

The Effects of Facebook Live-Stream Teaching on Improving Students' Dance Skills: Impacts on Performance, Learning Motivation, and Physical Activity Class Satisfaction

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ABSTRACT

The purpose of this study is to enhance the effect of dance skill learning, learning motivation, and physical activity class satisfaction. Moreover, the outcome of these quasi-experiments illustrate the effects of Facebook Live-stream teaching, co-regulated learning (CRL), and experience-based learning (ExBL) on improving students' learning performance. The experimental design in this study was a 2 (CRL vs. non-CRL) \times 2 (ExBL vs. non-ExBL) factorial pretest/post-test design. Four classes of a course titled 'Physical Education: Dance' at university level were chosen for this study in one semester. According to the analysis of results, conclusions of this study are that students who receive ExBL have significantly higher physical activity class satisfaction than students who do not receive ExBL. In addition, in the case of ExBL teaching, the concurrent implementation of CRL can improve students' dance skill learning more than ExBL alone.

KEYWORDS

Co-Regulated Learning, Dance Skill Performance, Experience-Based Learning, Facebook Live-Stream Teaching, Learning Motivation, Physical Activity Class Satisfaction, Self-Regulated Learning

1. INTRODUCTION

In this 5G generation, the use of the Internet as a medium to conduct teaching and learning activities has become the most urgently needed and popular teaching platform in face of this pandemic (Verawardina et al., 2020). Although there have been traces of remote teaching as early as 1920 via radio broadcast (Clark, 2020), nowadays, online courses have become one of the fastest growing teaching strategies in higher education. Less than a decade ago, one third of students had taken at least one online course during college, a proportion that had already increased three-fold compared with the previous ten years

DOI: 10.4018/IJMBL.2021100103

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This article, originally published under IGI Global's copyright on October 1, 2021 will proceed with publication as an Open Access article starting on March 26, 2024 in the gold Open Access journal, International Journal of Mobile and Blended Learning (IJMBL) (converted to gold Open Access January 1, 2023) and will be distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and production in any medium, provided the author of the original work and original publication source are properly credited.

(Allen & Seaman, 2013). In light of this rapid evolution, education leaders in various countries have proactively promoted continuous investment in online education by both public and private institutions (Deming et al., 2015). Scholars have documented the influence of teaching methods, processes and teaching practices of various countries (Tight, 2019), and some have included dance education as one of the areas of international development exchange (Jin & Martin, 2019; Martin, 2013), leading dance education to become internationalized in the higher education arena (Martin, 2013).

The 2020 worldwide outbreak of new coronavirus (COVID-19) has rapidly transformed the entire education field from offline teaching to online teaching (Chen et al., 2021; Heyang & Martin, 2020). Online learning can solve the restrictions of time and space, whereas the traditional teaching methods cannot overcome the restrictions due to the current virus crisis (Panigrahi, Srivastava, & Sharma, 2018). Some universities have even eliminated face-to-face teaching (Dias et al., 2020), catalyzing the implementation of online education, which brings brand new challenges to both teachers and students (Heyang & Martin, 2020). For example: support of the school's software and hardware, online teaching and learning experiences of teachers and students, technical background differences, education level of the students and financial support from their families, etc. are all important issues that need to be faced in this crisis (Chen et al., 2021).

A study by Cacault et al. (2019) found that online courses impact on students' learning performance. They have more negative impact on students whose past grade point average is lower, which points out that online learning courses are less effective in enhancing students' academic achievement and progress than face-to-face courses. In addition, it discourages such students' learning effectiveness and decreases students' performance in subsequent courses (Bettinger et al., 2017; Figlio, Rush & Yin, 2013; Alpert, Couch & Harmon, 2016; Joyce et al., 2015), reducing student attendance in class, and may even reduce their willingness to attend school one year later (Cacault et al., 2019).

1.1. Teaching Practices in Taiwan

In response to the epidemic, the Ministry of Education in Taiwan has also set class suspension standards for schools at all levels and agreed to adopt the methods of on-campus or online supplementary classes for instruction. During the COVID-19 epidemic control period, the world advocated stopping classes yet continuing to learn (Mishra et al., 2020). Teachers at all levels of schools in Taiwan are also proactively preparing online courses in order to allow students to be able to learn at home, making online learning a significant focus. At this time, how physical education courses should be carried out online has become one of the key issues being discussed. Most physical education teachers may think that physical education has its own characteristics, and not all items are suitable for online teaching. Both teachers and students are subject to the limitations of space, as well as hardware and software. There are still many problems to be overcome to implement online teaching. As for the effectiveness of learning, both teachers and students have doubts as well. Investigating how to best achieve effective learning is one of the main purposes of this research.

1.2. Motivation and Purpose for the Study

Although there have been some related studies on social-based motivations, tension release, escapism, and acquiring knowledge through Live-streaming in the past (Hilvert-Bruce et al., 2018; Sjöblom & Hamari, 2017; Sjöblom et al., 2017), there is no research on the effectiveness, motivation and student satisfaction with physical activity classes when learning in the context of Live-streaming. Thus, in order to minimize the impact of the epidemic, the researchers have taken advantage of the features and applicability of Facebook (FB) Live-streaming to encourage students to exercise continuously, learn dance skills, improve learning motivation and increase satisfaction with physical education courses.

The purpose of this research is to explore the influence of Co-regulated Learning (CRL) - defined as comprising self-regulation and co-regulating other learners, even with each individual in a particular environment (Chan, 2012) - and Experience-based Learning (ExBL) - which refers to acquiring knowledge and skills from one's experience (Matsuo et al., 2008) - teaching interventions

through FB Live-stream teaching on the dance skills performance, learning motivation, and physical activity class satisfaction of university dance course students. The research questions are listed below.

In the context of Facebook (FB) Live-streaming:

1. Does the intervention of CRL teaching approach affect students' dance skills performance, learning motivation, physical activity class satisfaction?
2. Does the intervention of ExBL teaching approach affect students' dance skills performance, learning motivation, and physical activity class satisfaction?
3. Which teaching approach is most effective in improving students' dance skills performance, learning motivation, physical activity class satisfaction?

2. LITERATURE REVIEW

This section first introduces the definitions of the two teaching methods, CRL and ExBL. That is, related literature about the effects and validity of CRL and ExBL is individually portrayed in subsections '2.1. Co-regulated Learning' and '2.2. Experience-based Learning'. Subsequently, the key factors for measuring students' learning motivation and dance skill performance are introduced and illustrated in subsections '2.3. Learning motivation' and '2.4. Physical activity class satisfaction'.

2.1. Co-Regulated Learning (CRL)

Co-regulated learning (CRL) is defined as “temporary coordination of self-regulation amongst self and others” (Hadwin, Järvelä & Miller, 2011). CRL is currently considered to be a reasonable theoretical framework for inquiry and reflective learning activities in the online learning environment. CRL extends the concept of self-regulated learning (SRL), which incorporates a key element of success in higher education, as it enables students to proactively manage their own learning progress and develop life skills (Fernández et al., 2013). Therefore, the idea of embedding SRL into CRL currently continues to expand. CRL is a process that helps students to understand and regulate their learning and that of others (Harley et al., 2012). It must be carried out under social context and influence (Rich, 2017) so that learners themselves and other students in the environment can adjust their cognition, motivation and behavior to interact and develop (Bransen et al., 2020). That self-regulation plays a key role in online learning has been recognized by other researchers (Cho & Shen, 2013; Shea et al., 2013). However, in a spontaneous learning environment, it may be difficult for college students to regulate their own learning (Heikkilä et al., 2012), which may also cause them to easily drop out of their courses halfway through (Van den Bogaard, 2012), or they may often not attain the required learning progress on time (Räisänen et al., 2016). In addition, most students may not understand how to perform SRL, so it is very important for teachers to guide them (Alharbi et al., 2011). Therefore, this research provided students with CRL teaching strategies as an aid so that they could cultivate regular learning habits in the FB Live-stream environment in coordination with other students and further to explore the influence of CRL on improving students' learning effectiveness, motivation and satisfaction in dance courses.

2.2. Experience-Based Learning (ExBL)

Experience-based Learning (ExBL) is a teaching method that encourages students to engage in targeted learning (O'Donnell & Fortune, 2019), and helps build students' confidence, capability and professional image (Wilson et al., 2019). ExBL is also a practical teaching method, providing students with the most practical and empirical guidance from the best theories and foundations at present so that students can gain experience from these (Dornan et al., 2019). ExBL is defined as “the process of creating knowledge through experience conversion” (Kolb, 2014). The process is divided into four steps: experience, reflection, thinking and action. The first is the specific experience; the

second is the opportunity to reflect on the experience; the third is the conceptual theory based on past experience and observations, and finally, the concepts and conclusions from personal experience provide the basis for action (Oxendine et al., 2004). Students' reflective ability is affected by ExBL, and it also affects the development of students' key sustainability capacities (Birdman et al., 2021). Adults learning a second language through ExBL has already gained importance, as it can improve learners' language fluency (Namaziandost et al., 2019). Studies have confirmed that the environment of ExBL can stimulate certain student potential, communication or problem-solving skills (Braßler & Dettmers, 2016; Frank & Stanszus, 2019).

Contrary to the above findings in language learning, students who received ExBL through the Internet did not significantly improve their calculation skills in Excel. Compared with a pre-test, students who did not receive ExBL had higher learning motivation (Tsai et al., 2018) than those who did. Neither di applying ExBL in serious game activities make a significant difference in students' learning effectiveness (Cowley et al., 2013). However, since medical school students obtain many abilities from practical experience, most ExBL research has been more focused on medical instruction (Dornan et al., 2019). But there are few studies discussing its impact in the field of physical education, so this is a question worth exploring. Herein, ExBL is applied in the FB Live-streaming environment to explore its impact on improving students' learning effectiveness, motivation and satisfaction in dance courses.

2.3. FB Live-Streaming

Live-streaming is a rapidly growing phenomenon in the Internet era, and it is also an interactive form of multimedia entertainment. It has been rapidly popularized worldwide since 2011 (Hilvert-Bruce et al., 2018; Needleman, 2015; Skjuve & Brandtzaeg, 2019). Various web platforms such as YouTube, Dailymotion and FB have Live-streaming functions (D'onfro, 2015; O'Neill, 2014; Wilhelm, 2013). FB is a social interactive media platform that is very popular among college students (Lin, Hong & Lawrenz, 2012) and has also been proven to provide and support teachers and students to interact outside the classroom (Liu & Hung, 2020; Deng & Tavares, 2013) as a space for informal discussion of learning issues (Madge et al., 2009). In terms of education, FB allows teachers and students to use the functions of resource sharing and learning material integration to conduct synchronous and asynchronous learning and discussion, not only providing students with innovative learning methods and opportunities, but also invisibly creating student-centered autonomy for self-learning, collaborative learning and lifelong online learning (Idris & Wang, 2009). A study by Skjuve & Brandtzaeg (2019) found that the largest proportion of behaviors in FB are random chatting with people (48%) and skill demonstrations (10%). Haimson & Tang (2017) conducted a study on people's social media experience and pointed out that live broadcast on the media is the most attractive function. Based on the contact between the two parties in the live broadcast, people who do the live broadcast can directly confirm and respond to the audience, and the audience can directly participate in the live broadcast (Sjöblom & Hamari, 2017). In other words, the behavior between teachers and students on a live broadcast platform will be correlated with and influenced by each other.

2.4 Dance Courses

Schools incorporate dance courses into the physical education curriculum mainly to promote the development of students' motor skills; moreover, dance is a common social activity that can be practiced in different social cultures in various aspects such as performance, art and entertainment (Karpati et al., 2015). The benefits of incorporating sports in the classroom include increasing students' fun, motivation and confidence in learning (Hanks & Eckstein, 2019). Physical education experience during school years is key for students to develop lifelong exercise habits. For many students, physical education is the only opportunity for them to contact and experience dance, and it is also an important way for students to participate in dance activities outside of class in the future (Anderson et al., 2017).

As early as 2009, some scholars incorporated the creative idea of recording dance works on mobile devices into the blended learning dance curriculum and discussed the differences that resulted compared with traditional instruction (Wilson et al., 2009). Most recent dance-related studies focus on blended learning (BL) and flipped learning (FL), and are highly valued (Havemann et al., 2019; Stein & Graham, 2020). According to other research results, it is found that if teachers use BL and FL teaching methods in dance courses, they can help students improve their learning motivation and effectiveness better than online remedial teaching and traditional teaching (Chao et al., 2021b). This is especially true when used in dance courses for Taiwanese students. Blended learning can not only improve students' learning effectiveness over traditional teaching, but also has good effects in fun, degree of enjoyment, cognitive development, degree of relaxation and diversified experience (Chao et al., 2021a). In addition, using FL has a better impact on students' learning motivation, effectiveness and satisfaction than traditional instruction, so it is very helpful to improve students' cognition and skill learning in dance (Hsia et al., 2019; Hsia & Sung, 2020).

2.5. Learning Motivation

Motivation is a force that leads to certain human behavior, as well as the power to guide, control and persist in human behavior. It is defined as "powering people to achieve high levels of performance and overcoming barriers in order to change" (Tohidi & Jabbari, 2012).

In fact, any activity or behavior that influences people externally or internally is regarded as a response to their motivation (Tohidi, 2011). According to the results of past research, online remedial teaching and traditional teaching can increase students' learning motivation, especially in terms of "value" and "expectation" (Chao et al., 2021b). There is a significant positive correlation between self-efficacy and motivation of students who are learning in the context of flipped learning (Hsia & Sung, 2020). However, some studies have pointed out that lack of time and motivation are among the main reasons for students to quit learning or for get lost in the online learning environments (Kim & Frick, 2011). Therefore, this study used different teaching approaches (CRL and ExBL) in the FB Live-streaming environment to improve students' motivation to learn dance.

2.6. Physical Activity Class Satisfaction

Physical activity class satisfaction questionnaire (PACSQ) is a scale that mainly analyzes psychological characteristics (Trigueros et al., 2019). It can be divided into nine factors: teaching, normative success, cognitive development, mastery experiences, fun and enjoyment, improvement of health and fitness, diversionary experiences, relaxation, interaction with others, etc. so that students' satisfaction in physical education courses can be evaluated from a comprehensive and multi-dimensional perspective. It is also a test tool that has been proven to be able to compare males and females at the same time (La Rotta et al., 2021) and has been used in research on physical education-related courses (Ferriz et al., 2016; Gil-Arias et al., 2021; González-Cutre & Sicilia, 2019). Teachers care about students' satisfaction with their courses so they must deliver practical experience, professional knowledge and successful teaching during the class (Sicilia et al., 2014). In addition, some scholars believe that a good teaching structure can help build up students' learning concepts and improve their physical skills and health (Jaakkola et al., 2012). Past research has found that blended learning in the dance teaching environment attains significantly higher physical activity class satisfaction than traditional teaching (Chao et al., 2021a). This shows that students may like the online learning environment. At present, there are few researchers discussing the applications of CRL and ExBL in physical education skill learning courses or the resulting learning effects in the online learning environment. Therefore, instruction of dance skills is combined with innovative teaching approaches (CRL and ExBL) in the FB Live-streaming environment for this study to increase students' satisfaction in dance courses.

Figure 1. Expected effects of different instructional designs on students' learning motivation and dance skills

	CRL	non-CRL
ExBL	Most significant effect (C1 Group)	Medium effect (C3 Group)
non-ExBL	Medium effect (C2 Group)	No difference (C4 Group)

3. METHOD

3.1. Participants and the Course Involved

The experiment was conducted in a course entitled “Physical Education: Dance,” which is a one-semester required elective course worth 0 credits. Students comprise first- to fourth-year university students from different academic disciplines in Taiwan who are interested in dance. The participants in this study were 128 students generally aged between 18-22 years, comprising 101 females and 27 males in four classes. In this study, 48 students took part in the CRL and ExBL class (C1), 36 students in the non-ExBL and CRL class (C2), 25 students in the non-CRL and ExBL class (C3), while 19 students were in the non-CRL and non-ExBL class (C4, control group). The four involved classes were taught by the same teacher. In addition, subjects in this study used the same course website built based on TronClass, which is an online learning management system, and FB. The CRL and ExBL interventions in the curriculum design of this study evolved from the teacher’s reflections on her previous teaching.

3.2. Experimental Design and Procedure

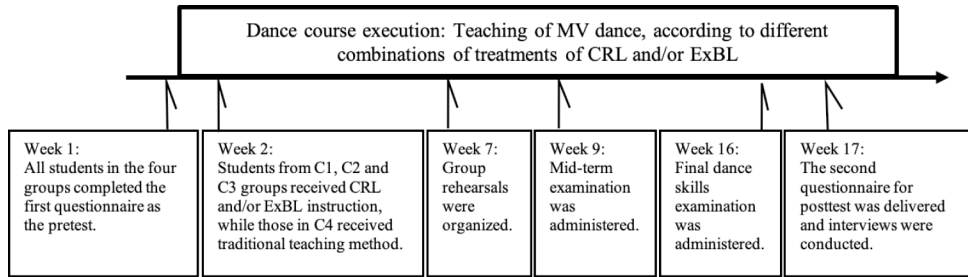
The first class (C1) simultaneously received the treatment of FB Live-stream teaching with interventions CRL and ExBL; the second class (C2) received the treatment of FB Live-stream teaching with CRL intervention only, and the third class (C3) received the treatment of FB Live-stream teaching with ExBL intervention only. These groups were the experimental groups, and the last group (C4), which received traditional teaching method via FB Live-streaming, was the control group. The experimental design and hypothesized results of the four conditions (groups) is shown in Figure 1. From the second week, the teacher taught the same content with different teaching methods for the four classes. The schedule of the course is illustrated in Figure 2.

3.2.1. CRL Intervention

Based on the operation of Tsai (2015), students were required to adopt SRL strategies before implementing CRL, so that students in the CRL group (C1 & C2) could develop regular study habits. The authors of this study extended SRL to CRL, divided students in the CRL and ExBL groups and CRL classes into groups of 5 to 8 persons, and conducted regular group discussions, group exercises, interactions, cooperative learning and other activities. Members learned together in groups.

In the course of this research, the teacher encouraged students to practice their dance skills more when they encountered problems and learn from each other in the same group. Students were required to watch the online teaching content from the teacher via FB for self-learning every week.

Figure 2. Schedule of the course and dance skills examinations



After studying, students needed to discuss and record their learning behaviors with the students in their group using the LINE app before the deadline for submitting assignments; this included how to study, study time, practice times, joint practice partners, and problems encountered.

Figure 3 is a screenshot of the computer screen of the teacher performing FB Live-stream teaching. Figure 4 shows screenshots of a mobile phone screen of students' CRL learning group using LINE.

3.2.2. ExBL Intervention

When implementing the ExBL teaching strategy in this study, it was based on the suggestions of Hay et al. (2013), and the students in the ExBL group (C1 and C3) were asked to focus on emotional and supportive participation. There must be a process analysis of introspection and critical thinking (Bruguier & Greathouse-Amador, 2012), so during the learning process, students were asked to observe how the teacher used different dance moves and techniques to design different visual dance bridges. Moreover, the teacher asked the students to have a group discussion after reflection and combine their past learning experiences to design a group dance movement suited to the group's style.

3.2.3. Control Group

The students of the control group also participated in the FB Live-stream teaching course but did not have the interventions of CRL or ExBL, so there was no need to implement any requirements for the

Figure 3. Screenshot of the computer interface of the teacher during FB Live-stream dance teaching

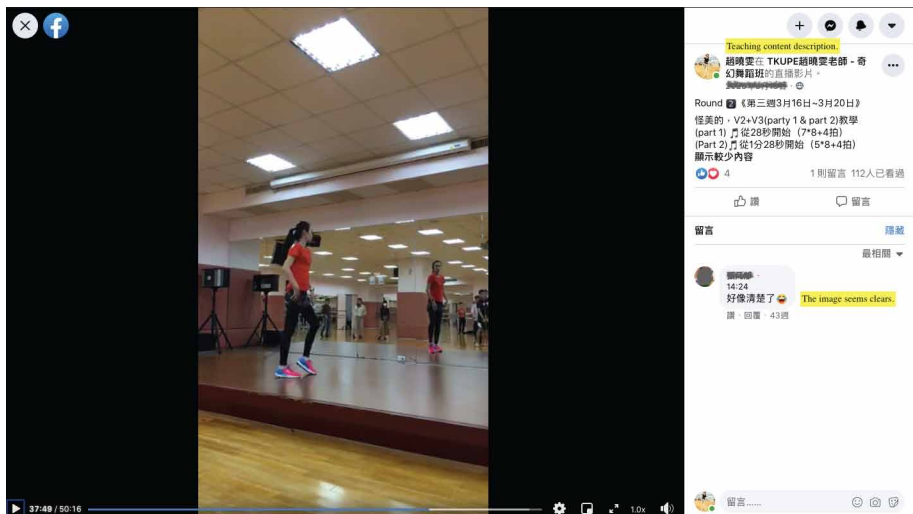
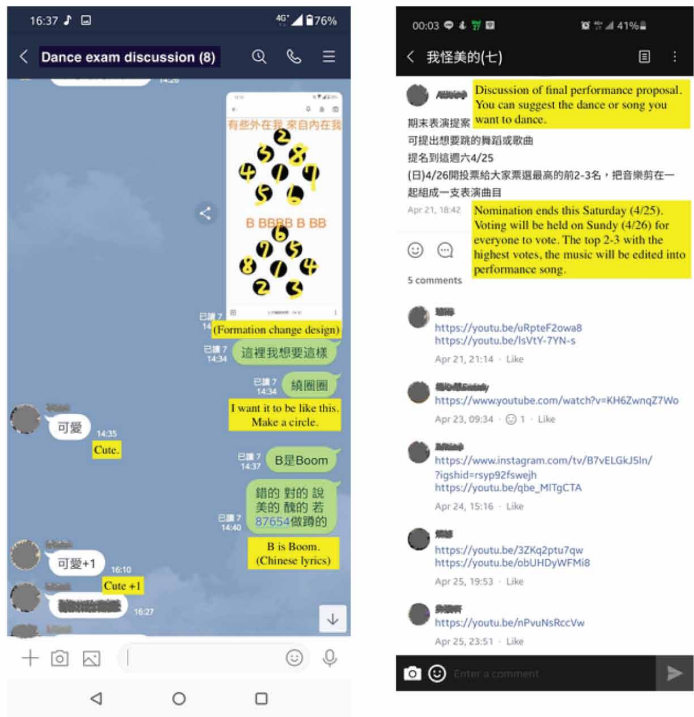


Figure 4. Screen shots from students' mobile phones during group discussion and co-regulated learning through the LINE app



(A) Dialogue between students on designing dance formations

(B) Students planning time for CRL



(C) Students discussing search for information for the performance of their repertoire

(D) Students vote on the content of the discussion

intervention of CRL and ExBL. The students in the control group received the same teaching time as the other three groups.

3.3. Evaluation

In order to prevent differences in existing dance skills and learning motivations from influencing students' learning of basic dance skills, before the experiment began, the researchers investigated and asked whether the students in each group had any experience in dance courses or contact with dance clubs in the past. The data of students who expressed that they had such experiences were removed from the experimental data, but they still learned in the class and passed the course.

In the first week of the semester, all students in the four classes completed the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich *et al.* (1993). To test students' motivation for learning, there are 31 questions on the questionnaire. Participants scored items using a 7-point response scale (1 = strongly disagree, 7 = strongly agree), with a Cronbach's alpha for the scale of 0.968. Additionally, the 32-item Physical Activity Class Satisfaction Questionnaire (PACSQ), designed by Cunningham (2007), was used to investigate students' satisfaction with this sports dance course. The participants scored items using an 8-point response scale (1 = strongly disagree, 8 = strongly agree), with a Cronbach's alpha for the scale of 0.78. Finally, after the final examination (Week 17), students in all four groups were again requested again to fill out the same questionnaires for the post-test.

Regarding the assessment of students' dance skills, learning effectiveness was tested in the 9th week (mid-term examination) and the 16th week (final examination) of the semester. The content of the examinations included soundtracks designated by the teacher and the results of the dances discussed and edited by each group in each class. This study used the collective dance performance scoring standard proposed by Rcampus (2017) as the basis for scoring the students' dance skills performance. A 5-point scale was applied; the higher the score, the more perfect the performance (1 point = minimally acceptable; 5 points = perfect). The score includes knowledge of choreography, technical skills, performance skills, and music and rhythm. Finally, the differences in learning dance skills between the four groups of students were tested according to the scores obtained by the students on the examinations.

In the end, differences in learning motivation, dance skills, and satisfaction of the four groups of students in this dance course were explored. In addition, change of students' motivation to learn from the beginning (pretest) to the end (posttest) was also analyzed.

4. RESULTS

4.1. Effects of CRL

In order to explore the effects of CRL, the independent samples t-test was used to compare students' dance skills performance, physical activity class satisfaction and their learning motivation based on the MSLQ completed at the end of the semester, between the CRL groups (C1 and C2) and non-CRL groups (C3 and C4). As the data in Table 1 shows, the difference of students' scores for dance skills between CRL group (13.70) and non-CRL group (13.08) is not significant. The difference between students' learning motivation between CRL group (164.37) and non-CRL group (174.57) is also not significant. In addition, the difference of students' PACSQ between CRL group (214.27) and non-CRL group (230.25) is not significant. That is, the expected effects of FB Live-stream with CRL on students' dance skills, physical activity class satisfaction and learning motivation were not found in this research. Thus, to answer the first research question, it is found that intervention of CRL teaching approach did not lead to better development of students' dance skills performance, learning motivation, or physical activity class satisfaction.

Table 1. Comparison of dance skills, learning motivation and PACSQ: CRL group and non-CRL group

Factors	Group	<i>n</i>	Mean	S.D.	<i>F</i>	<i>t</i> -value	Df	<i>p</i>
Dance skills	CRL	84	13.70	1.343	.128	2.526	126	.721
	non-CRL	44	13.08	1.267				
Learning motivation	CRL	84	164.37	26.526	1.495	-2.154	126	.224
	non-CRL	44	174.57	23.206				
PACSQ	CRL	84	214.27	30.005	2.462	-3.053	126	.119
	non-CRL	44	230.25	24.068				

4.2. Effects of ExBL

With regard to the effects of FB Live-streaming with ExBL, the differences of students' dance skills performance, physical activity class satisfaction and their learning motivation were investigated, based on the MSLQ completed at the end of the semester, between the ExBL groups (C1 and C3) and non-ExBL groups (C2 and C4) via the independent samples *t*-test. The results in Table 2 show an insignificant difference between the scores of students' dance skills in the ExBL group (13.51) compared with those in the non-ExBL group (13.45). The difference in students' learning motivation between ExBL group (168.01) and non-ExBL group (167.69) is also not significant. That is, the treatment of FB Live-streaming with ExBL did not result in better development of students' dance skills or learning motivation in this study. However, the physical activity class satisfaction, indicated by the difference of students' PACSQ between ExBL group (220.66) and non-ExBL group (218.58) is significant ($p = .017$). Thus, the intervention of ExBL is shown to significantly improve students' physical activity class satisfaction. Therefore, to answer the second research question, it is found that intervention of ExBL teaching approach in this study could lead to higher physical activity class satisfaction.

4.3. Combined Effects of CRL and ExBL

To answer the third research question, the researchers in this study compared the four groups, as shown in Table 3. Different teaching approaches exhibited significant differences on the skills students learned: C1 group (13.92), C2 group (13.40), C3 group (12.74), and C4 group (13.53) ($p < .05$). According to the subsequent comparison with the Scheffe method, it was found that the learning effects ($p = .004$) of C1 group were significantly better than that of the C3 group. The different teaching approaches have significant differences on learning motivation: C1 group (160.81), C2 group (169.11), C3 group (181.84), and C4 group (165.00) ($p < .05$). After further comparison with the Scheffe

Table 2. Comparison of dance skills, learning motivation and PACSQ: ExBL group and non- ExBL group

Factors	Group	<i>n</i>	Mean	S.D.	<i>F</i>	<i>t</i> -value	Df	<i>p</i>
Dance skills	ExBL	73	13.51	1.337	.086	.276	126	.770
	non- ExBL	55	13.45	1.368				
Learning motivation	ExBL	73	168.01	24.916	.113	.070	126	.738
	non- ExBL	55	167.69	27.168				
PACSQ	ExBL	73	220.66	25.421	5.865	.399	126	.017*
	non- ExBL	55	218.58	33.427				

Note: * $p < 0.05$

Table 3. One-way ANOVA: students' dance skills, learning motivation and PACSQ

Factors	Group	<i>n</i>	Mean	S.D.	<i>F</i>	<i>p</i>	Post hoc test (Scheffe)
Dance skills	C1	48	13.92	1.232	4.667	.004*	C1 > C3 (<i>p</i> = .004)
	C2	36	13.40	1.443			
	C3	25	12.74	1.196			
	C4	19	13.53	1.246			
Learning motivation	C1	48	160.81	24.794	4.012	.009*	C3 > C1 (<i>p</i> = .001)
	C2	36	169.11	28.329			
	C3	25	181.84	18.861			
	C4	19	165.00	25.340			
PACSQ	C1	48	212.48	25.518	4.210	.007*	C3 > C1 (<i>p</i> = .009)
	C2	36	216.67	35.359			
	C3	25	236.36	16.520			
	C4	19	222.21	29.997			

Note: **p* < 0.05

method, it can be seen that the learning motivation of the group using C3 is significantly better than for the C1 group (*p* = .001); In addition, the different teaching approaches have significant differences on physical activity class satisfaction: C1 group (212.48), C2 group (216.67), C3 group (236.36), and C4 group (222.21) (*p* < .05). Further comparison with Scheffe method reveals that the physical activity class satisfaction of the C3 group is significantly better than for the C1 group (*p* = .009).

In other words, this study found that the concurrent use of CRL and ExBL for teaching has a certain degree of influence on students' dance skills (See Table 3). In terms of improving learning motivation and physical activity class satisfaction, using ExBL alone is the most effective strategy.

5. DISCUSSION AND IMPLICATIONS

Based on the design of FB Live-stream teaching methods and the research results, it is argued that this study may contribute to the field of Live-stream learning in the following three ways. First, this research explains in detail how teachers can use CRL online to cultivate students' learning motivation and physical activity class satisfaction, and how to further improve their dance skills in FB Live-stream teaching dance courses. Secondly, the research and design of Live-stream teaching with ExBL can provide references for teachers of dance courses to improve students' learning motivation and physical activity class satisfaction by using ExBL teaching strategies in Live-stream teaching courses. Finally, this is one of the first attempts to investigate the effects of the various combinations of CRL, ExBL, and Live-stream learning in dance courses.

In an era when COVID-19 is sweeping the world, teachers and students are forced to advance into the online teaching environment (Chen et al., 2021; Heyang & Martin, 2020). Although the current situation of COVID-19 pandemic may be temporary, teachers and students should be trained and prepared to teach and learn using an online education platform. As the teaching field changes, teachers should design course content carefully and adopt innovative teaching methods to develop students' professional knowledge and skill learning (Tsai, 2013), no matter to minimize the impact of the epidemic on student learning or to further online education development in the future.

Therefore, in this study, an 18-week empirical study was conducted on the teaching of online dance courses in college physical education. The researchers redesigned the teaching methods of CRL

and ExBL and integrated them into the FB Live-streaming environment. Based on this investigation of the influence of these methods on students' actual dance skills, learning performance, learning motivation and physical activity class satisfaction development, this paper presents a comprehensive discussion.

According to the results of this study, there is no significant difference in dance skills, learning motivation or physical activity class satisfaction with CRL, but the teaching with ExBL results in a significantly higher physical activity class satisfaction than the teaching without ExBL. According to past research, learning satisfaction will affect students' evaluation of course participation and their preference for taking physical activity courses in the future (Chen & Stotlar, 2012). Recent studies have pointed out that there is a strong relationship between self-determination motivation and physical education curriculum satisfaction (Gil-Arias et al., 2021; González-Cutre & Sicilia, 2019). The main reason for a person's lack of exercise habit may be that they did not have a positive experience in physical education in their school days, did not like or would not engage in sports, and were dissatisfied with physical education (Tannehill & Zakrajsek, 1993). Therefore, in the physical education curriculum, when students obtain positive curriculum experience, that is, are satisfied with the physical education curriculum, their personal psychological needs are met, which triggers students to further invest in extracurricular sports behaviors similar to classroom activities as these continue to meet individual psychological needs (González-Cutre et al., 2014). Based on past experience, the researchers believe that in the teaching context of ExBL, students are provided with a simple scaffolding as a basis for changes in music beats, accents, movement arrangements, and performance formations, so that group discussions will not be indiscriminate. Purpose can improve the efficiency of discussions. CRL teaching is mainly used to guide students' creativity, and the teacher does not get involved too much. However, if the group members have no relevant experience, they will encounter obstacles in their discussion or lack focus in the group discussions.

In addition, from comparing and analyzing the concurrent combination of different teaching methods, it can be found that the effects of the combination are not the same as the individual teaching strategies. In terms of learning dance skills, there are significant differences between the groups. The learning outcome of dance skills in the C1 (CRL and ExBL) group is significantly better than that in the C3 (ExBL) group. In this regard, some students may benefit from the group peer guidance through teamwork. In terms of learning motivation and physical activity class satisfaction, there are also significant differences between the groups, wherein the changes in the C3 group were significantly better than those in the C1 group. Lee et al. (2008) pointed out that Taiwanese students may tend to learn passively in a course, be unwilling to spend extra time on learning after class or to take responsibility for their own learning, which may be potential reasons for these results. Under such circumstances, requiring students to perform CRL may lead to low learning motivation and physical activity class satisfaction. In addition, in traditional physical courses, students only have to collaborate with their teammates in class. However, students who received CRL intervention had to discuss, interact, practice, collaborate with their teammates, and record their learning behaviors after classes. This may have led to the poorer development of students' learning motivation and physical activity class satisfaction, if they faced difficulty when in online collaboration. In response to the pandemic, the use of online teaching may lead to students not being able to get feedback immediately and it not being easy to conduct group discussions, which may result in significantly lower learning motivation and physical activity class satisfaction than for the C1 group with CRL intervention.

5.1. Limitations of This Research

Although the results of the research in this study found that the integration of CRL and ExBL teaching strategies can help improve students' dance skills, assessing students' learning outcomes may be affected by certain potential factors. For example, the Hawthorne effect or readiness for online learning may cause some psychological impact or the results may be influenced by learners' preparation on the technology front. These may affect students' learning outcomes (Tsai, 2012).

6. CONCLUSION

Due to the COVID-19 pandemic, many schools around the world are conducting online teaching, including in physical education courses (Chao et al., 2021a). In this study, a dance course took advantage of FB Live-streaming while integrating CRL and ExBL to help students improve their learning outcomes in the online learning environment. According to the results of this research, the learning motivation and physical activity class satisfaction of students who have received ExBL is significantly higher than those who did not receive ExBL. In addition, the implementation of ExBL integrated with CRL in teaching improves students' dance skills learning more than without integrating CRL.

Conflicts of Interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

Funding Statement

No funding was received for this work.

Process Dates:

Received: April 3, 2021, Revision: June 6, 2021, Accepted: June 6, 2021

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REFERENCES

- Alharbi, A., Paul, D., Henskens, F., & Hannaford, M. (2011). An investigation into the learning styles and self-regulated learning strategies for computer science students. *Proceedings Ascilite*, 36–46.
- Allen, I. E., & Seaman, J. (2013). Changing course: Ten years of tracking online education in the United States. Sloan Consortium.
- Alpert, W. T., Couch, K. A., & Harmon, O. R. (2016). A randomized assessment of online learning. *The American Economic Review*, 106(5), 378–382. doi:10.1257/aer.p20161057
- Anderson, S. D., Leyland, S. D., & Ling, J. (2017). Gender differences in motivation for participation in extra-curricular dance: Application of the Theory of Planned Behaviour. *Research in Dance Education*, 18(2), 150–160. doi:10.1080/14647893.2017.1330325
- Bettinger, E. P., Fox, L., Loeb, S., & Taylor, E. S. (2017). Virtual classrooms: How online college courses affect student success. *The American Economic Review*, 107(9), 2855–2875. doi:10.1257/aer.20151193
- Birdman, J., Redman, A., & Lang, D. J. (2021). Pushing the boundaries: Experience-based learning in early phases of graduate sustainability curricula. *International Journal of Sustainability in Higher Education*, 22(2), 237–253. doi:10.1108/IJSHE-08-2019-0242
- Bransen, D., Govaerts, M. J., Sluijsmans, D. M., & Driessen, E. W. (2020). Beyond the self: The role of co-regulation in medical students' self-regulated learning. *Medical Education*, 54(3), 234–241. doi:10.1111/medu.14018 PMID:31788840
- Braßler, M., & Dettmers, J. (2016). Interdisziplinäres Problembasiertes Lernen–Kompetenzen fördern, Zukunft gestalten. *Zeitschrift für Hochschulentwicklung*, 11(3), 17–37.
- Bruguier, L. R., & Greathouse-Amador, L. M. (2012). New educational environments aimed at developing intercultural understanding while reinforcing the use of English in experience-based learning. *Profile Issues in Teachers Professional Development*, 14(2), 195–211.
- Cacault, M. P., Hildebrand, C., Laurent-Lucchetti, J., & Pellizzari, M. (2019). Distance learning in higher education: Evidence from a randomized experiment. *Journal of the European Economic Association*.
- Chan, C. K. (2012). Co-regulation of learning in computer-supported collaborative learning environments: A discussion. *Metacognition and Learning*, 7(1), 63–73. doi:10.1007/s11409-012-9086-z
- Chao, H. W., Wu, C. C., & Tsai, C. W. (2021a). Do socio-cultural differences matter? A study of the learning effects and satisfaction with physical activity from digital learning assimilated into a university dance course. *Computers & Education*, 165, 104150. doi:10.1016/j.compedu.2021.104150
- Chao, H. W., Wu, C. C., & Tsai, C. W. (2021b). Exploring the effects of blended learning, flipped learning, and online remedial teaching on improving students' learning performance and motivation. *International Journal of Technology and Human Interaction*, 17(3), 98–114. doi:10.4018/IJTHI.2021070107
- Chen, H. C., & Stotlar, D. (2012). An examination of the motivation and satisfaction of college students enrolled in physical education courses. *Sport Science Review*, 21(1-2), 43–63. doi:10.2478/v10237-012-0003-9
- Chen, X., Chen, S., Wang, X., & Huang, Y. (2021). "I was afraid, but now I enjoy being a streamer!" Understanding the challenges and prospects of using live streaming for online education. *Proceedings of the ACM on Human-Computer Interaction*, 4(CSCW3), 1–32.
- Cho, M. H., & Shen, D. (2013). Self-regulation in online learning. *Distance Education*, 34(3), 290–301. doi:10.1080/01587919.2013.835770
- Clark, J. T. (2020). Distance education. In *Clinical Engineering Handbook* (pp. 410–415). Academic Press. doi:10.1016/B978-0-12-813467-2.00063-8
- Cowley, B., Ravaja, N., & Heikura, T. (2013). Cardiovascular physiology predicts learning effects in a serious game activity. *Computers & Education*, 60(1), 299–309. doi:10.1016/j.compedu.2012.07.014
- Cunningham, G. B. (2007). Development of the physical activity class satisfaction questionnaire (PACSQ). *Measurement in Physical Education and Exercise Science*, 11(3), 161–176. doi:10.1080/10913670701326443

- D'onfro, J. (2015, December 4). Facebook takes on streaming apps live periscope and meerkat with its new 'live video' feature. *Business Insider*. Retrieved from <https://www.businessinsider.com.au/facebook-introduces-live-video-feature-2015-12>
- Deming, D. J., Goldin, C., Katz, L. F., & Yuchtman, N. (2015). Can online learning bend the higher education cost curve? *The American Economic Review*, 105(5), 496–501. doi:10.1257/aer.p20151024
- Deng, L., & Tavares, N. J. (2013). From Moodle to Facebook: Exploring students' motivation and experiences in online communities. *Computers & Education*, 68, 167–176. doi:10.1016/j.compedu.2013.04.028
- Dias, S. B., Hadjileontiadou, S. J., Diniz, J., & Hadjileontiadis, L. J. (2020). DeepLMS: A deep learning predictive model for supporting online learning in the Covid-19 era. *Scientific Reports*, 10(1), 1–17. doi:10.1038/s41598-020-76740-9 PMID:33199801
- Dornan, T., Conn, R., Monaghan, H., Kearney, G., Gillespie, H., & Bennett, D. (2019). Experience based learning (ExBL): Clinical teaching for the twenty-first century. *Medical Teacher*, 41(10), 1098–1105. doi:10.1080/0142159X.2019.1630730 PMID:31382787
- Fernández, E., Bernardo, A., Suárez, N., Cerezo, R., Núñez, J. C. & Rosario, P. (2013). Predicción del uso de estrategias de autorregulación en la educación superior: Un análisis a nivel individual y de contexto. *Anales de Psicología/Annals of Psychology*, 29(3), 865–875.
- Ferriz, R., González-Cutre, D., Sicilia, Á., & Hagger, M. S. (2016). Predicting healthy and unhealthy behaviors through physical education: A self-determination theory-based longitudinal approach. *Scandinavian Journal of Medicine & Science in Sports*, 26(5), 579–592. doi:10.1111/sms.12470 PMID:25916345
- Figlio, D., Rush, M., & Yin, L. (2013). Is it live or is it internet? Experimental estimates of the effects of online instruction on student learning. *Journal of Labor Economics*, 31(4), 763–784. doi:10.1086/669930
- Frank, P., & Stanszus, L. S. (2019). Transforming consumer behavior: Introducing self-inquiry-based and self-experience-based learning for building personal competencies for sustainable consumption. *Sustainability*, 11(9), 2550. doi:10.3390/su11092550
- Gil-Arias, A., Harvey, S., García-Herreros, F., González-Víllora, S., Práxedes, A., & Moreno, A. (2021). Effect of a hybrid teaching games for understanding/sport education unit on elementary students' self-determined motivation in physical education. *European Physical Education Review*, 27(2), 366–383. doi:10.1177/1356336X20950174
- González-Cutre, D., & Sicilia, Á. (2019). The importance of novelty satisfaction for multiple positive outcomes in physical education. *European Physical Education Review*, 25(3), 859–875. doi:10.1177/1356336X18783980
- González-Cutre, D., Sicilia, A., Beas-Jiménez, M., & Hagger, M. S. (2014). Broadening the trans-contextual model of motivation: A study with Spanish adolescents. *Journal of Medicine & Science in Sports*, 24(4), e306–e319. doi:10.1111/sms.12142 PMID:24256054
- Hadwin, A. F., Järvelä, S., & Miller, M. (2011). Self-regulated, co-regulated, and socially shared regulation of learning. *Handbook of Self-Regulation of Learning and Performance*, 30, 65–84.
- Haimson, O. L., & Tang, J. C. (2017). What makes live events engaging on Facebook live, periscope, and snapchat. *Proceedings of the 2017 CHI conference on human factors in computing systems*, 48–60. doi:10.1145/3025453.3025642
- Harley, J., Taub, M., Bouchet, F., & Azevedo, R. (2012, June). A framework to understand the nature of co-regulated learning in human-pedagogical agent interactions. *11th International Conference on Intelligent Tutoring Systems*.
- Havemann, L., Charles, E., Sherman, S., Rodgers, S. & Barros, J. (2019). *A multitude of modes: considering 'blended learning' in context*. Academic Press.
- Hay, A., Smithson, S., Mann, K., & Dornan, T. (2013). Medical students' reactions to an experience-based learning model of clinical education. *Perspectives on Medical Education*, 2(2), 58–71. doi:10.1007/s40037-013-0061-4 PMID:23670698
- Heikkilä, A., Lonka, K., Nieminen, J., & Niemivirta, M. (2012). Relations between teacher students' approaches to learning, cognitive and attributional strategies, well-being, and study success. *Higher Education*, 64(4), 455–471. doi:10.1007/s10734-012-9504-9

- Heyang, T., & Martin, R. (2020). A reimagined world: International tertiary dance education in light of COVID-19. *Research in Dance Education*, 1–15. doi:10.1080/14647893.2020.1780206
- Hilvert-Bruce, Z., Neill, J. T., Sjöblom, M., & Hamari, J. (2018). Social motivations of live-streaming viewer engagement on Twitch. *Computers in Human Behavior*, 84, 58–67. doi:10.1016/j.chb.2018.02.013
- Hsia, L. H., Hwang, G. J., & Lin, C. J. (2019). A WSQ-based flipped learning approach to improving students' dance performance through reflection and effort promotion. *Interactive Learning Environments*, 1–16. doi:10.1080/10494820.2019.1651744
- Hsia, L. H., & Sung, H. Y. (2020). Effects of a mobile technology-supported peer assessment approach on students' learning motivation and perceptions in a college flipped dance class. *International Journal of Mobile Learning and Organisation*, 14(1), 99–113. doi:10.1504/IJMLLO.2020.103892
- Idris, Y., & Wang, Q. (2009). Affordances of Facebook for learning. *International Journal of Continuing Engineering Education and Lifelong Learning*, 19(2-3), 247–255. doi:10.1504/IJCEELL.2009.025031
- Jaakkola, T., Washington, T., & Yli-Piipari, S. (2013). The association between motivation in school physical education and self-reported physical activity during Finnish junior high school: A self-determination theory approach. *European Physical Education Review*, 19(1), 127–141. doi:10.1177/1356336X12465514
- Jin, J., & Martin, R. (2019). Exploring the past to navigate the future: Examining histories of higher dance education in China in an internationalized context. *Research in Dance Education*, 20(2), 225–240. doi:10.1080/14647893.2019.1566304
- Joyce, T., Crockett, S., Jaeger, D. A., Altindag, O., & O'Connell, S. D. (2015). Does classroom time matter? *Economics of Education Review*, 46, 64–77. doi:10.1016/j.econedurev.2015.02.007
- Karpati, F. J., Giacosa, C., Foster, N. E., Penhune, V. B., & Hyde, K. L. (2015). Dance and the brain: A review. *Annals of the New York Academy of Sciences*, 1337(1), 140–146. doi:10.1111/nyas.12632 PMID:25773628
- Kim, K. J., & Frick, T. W. (2011). Changes in student motivation during online learning. *Journal of Educational Computing Research*, 44(1), 1–23. doi:10.2190/EC.44.1.a
- Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. FT Press.
- La Rotta, D. R., Ferriz, R., & Lara, D. (2021). Validation of the satisfaction questionnaire with physical education classes (CSCEF) in the Latin American context. *Journal of Human Sport and Exercise*. 16(3), 627-639. Retrieved from <http://rua.ua.es/dspace/handle/10045/106139>
- Lee, T. H., Shen, P. D., & Tsai, C. W. (2008). Applying web-enabled problem-based learning and self-regulated learning to add value to computing education in Taiwan's vocational schools. *Journal of Educational Technology & Society*, 11(3), 13–25.
- Lin, H. S., Hong, Z. R., & Lawrenz, F. (2012). Promoting and scaffolding argumentation through reflective asynchronous discussions. *Computers & Education*, 59(2), 378–384. doi:10.1016/j.compedu.2012.01.019
- Liu, I. F., & Hung, H. C. (2020). How are live-streaming services and social media platforms changing on-job MBA students' learning? A case study for applying e-case live in management case-based learning in Taiwan. *IEEE Access: Practical Innovations, Open Solutions*, 8, 120936–120945. doi:10.1109/ACCESS.2020.3006170
- Madge, C., Meek, J., Wellens, J., & Hooley, T. (2009). Facebook, social integration and informal learning at university: 'It is more for socialising and talking to friends about work than for actually doing work'. *Learning, Media and Technology*, 34(2), 141–155. doi:10.1080/17439880902923606
- Martin, R. (2013). Alienation and transformation: An international education in contemporary dance. *Research in Dance Education*, 14(3), 201–215. doi:10.1080/14647893.2012.732566
- Matsuo, M., Wong, C. W., & Lai, K. H. (2008). Experience-based learning of Japanese IT professionals: A qualitative research. *The Journal of Strategic Information Systems*, 17(3), 202–213. doi:10.1016/j.jsis.2008.03.001
- Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Journal of Educational Research Open*, 1, 100012. doi:10.1016/j.ijedro.2020.100012

- Namazandost, E., Nasri, M., & Esfahani, F. R. (2019). Pedagogical efficacy of experience-based learning (EBL) strategies for improving the speaking fluency of upper-intermediate male and female Iranian EFL students. *International Journal of Research in English Education*, 4(2), 29–41. doi:10.29252/ijree.4.2.29
- Needleman, S. E. (2015). Twitch's viewers reach 100 million a month. *The Wall Street Journal*, 29.
- O'Donnell, J., & Fortune, L. (2019). Mobility as the teacher: Experience based learning. In *The Study of Food, Tourism, Hospitality and Events* (pp. 121–132). Springer. doi:10.1007/978-981-13-0638-9_11
- O'Neill, P. H. (2014). Twitch dominated streaming in 2013, and here are the numbers to prove it. *The Daily Dot*. Retrieved from <http://www.dailydot.com/esports/twitch-growth-esports-streaming-mlg-youtube-2013/>
- Oxendine, C., Robinson, J., & Willson, G. (2004). *Experiential learning. Emerging perspectives on learning, teaching and technology*. Department of Educational Psychology and Instructional Technology, University of Georgia. Retrieved from <http://epltt.coe.uga.edu/index.php>
- Panigrahi, R., Srivastava, P. R., & Sharma, D. (2018). Online learning: Adoption, continuance, and learning outcome—A review of literature. *International Journal of Information Management*, 43, 1–14. doi:10.1016/j.ijinfomgt.2018.05.005
- Pintrich, P. R., Smith, D. A., Garcia, T., & McKeachie, W. J. (1993). Reliability and predictive validity of the motivated strategies for learning questionnaire (MSLQ). *Educational and Psychological Measurement*, 53(3), 801–813. doi:10.1177/0013164493053003024
- Räsänen, M., Postareff, L., & Lindblom-Ylänne, S. (2016). University students' self-and co-regulation of learning and processes of understanding: A person-oriented approach. *Learning and Individual Differences*, 47, 281–288. doi:10.1016/j.lindif.2016.01.006
- Rcampus. (2017). *IRubric: Dance performance evaluation rubric*. Retrieved from <http://www.rcampus.com/rubricshowc.cfm?code=E8X3A9&sp=yes&>
- Rich, J. V. (2017). Proposing a model of co-regulated learning for graduate medical education. *Academic Medicine*, 92(8), 1100–1104. doi:10.1097/ACM.0000000000001583 PMID:28177957
- Shea, P., Hayes, S., Uzuner-Smith, S., Vickers, J., Bidjerano, T., Gozza-Cohen, M., & Tseng, C.-H. (2013). Online learner self-regulation: Learning presence viewed through quantitative content and social network analysis. *International Review of Research in Open and Distance Learning*, 14(3), 427–461. doi:10.19173/irrodl.v14i3.1466
- Sicilia, A., Ferriz, R., Trigueros, R., & González-Cutre, D. (2014). Spanish adaptation and validation of the physical activity class satisfaction questionnaire (PACSQ). *Universitas Psychologica*, 13(4), 1321–1332.
- Sjöblom, M., & Hamari, J. (2017). Why do people watch others play video games? An empirical study on the motivations of Twitch users. *Computers in Human Behavior*, 75, 985–996. doi:10.1016/j.chb.2016.10.019
- Sjöblom, M., Törhönen, M., Hamari, J., & Macey, J. (2017). Content structure is king: An empirical study on gratifications, game genres and content type on Twitch. *Computers in Human Behavior*, 73, 161–171. doi:10.1016/j.chb.2017.03.036
- Skjuve, M., & Brandtzaeg, P. B. (2019). Facebook live: A mixed-methods approach to explore individual live streaming practices and motivations on Facebook. *Interacting with Computers*, 31(6), 589–602. doi:10.1093/iwc/iwz038
- Stein, J., & Graham, C. R. (2020). *Essentials for blended learning: A standards-based guide*. Routledge. doi:10.4324/9781351043991
- Tannehill, D., & Zakrajsek, D. (1993). Student attitudes towards physical education: A multicultural study. *Journal of Teaching in Physical Education*, 13(1), 78–84. doi:10.1123/jtpe.13.1.78
- Tight, M. (2019). Globalization and internationalization as frameworks for higher education research. *Research Papers in Education*, 20(1), 52–74. doi:10.1080/02671522.2019.1633560
- Tohidi, H. (2011). Human resources management main role in information technology project management. *Procedia Computer Science*, 3, 925–929. doi:10.1016/j.procs.2010.12.151

Tohidi, H., & Jabbari, M. M. (2012). The effects of motivation in education. *Procedia: Social and Behavioral Sciences*, 31, 820–824. doi:10.1016/j.sbspro.2011.12.148

Trigueros, R., Mínguez, L. A., González-Bernal, J. J., Jahouh, M., Soto-Camara, R., & Aguilar-Parra, J. M. (2019). Influence of teaching style on physical education adolescents' motivation and health-related lifestyle. *Nutrients*, 11(11), 2594. doi:10.3390/nu11112594 PMID:31671742

Tsai, C. W. (2012). The role of teacher's initiation in online pedagogy. *Education + Training*, 54(6), 456–471. doi:10.1108/00400911211254253

Tsai, C. W. (2013). An effective online teaching method: The combination of collaborative learning with initiation and self-regulation learning with feedback. *Behaviour & Information Technology*, 32(7), 712–723. doi:10.1080/0144929X.2012.667441

Tsai, C. W. (2015). Applying web-based co-regulated learning to develop students' learning and involvement in a blended computing course. *Interactive Learning Environments*, 23(3), 344–355. doi:10.1080/10494820.2013.764323

Tsai, C. W., Shen, P. D., Chiang, I. C., Chen, W. Y., & Chen, Y. F. (2018). Exploring the effects of web-mediated socially-shared regulation of learning and experience-based learning on improving students' learning. *Interactive Learning Environments*, 26(6), 815–826. doi:10.1080/10494820.2017.1415940

Van den Bogaard, M. (2012). Explaining student success in engineering education at Delft University of technology: A literature synthesis. *European Journal of Engineering Education*, 37(1), 59–82. doi:10.1080/03043797.2012.658507

Verawardina, U., Asnur, L., Lubis, A. L., Hendriyani, Y., Ramadhani, D., Dewi, I. P., & Sriwahyuni, T. (2020). Reviewing online learning facing the COVID-19 outbreak. *Journal of Talent Development and Excellence*, 12(3s), 385–392.

Wilhelm, A. (2013). *As DailyMotion and Youtube turn up the pressure, Twitch looks to retain livestreaming ascendance*. The Next Web. Retrieved from <http://thenextweb.com/insider/2013/03/30/as-dailymotion-and-youtube-turnup-the-pressure-twitch-looks-to-retain-livestreaming-ascendance/>

Wilson, D., Andrews, B., & Dale, C. (2009). Choreo:pod. *International Journal of Mobile and Blended Learning*, 1(1), 49–60. doi:10.4018/jmbl.2009010104

Wilson, H., Warmington, S., & Johansen, M. L. (2019). Experience-based learning: Junior medical students' reflections on end-of-life care. *Medical Education*, 53(7), 687–697. doi:10.1111/medu.13907 PMID:31106895