

Enhancing Table-Tennis Learning Outcome Using Video-Based Self-Recording During Play and Practice

Termpetch Sookhanaphibarn

Faculty of Applied Arts,

King Mongkut's University of Technology North Bangkok
Bangkok, Thailand

termpetch.s@arts.kmutnb.ac.th

Kingkarn Sookhanaphibarn

BU-Multimedia Intelligent Technology Laboratory,
School of Information Technology and Innovation
Bangkok University, Thailand

kingkarn.s@bu.ac.th

Abstract—This paper presented the learning experience supplementary program using video clips to teach table tennis for enhancing learning outcome of undergraduate students. The video clips were taken by students during their practices. The study type is an experimental research, and the purpose of this study was to investigate the patterns of video clips that are required to learn the table tennis course and compare the effectiveness of two table tennis instruction methods-conventional method and using video clips. The findings from the study indicate, the most important table tennis skill is bounce the ball, knock board are basic skills and fore hand, back hand rally with partner are higher skills before developing advanced skills. The necessary format of table tennis video clips skills includes: 1) bounce the ball fore and back switching, 2) knock board rally, 3) fore hand rally with partner and 4) back hand rally with partner.

Index Terms—Selfie, Self-recording, Self-observation, Video Clips, Physical Education, Coaching

I. INTRODUCTION

In Thai higher education, subjects in a group of physical education (such as table tennis, tennis, badminton, basketball, soccer, etc) were popular free-elective and opened for all students in any majors. Most of them used a conventional teaching technique that an instruction began with demonstration and doing a good example once about 5-10 minutes, after that all students were allowed to free play and practice about 20-30 minutes. At the end of class period, the teacher gave a brief conclusion about 5-10 minutes. The conventional technique spent a lot of time for letting student free-play and practice in classroom. Most of time students could not enhance their skill by themselves because they repeated without observing their errors.

The student-centered learning has been used for a decade, and its distributions are in many fashions such as problem-based learning, project-based learning, etc. A flipped classroom has become to widespread in US schools and also higher education by reversing the traditional classroom. Physical educations has changed their teaching method from the conventional methods to the idea of student-centered learning as shown in [3], [4] as well as the flipped classroom as shown

TABLE I
TEACHING OUTLINE FOR BOTH GROUPS: CLASSROOM LEARNING EXPERIENCE SUPPLEMENTARY PROGRAM USING VIDEO CLIPS (EXP.GROUP) AND CONVENTIONAL TEACHING METHOD (CONTROL GROUP).

Time spent	Exp. group	Conventional group
5-10 min	Brief the purpose of learning lesson and the learning outcome today	
25-35 min	Demonstration and focus activities by using self-recording video clips	Free play and practice under supervision by a teacher
10-15 min	Conclusions of the lesson today	

in [1], [2]. The previous studies presented an assistant tool for supporting a use of flipped classroom, but our study introduced a use of self-recording and self-observation via video clips to enhance the learning outcome of physical education.

To encouraging the students to play and practice outside the classroom, the teachers must design and develop a series of assignments to let them learning by themselves. The assignments were a self-recording task during play and practice outside the classroom. This paper proposed Learning experience supplementary program using video clips to teach table tennis for enhancing learning Outcome of undergraduate students. The research consisted of investigating the patterns of video clips that are required to learn the table tennis course and comparing the effectiveness of two table tennis instruction methods-conventional method and using video clip.

II. METHODOLOGY

Our research methodology consisted of 1) Identifying a set of major skills for playing table tennis, 2) formulating a learning pattern in the learning experience supplementary program (our purposed program), and 3) conducting the experiments and analysis the experimental results. The set of major skills were obtained from our ten-year teaching experience (Asst. Dr. Termpetch Sookhanaphibarn), and the skills are listed as

TABLE II
PERFORMANCE COMPARISON BETWEEN EXPERIMENTAL GROUP AND CONTROL GROUP

Table tennis skills	Pre-test			Post-test		
	Exp. group Mean (SD.) n=38 (f=22)	Control group Mean (SD.) n=34 (f=20)	p-value	Exp. group Mean (SD.) n=38 (f=22)	Control group Mean (SD.) n=34 (f=20)	p-value
Male:						
Bounce the ball fore and back switching (50 times)	41.32(10.9)	39.25(12.07)	0.28	49.73(1.28)	48.35(4.51)	0.01
Knock board rally (30 times)	21.91(7.32)	21.50(7.54)	0.43	28.82(2.26)	27.40(3.68)	0.07
Fore hand rally with partner (30 times)	18.18(7.18)	18.20(6.99)	0.50	26.55(3.91)	25.90(4.64)	0.32
Back hand rally with partner (30 times)	20.00(7.39)	20.70(5.69)	0.37	29.27(1.80)	28.40(1.79)	0.06
Female (f):						
Bounce the ball fore and back switching (50 times)	35.06(13.89)	34.21(13.53)	0.43	46.44(9.74)	48.57(3.72)	0.21
Knock board rally (30 times)	16.00(7.52)	16.07(9.03)	0.49	28.63(3.76)	25.29(5.00)	0.03
Fore hand rally with partner (30 times)	10.38(7.28)	13.43(6.77)	0.12	25.25(4.64)	22.57(4.89)	0.07
Back hand rally with partner (30 times)	17.13(7.63)	16.00(8.17)	0.35	28.05(2.68)	26.14(3.53)	0.03

follows: fore hand, back hand rally with partner are higher skills before developing advanced skills. The necessary format of table tennis video clips skills includes 1) bounce the ball fore and back switching 2) knock board rally 3) fore hand rally with partner and 4) back hand rally with partner. For the learning pattern, both conventional and experimental programs are shown in Table I.

A. Participants and Procedure

The subjects in this study were Students at King Mongkut's University of Technology, North Bangkok. The subjects were divided into two groups by purposive sampling technique. The control group had 38 students and the experimental group had 48 students. The control group was taught by the conventional method while the experimental group was taught using video clip. As for the video clip, the students table tennis skills were recorded during practicing in order to show the students after finish practicing. The teacher gave them suggestion to help them improve their performance. The pre-test and post-test were undertaken to evaluate their table tennis skills in both groups of subjects. The scores for their post-test were statistically analyzed by t-test.

The criteria of filtering unqualified subjects are as follows:

- the students must participate in the classroom greater than 80% equal to seven weeks from eight weeks,
- the students must take all pre- and post- tests through the 8-week course, and
- the students in the experimental groups must have all self-recording videos through the 8-week course.

Following the criteria, the number of qualified students in the control and the experimental were 38 and 34, respectively.

B. Data Analysis

The results of both experimental and control groups were shown in Table. II. The results contained scores of both pre- and post-tests of both experimental and control groups. The scores were also classified into male and female. According to the statistical analysis of t-test, we can interpret the data as follows:

- In both experimental and control groups, all students were able to perform all four skills in the post-test better than the post-test significantly.

- The students in both groups had the same background in table tennis skills as shown that their pre-test scores in both groups are not significantly different.
- The female student in the experimental group has the post-test scores higher than those in the control group, for knock board rally and back hand rally with partner.
- The male student in the experimental group has the post-test scores higher than those in the control group, for bounce the ball fore and back switching .

III. RESULTS AND CONCLUSIONS

The findings from the study indicate, the most important table tennis skill is bounce the ball, knock board are basic skills and fore hand, back hand rally with partner are higher skills before developing advanced skills. The necessary format of table tennis video clips skills includes 1) bounce the ball fore and back switching 2) knock board rally 3) fore hand rally with partner and 4) back hand rally with partner. that the post-test scores obtained by students in the experimental group were significantly ($p < .05$) higher than the post-test scores obtained by students in the control group. In conclusion, using video clips to enhance the learning experience allows students to see self-deficiencies while playing the basic skills which can then be taken to correct these basic skills, which is important in learning skills will help learners improve their sport better.

ACKNOWLEDGEMENTS

Thank you for partially financial support from Faculty of Applied Arts and King Mongkut's University of Technology North Bangkok, Thailand.

REFERENCES

- [1] J. O'Flaherty and C. Phillips, "The use of flipped classrooms in higher education: A scoping review," *The Internet and Higher Education*, vol. 25, pp. 85–95, 2015.
- [2] E. Isidori, O. Chiva-Bartoll, A. Fazio, and I. Sandor, "Flipped classroom in physical education: Pedagogical models and possible implementation through web 2.0," in *The International Scientific Conference eLearning and Software for Education*, vol. 3. " Carol I" National Defence University, 2018, pp. 274–279.
- [3] S. Capel and M. Whitehead, *Learning to Teach Physical Education in the Secondary School: A companion to school experience*. Routledge, 2015.
- [4] S. Stolz and S. Pill, "Teaching games and sport for understanding: Exploring and reconsidering its relevance in physical education," *European Physical Education Review*, vol. 20, no. 1, pp. 36–71, 2014.