut and burn and the injury area represented in order of face, mouth and teeth, head and forehead.

2.3. Actual situation of first aid training

The results of reviewing the preceding researches on the effect of the first aid training for infant using diverse media with the child care teachers in our country are as follows. There were the audio-visual first aid education using printout and Power Point[14], cardiopulmonary resuscitation using Video Self-Instruction[15], the education using website (Kim Ji-Soo, 2010)[16], health education using the textbook, which is printed media, video, Power Point slide for lecture[17], case-based small group learning education on the emergency in general life and cardiopulmonary resuscitation[18], instructor-leading training on the cardiopulmonary resuscitation and respiratory obstruction and video self-instruction training[19].

3. Conclusion

This study was performed to provide the basic data for first aid management by identifying the degree of education on the infant first aid of child care teacher.

The first person who discover the emergency in the child care facilities is the child care teacher and should be educated so that can provide the important help in the emergency by identifying the emergency through the periodic education without receiving professional first aid training. As a first responder, the faster the action of the child care teacher the greater influence on the prognosis of the infant can be granted.

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phase. In addition, through the education of accident type and the treatment training by common symptom, the child care teacher can respond to the emergency.

Second, the first aid training system should be distributed systematically in the national level.

Third, the first aid training for the child care teacher needs the changes of the education strategy.

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Class Model of Child SAFETY Education Applied to the Flipped Learning Method

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Abstract

In teaching safety education to young children, early childhood teachers not only have to consider the use of safety issues related to young children as part of a useful strategy, but also the age of the children and various teaching methods. After the teachers recognize the importance of safety education, they have to perform and plan the actual safety education methods based on safety concepts and basic theories. For this reason, it is essential to plan and teach safety education based on the age of the children for pre-service teachers in order to prevent contingent safety accidents in pre-service education.

In this thesis, I am going to design a child safety education for the flipped learning method in order to supplement the traditional lecture method. According to flipped learning, it is possible to understand theories completely by providing learning materials(e.g., various practical samples) in pre-class and develop the pre-service teachers' ability of dealing with accidents and caring for the safety of the children by extending practice hours for planning and conducting various safety education based on the background of theory that was acquired in pre-class.

The characteristics of the class model of child safety education applied in the flipped learning method are as follows. First, a total of 4 topics are included in the flipped learning method, except for theory lessons and field trips, with regard to the overall design of the child safety education class, safety education on traffic and fire, which occur frequently during childhood period, and environment and media safety education, which are correctly oriented. Second, pre-class step provides study materials(e.g., various practical cases) to pre-service teachers for a better understanding theories, and simple quizzes to pre-service teachers for checking themselves if they understood the contents or not. Third, in-class step develops a cooperative relationship among the parties in PBL and debate cases. For the successful implementation of the flipped learning method, teaching activities are planned and performed based on a child-centered learning method. PBL learning includes searching for data, preparing a teaching plan suitable for children's developmental characteristics, providing teaching materials, and teaching safety education after providing actual safety situations. Debate learning focuses on decision making regarding the roles and conducting discussions with a logical basis after providing the topics, such as value judgment. It also evaluates the other team's debate after providing a specific valuation basis. Fourth, the post-class step manages the team's weak points result from a portfolio feedback. According to the child safety education applied to the flipped learning method, pre-service teachers will be able to extend their ability on safety management and handling dangerous situations related to the safety of the children.

[Keywords] Children, Safety, Flipped-Learning, PBL, DEBATE

1. Introduction

Young children are likely to experience a lot of accidents because they are full of

curiosity and unaware of their situation. They are also unable to self-regulate and deal with accidents. To make matters worse, young children go to daycare centers early in their lives and spend a lot of time there

according to the free childcare policy and the parents' attention to preschool education. In this situation, children's safety has become the basic and most important factor in daycare centers.

For this reason, early childhood teachers have to recognize the seriousness of contingent safety accident and learn more about preventive actions. Teachers should focus on safety issues related to safety education contents for young children. They should also use these materials appropriately and help the young children in gaining proper perspective, attitude, and ability to deal with dangerous situations.

However, young children have a lot of gap in recognizing and learning about safety rules in their ages[1][2]. Therefore, in planning and performing safety education, early childhood teachers should choose the safety education contents while considering developmental differences, teach the children by using appropriate methods, and aim at making young children recognize dangerous situations unaided and learn about coping behavior[3]. At this time, early childhood teachers are required to design various teaching methods while considering the safety education contents or accident types[4], and apply this according to the age of the children because young children will not be able to realize and display their capability in dealing with dangerous situations if the safety education is based only on a traditional lecture method[5].

As previously mentioned, early childhood teachers should consider using safety issues related to young children, age of the children, and various teaching methods in a useful strategy. After the teachers recognize the importance of safety education, they will be required to perform and plan the actual safety education methods based on safety concepts and basic theories. For an effective safety education, it is essential to teach or train early childhood teachers about safety education.

The first step in training for early childhood teachers is pre-service education

because they can mold their educational beliefs and knowledge according to various educational contents and methods in pre-service education. It is essential to teach pre-service teachers about planning and implementing safety education contents, as well as applying the age difference in children, for preventing contingent safety accidents in daycare centers. However, safety education in pre-service education is based on a traditional lecture method and lack of dealing with accidents[6]. For this reason, a substitute teaching method for child safety education is deemed necessary for pre-service education.

At this time, we can consider the implementation of a flipped learning program. Flipped learning method is the reversed form of the traditional lecture method. It is a substitute teaching method for utilizing an offline learning class according to the understanding and needs of the students[7]. It is possible to conduct an intensive study under a professor's guidance in the flipped learning program. In other words, it is necessary to train pre-service teachers on subject matters pertaining to child safety education, strategy and implementation of safety education for young children, and information on safety management and ability in dealing with dangerous situations, which are focused on the performance of the students without the use of a traditional lecture method. Therefore, flipped learning is deemed suitable as a teaching method.

In this thesis, I am going to design a child safety education based on the flipped learning method. According to flipped learning, it is possible to completely understand theories by providing learning materials (e.g., various practical samples) in pre-class. Furthermore, in an offline class (face-to-face teacher-student interaction), it is possible to enhance the pre-service teachers' ability of dealing with accidents and caring for the safety of the children by extending the practice hours for planning and conducting various safety education methods based on the background

information of the theory acquired in pre-class.

2. Traditional Lecture Method on Child Safety Education and Possibility of a Flipped Learning Method

2.1. Concept and characteristics of the flipped learning method

Flipped learning is a new teaching model that focuses on the students' initiative. It is the reversed form of the traditional lecture method. In addition, it is a useful teaching method that can correct the students' passive attitude and the teachers' one-way teaching process[8]. It will substitute the teaching method of utilizing an offline learning class based on the understanding and needs of the students[7]. In an offline class, which is a face-to-face teacher-student interaction, it is possible to check, supply, and deepen the learning process acquired in pre-class, as compared to a lecture method.

Based on a pilot model of the flipped learning class in Texas University's Center for Teaching and Learning[9], we recognized the difference between the traditional lecture method, wherein most of the students understand the major concept and contents through lectures and their degree of understanding through tasks, and flipped learning method, wherein most of the students study ahead the major concept and contents that were prepared by their professor and discuss or solve tasks in an offline class. It is impossible to check the accuracy of the students' knowledge and utilization ability in the traditional lecture method; however, it is possible for the students to have an improved study habit and for the professors to have an improved teaching ability because of the visible signs of accuracy regarding their knowledge and ability of utilization in the flipped learning method.

The strong point of the class model of child safety education applied to the flipped learning method is the performance of safety education focused on implementation. In other words, it is

possible to plan and teach safety education based on safety issues related to young children and suitable teaching method for children's developmental characteristics in an offline class after studying theory in an online class. In the flipped learning method, it is possible to emphasize learning focused on implementation because of the importance of designing an offline class.

2.2. Objectives for child safety education and operation

Child safety education is a mandatory subject for acquiring a teaching certificate. The objectives for child safety education are as follows. First, it needs to recognize the importance of child safety education. Second, it needs to perform safety education suitable for children's developmental characteristics. At this time, child safety education means that early childhood teachers provide lectures on proper safety knowledge and attitude to young children for protecting themselves in dangerous situations and living a healthy life[10]. It emphasizes the accountability of the teachers in protecting and teaching the young children.

However, safety education in pre-service education was conducted based on the traditional lecture method and lack of knowledge in dealing with accidents, and the pre-service teachers recognized the effectiveness of safety education in pre-service education[6]. The main concern at this point in time is that the actual conditions of safety education in pre-service education related to the limited method of safety education applies to children's developmental characteristics in daycare centers[11] and situations involving child safety and accidents. Young children face difficulties in conceptualizing and learning safety rules from the limited method of safety education.

Pre-service teachers responded by saying that the major factors of accidents involving children are the children's lack of awareness about safety, and early childhood teachers' experience and training[6]. For this reason, we recognize

that the lack of early childhood teachers' experience and training is deeply connected to accidents involving children. Previous studies have also emphasized the correlation between the early childhood teachers' knowledge and accidents involving children by reporting the correlation between the early childhood teachers' knowledge and executive faculty of safety. Eom[12] reported that the early childhood teachers' knowledge is deeply connected to the executive faculty of safety. It is also reported that the enhanced experience of the early childhood teachers on safety education resulted in an increased interest on safety[13], and the enhanced knowledge of the early childhood teachers on safety education resulted in the executive faculty of safety education[14]. Based on the study result, the professional knowledge of the early childhood teachers is deeply connected to the safety of the young children. For this reason, I will introduce a class model of child safety education applied to the flipped learning method as a teaching model for developing pre-service teachers' executive faculty of safety education.

2.3. Class model of child safety education applied to the flipped learning method

The special care points of the class model of child safety education applied to the flipped learning method are as follows. First, a total of 4 topics are included in the flipped learning method, except for theory lessons and field trips, with regard to the overall design of the child safety education class, safety education on traffic and fire, which occur frequently during childhood period, and environment and media safety

education, which are correctly oriented. Second, pre-class step provides study materials(e.g., various practical cases) to pre-service teachers for a better understanding of the theories, and simple quizzes to pre-service teachers for checking themselves if they understood the contents or not. Third, in-class step develops a cooperative relationship among the parties in PBL and debate cases. For the successful implementation of the flipped learning method, teaching activities are planned and performed based on a child-centered learning method[15]. PBL learning includes searching for data, preparing the teaching plan suitable for children's developmental characteristics, providing teaching materials, and teaching safety education after providing actual safety situations. Debate learning focuses on decision making regarding the roles and conducting discussions with a logical basis after providing the topics, such as value judgment. It also evaluates the other team's debate after providing a specific valuation basis. Fourth, the post-class step manages the team's weak points result from a portfolio feedback.

In this thesis, child safety education is applied to 26 students, and it was conducted for four hours, including online and offline. The flipped learning method is designed with reference to the class design and progress system[16]. This has been checked for validity by a doctor of education technology and a same major professor with years of experience in the study and consultation of the flipped learning method. For a better understanding of this, I will provide a class model of child safety education applied to the flipped learning method on the subject of traffic safety.

Table 1. Class model of traffic safety.

Subject	Child safety education	Major	Child education and care
Unit topic	Traffic safety		
Main study contents	Characteristics of traffic safety accidents related to children's developmental characteristics, contents, and teaching methods of traffic safety education	Week / Period	Sixth / Second – fifth

Object of the study	<p>Knowledge – This is the practical application based on the information on the characteristics of traffic safety accidents related to children’s developmental characteristics and educational contents on traffic safety.</p> <p>Skill - This is the application of a teaching method suitable for children’s developmental characteristics and educational contents on traffic safety.</p> <p>Attitude – This is a behavior developed in dealing with accidents, and taking proactive steps related to children’s traffic safety and accidents.</p>			
Teaching method	PBL			
Advanced class	Plan and implementation of educational contents on traffic safety related to children’s developmental characteristics			
Evaluation	<p>Suitable for the educational contents on traffic safety related to children’s developmental characteristics (Feedback)</p> <p>Individual (Study readiness) / Team (Publish education plan about traffic safety) / Peer review</p>			
Flipped learning step	Activity guide	Teaching • Learning Activity		Time
		Teaching Activity	Learning Activity	
Pre-class	Online study: watch the contents and write in a learning notebook	Lecture Topic: Traffic safety	Online study: Watch the contents Write in a learning notebook	20’
		Utilize LMS (Load LMS with contents, utilize bulletin board in LMS, and Q & A)	Q & A about the contents	
In-class	Check the students’ study readiness and provide feedback before starting the class	Evaluate the understanding of the children’s traffic safety characteristics Utilize havruta learning	Answer the question after understanding children’s traffic safety characteristics	10’
		Explanation and guidance for PBL	Ideas, facts, learning issues, and action plan	20’
	Advanced class	Guidance and Coaching for the educational contents on traffic safety related to children’s developmental characteristics Q & A and feedback	Plan contents of traffic safety education related to children’s developmental characteristics Modify and integrate the education plan on traffic safety	60’
		Evaluation and feedback	Provide an explanation of evaluation Provide an evaluation sheet	Carry out the educational contents on traffic safety related to children’s developmental characteristics Provide peer review and feedback

Post-Class	Conduct a study, Share and Manage a portfolio	Manage a teaching portfolio by sharing the education plan about traffic safety	Manage a learning portfolio by sharing the education plan about traffic safety	Daily
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