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Manifestations of 21st Century Skills Development Under the SPRING Online Flipped Learning Model in a College Physical Education Course

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Abstract: Flipped learning (FL) is one of the recent pedagogical models that seeks to promote student agency and hone 21st century skills for lifelong learning through its emphasis on collaboration, creativity, critical thinking, and autonomy. However, only some physical education (PE) classes globally have adopted this method and researched its effectiveness. Thus, this qualitative study discovered how the SPRING online FL model helped enhance the 21st century skills of college PE students. From the students' responses in the questionnaire and the teacher-researchers observation notes, it was revealed that FL aids in the students' 21st century skills as it allows the students to collaborate and improve their social skills; analyze people, tasks, and situations to create an output that is not only ingenuous and entertaining but beneficial to all; and study and master the skills independently at their own pace. Future studies can explore testing the SPRING model's effectiveness in younger students and other learning contexts.

Keywords: *21st century skills, dance education, flipped learning, lifelong learning, physical education.*

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Introduction

Background of the Study

In the Declaration of Berlin 2013 – United Nations Educational, Scientific and Cultural Organization's (UNESCO) World Sports Ministers Conference (MINEPS V), it was asserted that physical education (PE) in school and in all other educational institutions is the most effective means of providing all children and youth with the skills, attitudes, values, knowledge and understanding for lifelong participation in society" (UNESCO, 2013, p. 3). This was supported by the Quality Physical Education Guidelines created by UN partners that regard PE "as the only curriculum subject whose focus combines the body and physical competence with values-based learning and communication, provides a learning gateway to grow the skills required for success in the 21st Century" (UNESCO, 2013, p. 6). Evidently, these assertions are aligned with the United Nations Sustainable Development Goal number 4, which aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (United Nations, 2022, p. 11). UNESCO also recognizes PE's role in achieving this crucial target by 2030.

The promotion of 21st century skills necessary for students' lifelong learning mentioned above was included in the P21 (Partnership for 21st Century Learning) Framework created in 2019 (see Figure 1). This was also used in the K-12 curriculum of the Philippines. This framework "describes the skills, knowledge, and expertise students must master to succeed in work and life; it is a blend of content knowledge, specific skills, expertise, and literacies" (Battelle for Kids, 2019, p. 2).

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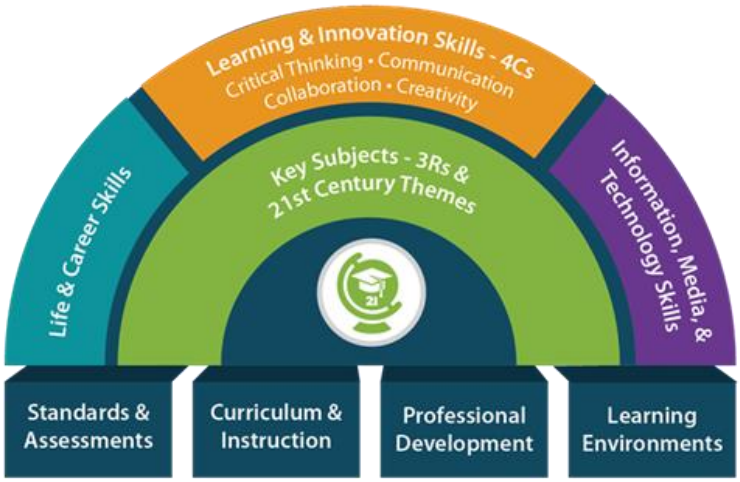

Figure 1. P21 Framework (Battelle for Kids, 2019).

Four specific 21st century skills focused on in this study are *Creativity, Critical Thinking, Communication and Collaboration, and Initiative and Self-Direction* due to their closest relevance to this study's college PE course.

One of the recent pedagogical models that promises to cater to the development of students' 21st century skills is flipped learning (FL). It was defined as

> "a pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter" (Flipped Learning Network, 2014).

Moreover, Bergmann and Sams (2012), the proponents of this method, mentioned that the success of the FL implementation depends on the following: (a) flexible time and place for learning; (b) increased student agency; (c) focus on the development of students' "conceptual understanding" and "procedural fluency"; and (d) educators who are willing to do the first three mentioned and provide sustainable assessment for students.

Since no single prescribed framework for FL has been created yet, and FL has been employed and experimented with in diverse classes, it is necessary to explore its use in subjects like PE (Sargent & Casey, 2020). This study then implemented the SPRING online FL model (Figure 2) for the eight-session (16-hour) Rhythmic Activities/Social Recreational Dance module adhering to Bergmann and Sams's (2012) framework discussed above and aligning them with the course objectives and requirements, the professor's teaching methods, and students' online learning needs.

This framework was introduced in Dimarucot's non-experimental study on FL application college PE in 2022. The name of the model "reflects (a) the reflexive nature of the framework, (b) its intention to track students' progress, and (c) the aim to contribute to the development of the students' lifelong skills for them to become mature learners" (Dimarucot, 2022, p. 267).

In this model, the students watch the multimedia instructional materials provided by the professor and do advanced studies before their next synchronous session. In the first five to ten minutes of the synchronous class, the professor facilitates the recall of the lesson's concepts and engages them in a meaningful discussion. Next, the students consult with the professor on their practices and performances, and they receive feedback from him via breakout rooms. This way, the professor informally assesses their procedural fluency before the actual graded performance. The rest of the class prepares for the major dance performance using the instructional materials.

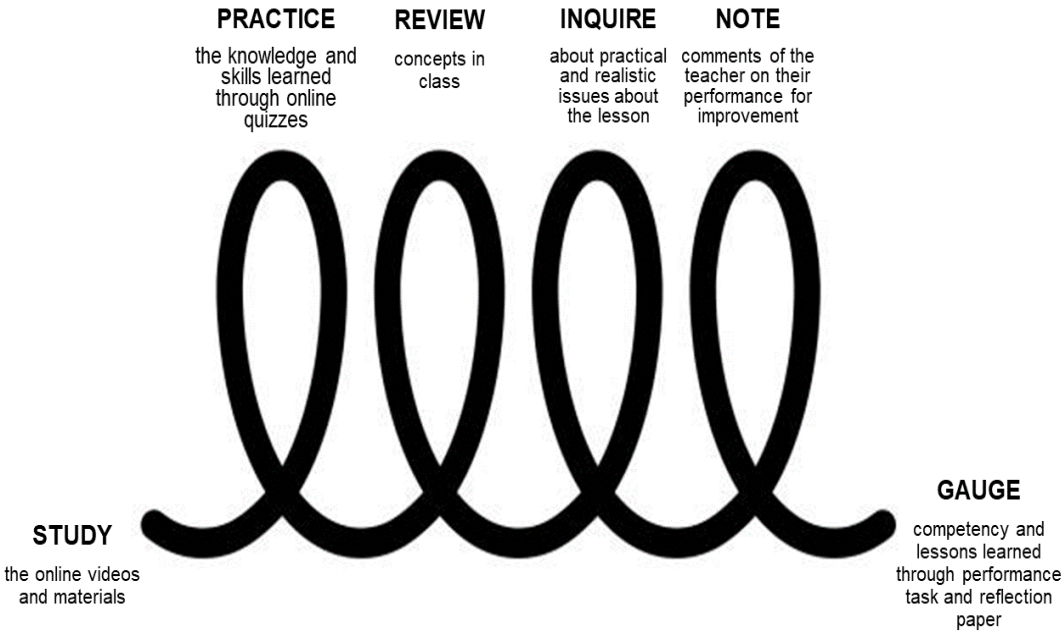

Figure 2. The SPRING Online Flipped Learning (FL) Model (Dimarucot, 2022)

Lastly, the students answer this reflection question: "How would you describe your experiences as a FL student in developing your independent learning ability, collaborative skills, creativity, and critical and reflective thinking?" This was the professor's way of getting feedback from the students on how the SPRING model had helped them master the lessons. He used this feedback to improve the model implementation for the next PE classes.

For the past decades that FL has been implanted, researchers have shared their findings on how the method worked and did not work for them. For instance, Divjak et al. (2022) revealed that FL aids in developing 21st century skills. Specifically, Mischenko et al. (2020) attested to the potential of FL in enhancing students' cognition, active learning, autonomy and sense of responsibility, and creativity, as well as their critical thinking, communication, collaborative, and leadership skills. Zhang and Yu (2021) also mentioned that since the students can play the video repeatedly at home and in advance before class in FL, they can better grasp the sports knowledge and skills and engage in deeper and more independent learning. Moreover, students are empowered because they enhance their physical fitness on their own time and monitor their progress. Similar to Hur et al.'s (2019) conclusion, Zhang and Yu (2021) opined that students' determination to do physical exercises will "lay a good foundation for students to form a lifelong awareness of physical education" (p. 46).

Aside from developing 21st century skills, there are other benefits teachers and students can reap from FL. Divjak et al. (2022) and Diciano et al. (2021) concluded in their review that FL could be a useful approach for students to immerse themselves in the learning materials and collaborate effectively with their peers and teachers. FL became specifically advantageous, especially during the pandemic, because of the flexibility in time for students and the provision of synchronous and asynchronous learning modes. FL can provide more physical activity time due to the decreased time for lectures in class. Eventually, this could also lead to an "increase [in] students' enjoyment of physical activity" (Hur et al., 2019, p. 90).

Kirk (2012) believes that "young people's perceptions of what they can and cannot do play a critical mediating role in both the level and quality of their engagement in physical activity" (p. 5). Thus, increasing the students' motivation to take learning PE seriously to gain maximum competence expected to fulfill a task is crucial. Moreover, teachers must be consistent in their FL routine and instill a culture of independent learning to maximize the students' lesson time (Sargent & Casey, 2020).

Diciano et al. (2021) shared how their FL implementation during the pandemic in the Philippines was met with challenges such as a lack of accurate teacher feedback, unstable internet, and varying learning styles of students. Thus, they recommended regularly monitoring students, integrating technology in teaching PE, and giving ample time for PE activities.

On top of all these, Sargent and Casey (2020) that teachers have to confront the "increasing pressure…to engage with DigiTech and, as a result, be seen to meet the needs of the 21st century learners, while simultaneously ensuring the students are physically active" and they need to make sense of this "dichotomy" (p. 72) to be able to succeed in their FL implementation.

With varied reports on FL's merits and downsides, it would also be interesting to explore the PE teachers' and students' insights into the effectiveness of this method when used particularly in a dance class and its contribution to developing the students' 21st century skills. Identifying concrete solutions to address the setback mentioned above could also aid in refining FL implementation in the country.

Literature Review

Below is a review of the recent studies on FL implementation in different contexts for the past three years. They were categorized based on their focus on 21st century skills, conceptual understanding and cognitive knowledge, learning motivation, and physical ability.

D. J. Lee and Kim (2019) clarified how FL implementation in PE classes influences self-directed learning abilities and attitudes toward PE classes. They found that the students' self-directed learning abilities improved, except for self-management abilities, due to their increased learning motivation, provision of videos before their class, organized and goal-oriented class methods, and opportunities for reflection. Alienation issues were also addressed because of the students' increased active participation and student-student and student-teacher interactions. The freedom they enjoyed in class translated into better performance and feeling toward the outcome of their learning experiences.

Several studies also supported the positive effect of FL on conceptual understanding and cognitive knowledge. Liu's (2019) study on the use of Computer Assisted Instruction courseware in a track and field course with an FL model based on a Massive Open Online Course (MOOC) attributed the students' easy and correct understanding of the hurdle technical principles to the "shortened [distance] between students' theoretical study and practical practice" (p. 8). Similar results were also revealed in Marqués-Molías et al.'s (2019) study, wherein 5th- and 6th-grade students improved their scores both for knowledge and application of strategy during their korfball gameplays after viewing the lecture videos at home and having adequate practice time. Moreover, students became more autonomous learners while learning at home in advance and better decision-makers and strategists in a game. Ferriz-Valero et al. (2022) also mentioned how FL affected the students' conceptual understanding of volleyball. Østerlie and Kjelaas' study (2019) among Norwegian adolescents also concluded that FL contributes to student understanding and learning in PE and health-related fitness knowledge (Østerlie & Mehus, 2020).

Some studies also found that FL affected the students' perception of PE and boosted their interest in the subject (Østerlie & Kjelaas, 2019; Wang & Chen, 2022). Wang and Chen (2022) proved how FL improved how students attained physical skills at the university level through few-shot learning (micro-teaching videos that are less than 10 minutes). FL helped bolster students' physical exercise attitudes more than the traditional setup, which also caused increased physical activity behavior. The students in Mischenko et al.'s (2020) study had better functional fitness and motor tests attributed to the students' heightened motivation to exercise, independent work skills, and increased motor density during the lesson. Hur et al. (2019) also shared how FL helped them meet their age's daily physical activity requirements due to the practice time Saneeds and interests. The flexibility provided also contributed to the students' enjoyment of physical activities and increased students' course satisfaction. Thus, they recommended providing students with a learning environment that gives them more agency.

Several studies also affirmed the FL's capability to increase the students' learning motivation in PE (Botella et al., 2021; Ferriz-Valero et al., 2022; Liu, 2019; Østerlie, 2018; Østerlie & Mehus, 2020). Østerlie and Mehus stressed the importance of having a more play-like PE that supports independent learning for students to maintain, if not increase, their motivation in learning PE. Fostering companionship could also be another factor, especially for group tasks in PE that require students to cooperate and collaborate while facing obstacles on their own and as one (Botella et al., 2021).

The analyses and recommendations provided in these studies were used to guide the researchers in formulating the SPRING model and implementing it more effectively in the classroom. The researchers noted the best practices shared by these studies and learned from their challenges. The results of the previous studies were also used to compare with the present study and explain the reasons for the similarities and differences in experiences of FL implementation.

Though more and more teachers adopt FL across the globe, the research in this field is still in its inception phase (Abeysekera & Dawson, 2015; Ferriz-Valero et al., 2022), and there is a dearth of studies that investigate its effectiveness or impact through a pedagogical lens. Marqués Molías et al.'s (2019) review of studies on FL in PE revealed that though most studies identified positive results, they are usually in medicine and health sciences. Moreover, most recent studies were conducted with middle school and secondary school students from China, Korea, and Western countries like Norway, Spain, the United Kingdom, and the United States, and very few about the Philippine higher education context. Not many were conducted in college general PE courses, specifically dance courses. Most FL studies in PE were on sports like volleyball, korfball, and Parkour. Lastly, most studies used quantitative methods, and not a single one used students' reflection papers and professors' observation notes as qualitative evidence of the effectiveness of FL.

Thus, this qualitative study aimed to answer this question: What are the manifestations of the effectiveness of the FL model in developing 21st century skills of higher education students in a college PE course based on the perspective of the students and the professor's observations? This study attempted to discover if the SPRING model works to the

advantage of both the professors and the students and to help address the dearth of FL studies focusing on the context of dance education in a university in the Philippines.

Methodology

Research Design

This qualitative research aimed to gather the lived experiences and insights from the respondents regarding their learning experience under FL in written form and the researchers' observations on improving the students' 21st century skills while under the SPRING online FL model. Descriptive statistics was also used to find the average number of students' responses and researchers' observations per item.

Sample and Data Collection

A series of participant observations of the students in a natural and realistic classroom setting was conducted (Lichtman, 2014) to document the manifestations of the contribution of FL to the development of the students' 21st century skills.

Purposive sampling was used to have a more in-depth and contextualized understanding of the specific and unique circumstances and experiences of a selected group of students subjected to the first implementation of the SPRING model. The research participants were first-year students who passed their prerequisite PE 1 class. There were 183 students from the following sections: Accountancy (DAC), Legal Management-Section A (ALM), Legal Management-Section C (CLM), Information Technology (AIT), Political Science (BPL), and Psychology (BPS). The students consented to learn under the SPRING model and contribute to the data-gathering stage of the study.

Twenty-two (22) were student-athletes and were, thus, excluded from the study. To ensure that all students have more or less the same background in dance, this study also excluded students involved in professional or non-professional dance organizations before and during their freshman year at the university. Transferees from another university were also not selected due to possible mismatch between their previous and current university's PE curriculum; the students might not be as competent as those who took prior PE courses at the same university.

Responses in the reflection paper that did answer the question correctly, included other subjects that may have also implemented FL, provided only generic answers, gave advice rather than opinions, were incomprehensible and incohesive, and shared personal experiences not related to the PE course and the FL implementation were not included in the coding. Categories that received zero responses in the coding of either the midterm or final reflection paper were also excluded from the final presentation of results.

To gather their perceptions on the effect of FL on the students' 21st century skills, all the students' responses in the reflection paper at the end of each major dance performance were gathered as part of the overall assessment in their PE course. The reflection question was "How would you describe your experiences as an FL student in developing your (a) independent learning ability, (b) collaborative skills, (c) creativity, and (d) critical and reflective thinking?".

The reflection question was validated first by a dance expert. This was the same expert who validated the alignment of the instructional videos, the delivery of instructions, and the lesson flow. Once approved, the question was posted on the Learning Management System (LMS) - RedCanvas discussion board, and the professor gave them enough time to answer it in their own time. The reflection papers were not part of their grade in the subject. The students were reminded to answer succinctly and limit their responses to 500 words only. They were free to use the language they would like to use in the paper to limit the factors that might affect the authenticity and quality of their responses. Their written output was submitted in a PDF file through their Learning Management System (LMS), RedCanvas.

Meanwhile, the observation guide for writing the observation field notes was prepared. These notes were the documented evidence of the manifestations of the development of 21st century skills. The guide was designed based on the research objectives and *P21's Framework for 21st century Learning Definitions* (Battelle for Kids, 2019). It was validated by an education expert not affiliated with the same university. To test the reliability, the researchers pilot-tested the guide in the first week of implementation in all six classes. After the pilot test, they conducted a peer debriefing session wherein they checked for agreement in the classification of the observations and compared the number of occurrences of their observations. They also discussed the categories and items that are confusing and overlapping and revised them for clarity.

Once the validity and reliability were ensured, the researchers resumed their observations. Their observation field notes were expanded into analytic memos that included the researchers' insights during and after the observation. These were used in the content analysis.

Data Analysis

All the students' reflection papers and the participant-observers' expanded field notes or analytic memos were subjected to content analysis. A total of 157 reflection papers were gathered after the midterm performance task and 135 after the

final performance task. The researchers also gathered 64 observation notes for all six classes: 34 from the midterms and 20 from the finals.

This study largely adopted Richards and Hemphill's (2018) six-step collaborative qualitative analysis to enhance the transparency and trustworthiness of the data analysis within the research team. It is also a democratic way of ensuring the researchers' perspectives were accounted for in the analysis.

First, the researchers planned for the research focus and set the timeline for the conduct of the study. Secondly, they used open and *in vivo* coding for the initial coding of the responses and notes and axial coding for the second round to determine key concepts and themes after making comparisons, categorizing, and identifying patterns. The results of the coding were discussed in their peer debriefing sessions, and the themes they were able to generate were recorded in their analytic memos. Thirdly, using the analytic memos they wrote for the first week of implementation in six classes, the researchers constructed the initial coding manual. These also aligned with the 21st century skills mentioned in Partnership for 21st century Learning P21's *Framework for 21st century Learning Definitions* (Battelle for Kids, 2019). Fourthly, they pilot-tested the manual on the analytic memos they wrote for the second week of implementation and coded the same memos individually. After they were finished coding, they had a series of peer debriefing sessions to ensure everyone had the same understanding of the codes and to adjust the codes after discovering what had not been accounted for in the initial manual. Fifthly, they performed consensus coding with the rest of the data sets in another series of peer debriefing sessions to further adjust the manual. The final coding manual used in the study can be found in the Appendix. Lastly, they discussed the content analysis results, finalized the themes, resolved discrepancies, addressed outliers, and identified common response trends and themes.

After the coding and peer debriefing series, they finalized the tally of responses in the coding sheet. They used descriptive statistics to identify the average number of responses and observations from the qualitative data gathered from the reflection paper answered by the students and observation notes. Finally, the researchers noted the intersections and disparities in the results from these two data sets. They provided possible explanations for these outcomes in light of previous studies and the current context of PE in the university.

Findings/Results

Table 1 shows the qualitative data from the reflection paper of the students and the observation notes of the researchers. The results are categorized into the four 21st century skills focused on in this study.

Table 1. Summary of the Qualitative Data from the Reflection Paper and the Observation Notes

4Cs	Initial Codes	Description	Reflection Paper			Observation Notes			Ave for Both Data
			Mid Term	Fin	Ave	Mid Term	Fin	Ave	
		Manifestations of Collaboration							
COL	WG	working on a project with a group	44	20	32	33	15	24	**28**
	COM	communication and interaction with classmates and teacher through technology	52	28	40	13	8	10.5	**25.25**
	SH	share ideas and skills with each other	46	33	39.5	8	9	8.5	**24**
	SU	support each other in mastering the lesson and dance	48	49	48.5	51	55	53	**50.75**
	CONF	confidence to contribute; less intimidated and scared to contribute; confidence in one's ability	14	7	10.5	13	8	10.5	10.5
	EMP	empathy and consideration for others	23	7	15	13	4	8.5	11.75
	PRO	productivity	13	14	13.5	9	10	9.5	11.5

Table 1. Continued

4Cs	Initial Codes	Description	Reflection Paper			Observation Notes			Ave for Both Data
			Mid Term	Fin	Ave	Mid Term	Fin	Ave	
		Effects of Collaboration on the Students							
	FU	fun to collaborate	17	29	23	15	14	14.5	**18.75**
	IM	improve one's work	13	9	11	11	6	8.5	9.75
	LEA	learn from others, ideas, feedback, and perspectives	14	13	13.5	2	4	3	8.25
	REL	relationship/rapport with classmates	20	27	23.5	25	20	22.5	**23**
CRE	CR	create new ideas and steps	35	63	54	43	49	46	**50**
	CRT	creativity using technology	21	20	20.5	33	35	34	**27.25**
	RES	resourcefulness	20	8	14	15	9	12	13
CRI	ADJ	adjusting to people and situations	22	9	15.5	47	30	38.5	**27**
	ANA	analyzing steps and the task	23	13	18	16	11	13.5	**15.75**
	CRIT	critiquing each other's performance	4	3	3.5	5	6	5.5	4.5
	REFL	reflect about one's actions and decisions	8	8	8	4	2	3	5.5
	STR	strategic thinking	4	7	5.5	5	5	5	5.25
IND		**Provisions for Independent Learning**							
	FRE	freedom to create and learn on one's own	11	8	9.5	9	5	7	8.25
	REF	references made available that makes independent learning easy	59	54	**56.5**	65	43	**54**	**55.25**
	TMC	time to think and create	27	8	17.5	29	15	22	19.75
	TML	time to learn lessons	20	24	22	27	30	28.5	25.25
		Manifestations of Independence							
	ACC	accountability	8	6	7	5	3	4	5.5
	LER	learn by themselves	26	12	**19**	33	15	**24**	**21.5**
	SG	self-regulation; self-monitoring	15	10	12.5	10	5	7.5	10
	TMI	time management on one's own	15	20	17.5	0	0	0	8.75
		Benefits Gained from Independent Learning							
	EXP	gain new knowledge by exploring	13	7	10	4	1	2.5	6.25
	PA	works at own pace	28	18	**23**	33	25	**29**	**26**
	SD	self-discovery and awareness	5	7	6	3	3	3	4.5
		TOTAL NO. OF RESPONSES/ OBSERVATIONS	**668**	**541**		**579**	**445**		

Collaboration

Based on the Table 1 data, both the students shared and the researchers observed that one of the most dominant benefits of FL is the adequate time and opportunity for the students to support each other in learning the PE lessons and mastering the steps for their performance task (50.75), especially since they were required to perform a social recreational dance. The students had an easier time fulfilling their tasks by working as a group (28) as they helped each other conceptualize,

create new routines based on acquired fundamental skills, master the dance steps, and stimulate students' confidence in their own work. Technology even made this easier, allowing them to use related learning resources (25), especially during online classes amid a pandemic. Through these media, students shared ideas and skills with each other (24%), unhindered despite learning from a distance. Interestingly, even if they only collaborated and danced "together" virtually, the data revealed that the students had fun working with their classmates (18.75) and developed their relationship and rapport with each other (23) as they exchanged creative ideas, accepted constructive feedback from each other, and discovered each other's personalities and talents in the learning process.

Creativity

The students' creativity was enhanced as the performance task required creating new ideas and steps (50) after their teacher taught them the fundamental skills and steps. However, notably, the students' ingenious use of technology (27.25) helped them through their tasks despite the pandemic, as it became their wealthy source of ideas. For example, depending on their dance skill, they could also edit the video based on their decision as to who will be highlighted in each segment or sequence of the performance. They also created a repetitive segment where all of them dance together, usually the highlights of the dance--regardless of their competency--showing that they do not leave anyone behind.

Critical Thinking

Aside from honing their creativity, the students' responses and the observation revealed that their critical thinking was also tested and developed as they learned to carefully analyze which steps are best for their routine and the most effective strategies to fulfill their task (15.75). The course provided a time for the students every week to assess whether the initially formed routine was doable for all group members. This preview helped them validate and discuss how complex the routine is and what needs to be modified and critically select the most feasible and most appropriate steps to produce a creative dance that everyone could perform confidently and comfortably.

This also entailed adjusting their dance routine, work schedule, and work attitude to their classmates' different personalities, capabilities, and situations (27) because not all of them are motivated and gifted in dancing, and they come from different backgrounds (i.e., different courses taken in the university). They also had to understand the pandemic's impact on each one; some experienced mental health issues and financial difficulties, just to name a few other challenges.

Independence

The pandemic and online learning certainly drove students to work more independently (21.5) and rely on their resources and study skills. The FL implemented in their class even reinforced this as the students relied heavily on the extensive references made available through Red Canvas, like recorded lectures and demonstration videos of the teacher, and less on their teacher's talk time in class. The students mentioned how these "well-prepared modules" (ALM 33) and instructional videos made independent learning easy for them (55.25). They commended how the online materials were uploaded ahead of time and were easy to follow (ALM 33), "organized, necessary, and not overwhelming" (AIT 30). Also, because of the flexibility of the course structure, the students worked at their own pace (26), which helped them master the lessons and the steps for their dance routine without much external pressure, like time.

Discussion

The SPRING online FL model and the collaborative dance project allowed the students to perform together and complement each other's skills. Some could learn new skills, such as video editing, either on their own or with the help of their classmates. These findings contrast Hung's (2022) finding, wherein several participants reported that they had insufficient physical interaction that affected their satisfaction in performing in an online flipped classroom.

The results above are supported by Bergmann and Sams (2012) when they noted that overall interaction increased during their FL implementation because of the students' less dependence on the professor as the classic "sage" in the classroom. As one respondent mentioned, the students most likely enjoyed doing the task because they were not just after completing it but the learning process (Bergmann & Sams, 2012) and the desire to create high-quality work they can be proud of (CLM 20). The students learn to dance and be selfless in the creative process (BPS 17).

Because the students were given more flexible time to create and collaborate with classmates and more freedom in the use of various media, it became easier for them to "unleash their creativity, put their "personal touch" (AIT 19), and produce quality art despite the limitations they faced such as lack of motivation for studies and juggling multiple responsibilities at home and in school. The students' resourcefulness in this task could also be transferred to similar tasks in other subjects requiring creativity.

Using critical thinking could be challenging for students to develop, especially during online learning, because adjusting to people and their situations and making decisions together also requires understanding attitudes, values, and personal circumstances. Nevertheless, FL enabled students to experience both deep learning and transfer learning (Østerlie & Kjelaas, 2019) as they learned to be flexible and careful in making decisions for themselves and others without

compromising the quality of the output, especially in unpredictable circumstances. They could apply the same skills when working in a diverse and challenging environment.

Like in the result of Khasawneh's (2021) study, the readily accessible learning materials, especially during the COVID-19 pandemic, greatly benefit students who are struggling to learn independently. The instructional videos prepared by the professor were deemed one of the most contributory factors in the student's success in the subject and in navigating online learning independently, similar to Purwanti et al.'s (2022) study. Since the students can play the video repeatedly at home and in advance before their class in FL, they can better grasp the dance concepts and skills and engage in deeper learning (Zhang & Yu, 2021). They can also be adequately prepared to perform the exercises (Mischenko et al., 2020), which can most likely increase students' motivation and satisfaction with the dance course.

Students indeed appreciate the flexibility offered by FL as students "control the remote" and "pause their teacher" if they need to review the recorded lecture or demonstration until they have already mastered the skills or perfected the steps and choose to work ahead with their task (Bergmann & Sams, 2012, p. 24), considering their skills, priorities, and other personal factors like physical disability and physical and mental health concerns. They can negotiate with their classmates and professors about the type and complexity of steps, submission mode, and concepts where they could best excel. For example, suppose the course is about reggae that covers complicated steps, and students express that it is challenging for them or they performed it with difficulty. They can propose a kind of dance or set of steps with relatively the same concept that they can perform without fear of prejudice. The rubrics were, after all, flexible in that they considered the differences in competencies of the students. This could be why, unlike in the study of Hyppönen et al. (2019), the students in this study did not have dominant issues with time management and task avoidance because they performed of their own volition and with the passion to finish the task. When students demonstrate proper behavior when engaging in class and give proper emotional responses to the lesson and their own output, the higher the possibility that they will perform well academically (Reflianto et al., 2021). Most students also did not report many struggles adjusting to the online learning setup, unlike in Y.-J. Lee et al.'s (2022) study, probably because of the well-planned design and execution of the course and the students' active engagement.

Lastly, similar to Santhanasamy and Yunus (2022), students feel completely responsible for their own learning under FL—developing self-regulation and self-direction as early as their age. After all, students, especially those of this present generation, "need to feel competent" and this "autonomy satisfies their need to feel in control" (Abeysekera & Dawson, 2015, p. 8).

Conclusion

The SPRING online FL framework offers multiple benefits for developing students' 21st century skills. It allows them to collaborate and generate brilliant and original ideas with their classmates more often and improve their social skills. The students learn to analyze people, tasks, and situations and adjust to them accordingly to create an output that is innovative and entertaining, and advantageous to all students—regardless of their gender, ability, talent, or interest in the topic. They can study and master the skills independently, giving them more confidence and control of their own learning. The model can work more to the students' advantage if limitations in terms of time due to fulfillment of other academic obligations in other subjects (that do not use FL) can be addressed, and the quality of internet connection in the Philippines can be improved.

Recommendations

For better implementation of FL in higher education institutions, specifically PE departments, it is recommended to strengthen learning communities and collaborative activities in PE classes as these are necessary to sustain the students' motivation to study PE (Østerlie & Kjelaas, 2019). This study also agrees with the recommendation of Diciano et al. (2021) that there be more regular and closer monitoring of students' progress, which is more possible in an FL setup, using effective and innovative strategies in teaching PE to boost students' motivation. It would be better for students to reflect on how well they engaged in class, learned from the course, or performed during their class practices and major exams, as this will help them note their strengths and rooms for improvement.

For future research, it is recommended that a similar study be done in a non-online FL implementation, especially now that schools are gradually returning to face-to-face classes. It would also be interesting to know if the results would be the same if FL is used with younger PE students, other PE courses, and different learning contexts, such as in public schools with limited learning resources.

Limitations

This study only covered the FL experiences and insights of the university students and the observations of the researcher-professors involved in the study. Since qualitative research depends on the participants' and the researchers' perceptions and opinions, the responses could be unfiltered. They may not be 100% objective despite the proper orientation given to the students and the researchers' calibration methods while doing content analysis. Their contribution and involvement in the study could be affected by many factors, such as the students' preference and attitude toward the subject and the researcher professors' biases in grading creative output, that the researchers may not have complete control over. Only four 21st century skills were covered in the study because these are the most relevant and most significant in the study

of PE. This study also did not aim to find the correlation between students' responses and the researchers' observations in the midterm and final exams. However, this could be an interesting point of inquiry for future research.

Ethics Statements

The research proposal was approved by the Research Ethics Board of the university dated September 12, 2022, coded as SBU-REB 2022-006 under the EXPEDITED Category. Before the SPRING Model was implemented. The students were informed about the SPRING model before it was fully implemented in the PE course. The students gave their explicit consent to undergo the new method for the study and to allow the use of their reflection papers as data for this study in compliance with the Data Privacy Act of the Philippines. The reflection paper responses were coded but not graded in quality. The students were reminded that their answers would not affect their PE grades for the semester. The data gathered are only accessible to the researchers and are kept in a safe online repository. They will only be shared with anyone if required by law, and they will be retained until the study is published in a journal and presented at an academic conference.

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Authorship Contribution Statement

Dimarucot: Research conceptualization, design, data analysis and interpretation, drafting the manuscript, and supervision and implementation of the flipped learning model. Andres: Design and implementation of flipped learning model, data acquisition, data analysis and interpretation. Matitu: Implementation of flipped learning model, editing and reviewing research protocol, technical and material support. Santiago: Supervision of the implementation of the flipped learning model, reviewing research protocol, technical and material support.

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Appendix

Table A1. Final Coding Manual

4CS	Codes	Description
COL	AD	asking for other's advice or help
	COL	collaborate with classmates
	COM	communication with classmates and teacher
	CON	easy contact with classmates through technology
	CONF	confidence to contribute; less intimidated and scared to contribute; confidence in one's ability
	CONT	contribute new ideas
	DEL	delegating roles
	DIS	discuss ideas or knowledge with the group
	EMP	emphathy and consideration for others
	FEE	learning from feedback from others
	FLC	flexible time in collaboration
	FREC	freedom to collaborate with others
	FU	fun to collaborate
	GNI	generate new ideas
	IDE	learning from ideas of others
	IM	improve one's work
	INT	interactive/interaction
	LEA	learn from others
	LEP	learn other perspectives
	MO	boost morale
	PRO	productive with collaboration
	QUA	quality group output
	REC	easy to recite in class
	REL	relationship/rapport with classmates
	SEN	sensitive to other's needs
	SH	share ideas with others without feeling judged; share skills with others
	SU	support each other
	TMG	time management with the group
	TWG	think with a group
	WE	work efficiently with the group
CRE	ART	mastery and appreciation of dance as an art
	CR	create new steps
	CRT	creativity using technology
	INC	incorporate own ideas
	INN	innovative
	RES	resourcefulness
	TOB	think outside the box
	SYNT	synthesize past experience with present

Table A1. Continued

4CS	Codes	Description
CRI	ADAP	adjusting for other people
	ADAS	adaptability to situation
	ANA	analyzing steps and the task
	ASC	assess capabilities of groupmates
	ASK	ask questions for clarification in synch class
	ASS	assessing the complexity of the steps
	CART	careful thought
	CARW	careful with words
	CRIT	critiquing each other's performance
	DEC	helps in decision-making
	DU	deep understanding
	ENG	engage with the material actively
	EXA	examine steps to be put in the sequence
	OBS	observant
	PERS	widen perspective
	PRO	propose a simplified dance choreography for all
	REFL	reflect about one's actions and decisions
	SEV	self-evaluation of one's dancing skills
	STR	strategic
	SUG	suggest ideas or improvements
IND	ACC	accountability
	ADV	do advanced studies to prepare for class
	AG	achieve personal goals
	DET	determination
	DISC	discover things on their own
	EFF	efficiency in doing school work
	EXP	gain new knowledge by exploring
	FOC	have more focus in studying
	FRE	freedom to create and learn on one's own
	GRW	growth/maturity
	HAP	happiness
	IN	independence/self-reliance
	INQ	seek answers to questions or problems
	LEW	learn from websites
	LIM	pushed to their limits
	MEA	meaningful work
	OP	options to learn
	PA	works at own pace
	PER	personalized approach to learning
	QUAI	quality of individual output
	REF	references made available that makes independent learning easy
	SD	self-discovery and awareness
	SE	boost self-esteem
	SG	self-regulation; self-monitoring
	SYN	synthesize ideas from ready materials and group discussions
	THI	think on their own without pressure
	TMC	time to create
	TMI	time management on one's own
	TML	time to learn lessons
	TMT	time to think