

Movement-Based Arts Integration as a Strategy for Enhancing Progressive Skill Acquisition and Physical Literacy Among PE Learners

Marichu G. Blace¹, Freddie S. Javiña²

^{1,2}Laguna State Polytechnic University, Philippines

Email address: marichu.blace001@deped.gov.ph / freddie.javina@lspu.edu.ph

Abstract — This study seeks to address the relationship between movement-based arts integration and students' progressive skill acquisition and physical literacy in Physical Education. Specifically, it aimed to determine the level of movement-based arts integration across four dimensions: Kinesthetic Learning Activities, Dance and Rhythm Integration, Creative Movement for Concept Reinforcement, and Symbolic Movement Expression. It also examined students' progressive skill acquisition in terms of Foundational Understanding, Accuracy and Consistency, Efficiency of Movement, Application in Varied Contexts, and Integration with Complex Tasks. In addition, the study explored students' physical literacy through summative assessments and performance tasks and investigated whether movement-based arts integration is associated with students' skill acquisition and physical literacy.

This study examined the use of movement-based arts integration as an instructional strategy in Physical Education and its relationship with progressive skill acquisition and physical literacy among PE learners. A quantitative, descriptive-correlational research design was employed to determine students' perceptions of movement-based arts integration and to analyze its association with skill development and physical literacy outcomes. Data were gathered using validated survey instruments administered to selected PE learners, and statistical analyses were conducted to determine levels and relationships among the variables.

Results indicated that PE learners perceived a very high level of movement-based arts integration across all dimensions. Kinesthetic learning, dance, rhythm, creative movement, and symbolic expression were consistently incorporated into instructional practices, contributing to an engaging, learner-centered environment that supported creativity, coordination, and collaboration. Learners also demonstrated a very high level of progressive skill acquisition, as structured instruction and repeated practice enhanced confidence, accuracy, and the ability to transfer and integrate movement skills across various contexts.

Overall, the study underscores the value of movement-based arts integration as a strategy that enhances skill development, engagement, and holistic growth among PE learners, even as physical literacy outcomes remain multifaceted and context-dependent.

I. INTRODUCTION

Recent advancements in education and neuroscience have emphasized the fundamental role of physical activity in the learning process. Moreover, in the evolving landscape of education, the integration of arts into physical education has emerged as a progressive approach to enhancing both skill acquisition and physical literacy among students.

It has shown that engaging in physical activity supports cognitive function, promotes neuroplasticity, and enhances learning efficiency (Jing et al., 2024). These findings have contributed to a growing interest in pedagogical approaches that integrate movement into academic instruction. One such approach, movement-based arts instruction which has been identified as an effective strategy to promote students' cognitive, emotional, and physical development.

Movement based arts include physical activity in academic instruction, which fosters the simultaneous development of cognitive, affective, and psychomotor competencies (Novak, 2017). It can be implemented in various forms, ranging from brief structured physical activities interspersed within lessons, to activity-based learning models that encourage the kinesthetic exploration of academic concepts.

Furthermore, movement-based arts integration, which combines creative expression with physical activity, provides learners with opportunities to explore movement beyond traditional sports, fostering not only physical competence but also creativity, confidence, and holistic development. This approach emphasizes the value of engaging students in meaningful, expressive, and enjoyable activities that support lifelong participation in physical activity.

Therefore, promoting progressive skill acquisition through movement-based arts integration not only strengthens fundamental motor skills but also nurtures higher-order thinking, social interaction, and emotional expression. This holistic approach aligns with 21st-century educational goals, where fostering creativity, collaboration, and adaptability is as important as developing physical fitness. Thus, exploring how movement-based arts integration can enrich physical education provides a meaningful pathway for cultivating students' physical literacy while promoting lifelong engagement in active and healthy lifestyles

II. METHODOLOGY

This study employed a quantitative research design to examine the effect of movement-based arts integration on PE students' progressive skill acquisition and physical literacy, with the aim of enhancing inclusive and holistic approaches to Physical Education. Sreekumar (2023) discussed that quantitative research methods are used to observe events that affect a particular group of individuals, which is the sample population. In this type of research, diverse numerical data are

collected through various methods and then statistically analyzed to aggregate the data, compare them, or show relationships among the data. Quantitative research methods broadly include questionnaires, structured observations, and experiments. Moreover, it utilized the descriptive approach which McCombes (2023) stated that it can use a wide variety of research methods to investigate one or more variables. Unlike in experimental research, the researcher does not control or manipulate any of the variables but only observes and measures them.

III. RESULT AND DISCUSSION

TABLE I. Level of Movement-Based Arts Integration as perceived by the learners in terms of Kinesthetic Learning Activities

STATEMENTS As a student, I can...	MEAN	SD	REMARKS
...design kinesthetic learning activities that integrate movement and creativity in PE.	4.65	0.53	Strongly Agree
...develop students' motor skills through structured kinesthetic activities.	4.50	0.62	Strongly Agree
...provide opportunities for learners to enjoy physical skills through creative activities	4.76	0.44	Strongly Agree
...encourage learners to express ideas and emotions through movement in PE	4.77	0.47	Strongly Agree
...promote creativity and originality through kinesthetic learning approaches.	4.80	0.41	Strongly Agree
Weighted Mean SD Verbal Interpretation	4.69 0.51 Very High		

The overall weighted mean 4.69 standard deviation of 0.51 shows a very high level of movement-based arts integration in terms of kinesthetic learning activities. This means that movement and creativity are consistently incorporated into instructional practices, enabling learners to explore physical skills while expressing themselves through movement. Such practices contribute to a more engaging and meaningful learning environment and support the holistic development of students in Physical Education.

The findings reveal that kinesthetic learning activities are highly evident in Physical Education classes. Students strongly perceive that these activities promote creativity, support the development of motor skills, and provide opportunities for expressive and enjoyable movement-based learning experiences.

Table 2 illustrates the level of movement-based arts integration in terms of Dance and Rhythm Integration as perceived by the learners.

The results indicate that learners strongly perceive the integration of dance and rhythm in their Physical Education classes. They recognize that activities help them improve coordination through rhythmic movement experiences and allow them to strengthen their motor abilities while expressing creativity through dance. Students also perceive that collaborative dance activities encourage teamwork and cooperation among learners. In addition, they acknowledge

that lessons integrate both traditional and contemporary dance styles, which help promote cultural awareness and appreciation. Opportunities are also provided for learners to choreograph their own dance or movement routines, encouraging creativity and self-expression.

TABLE II. Level of Movement-Based Arts Integration as perceived by the learners in terms of Dance and Rhythm Integration

STATEMENTS As a student, I can...	MEAN	SD	REMARKS
...offer activities that help learners enhance coordination through rhythmic movement experiences.	4.64	0.53	Strongly Agree
...create instructional plans that incorporate dance to strengthen students' motor abilities and creative expression.	4.59	0.52	Strongly Agree
...lead collaborative dance and rhythm-based activities that encourage teamwork and cooperation among learners.	4.68	0.47	Strongly Agree
...foster cultural awareness by incorporating both traditional and contemporary dance styles into lessons	4.67	0.58	Strongly Agree
...encourage creative expression by giving students opportunities to choreograph their own dance or movement routines.	4.76	0.45	Strongly Agree
Weighted Mean SD Verbal Interpretation	4.67 0.51 Very High		

The overall weighted mean of 4.67 with a standard deviation of 0.51 indicates a very high level of movement-based arts integration in terms of dance and rhythm integration. This implies that rhythmic movement and dance activities are consistently incorporated into instructional practices, enabling learners to develop coordination, creativity, and collaborative skills while participating in meaningful physical activities.

TABLE III. Level of Movement-Based Arts Integration as perceived by the learners in terms of Creative Movement for Concept Reinforcement

STATEMENTS I can...	MEAN	SD	REMARKS
...carry out activities that help students understand concepts through bodily movement.	4.76	0.43	Strongly Agree
...support learners in demonstrating their comprehension of ideas through creative physical expression.	4.70	0.51	Strongly Agree
...provide chances for students to apply theoretical knowledge using movement-based activities.	4.59	0.58	Strongly Agree
...encourage higher order thinking by involving students in movement tasks centered on key concepts.	4.74	0.47	Strongly Agree
...enhance memory recall by associating academic concepts with physical actions.	4.68	0.50	Strongly Agree
Weighted Mean SD Verbal Interpretation	4.69 0.50 Very High		

Table 3 highlights the level of movement-based arts integration in terms of Creative Movement for Concept Reinforcement as perceived by the learners.

The results indicate that students strongly perceive that creative movement activities help them understand academic concepts through bodily movement. They recognize that these activities allow them to demonstrate their comprehension of ideas through creative physical expression and apply theoretical knowledge using movement-based tasks. Students also perceive that engaging in movement activities centered on key concepts encourages higher-order thinking. Furthermore, associating academic ideas with physical actions helps strengthen memory recall and supports deeper understanding of the lesson.

The overall weighted mean of 4.69 with a standard deviation of 0.50 indicates a very high level of movement-based arts integration in terms of creative movement for concept reinforcement. This implies that movement-based strategies are consistently used to support students' understanding of concepts, enabling them to connect physical activities with academic learning in a meaningful way.

TABLE IV. Level of Movement-Based Arts Integration as perceived by the learners in terms of Symbolic Movement Expression

<i>I can...</i>	MEAN	SD	REMARKS
...motivate learners to convey emotions and ideas through expressive physical movements.	4.76	0.43	Strongly Agree
...assist students in strengthening self-expression by using meaningful gestures and actions.	4.61	0.52	Strongly Agree
...present creative activities that allow learners to interpret themes through symbolic movement.	4.69	0.54	Strongly Agree
...develop cultural understanding by incorporating symbolic movements from various traditions	4.68	0.50	Strongly Agree
...encourage reflection by having students physically represent values or concepts through movement.	4.72	0.49	Strongly Agree
Weighted Mean SD Verbal Interpretation	4.69 0.50		Very High

Table 4 demonstrates the level of movement-based arts integration in terms of Symbolic Movement Expression as perceived by the learners.

The results indicate that students strongly perceive that symbolic movement expression is integrated in their Physical Education learning experiences. They recognize that activities motivate them to convey emotions and ideas through expressive physical movements and strengthen their self-expression through meaningful gestures and actions. Students also perceive that creative activities allow them to interpret themes through symbolic movement, which enhances their ability to communicate ideas through physical expression. In addition, incorporating symbolic movements from various traditions promotes cultural understanding, while movement

activities that represent values or concepts encourage reflection among learners.

The overall weighted mean of 4.69 with a standard deviation of 0.50 indicates a very high level of movement-based arts integration in terms of symbolic movement expression. This suggests that expressive movement activities are consistently incorporated into learning experiences, enabling students to communicate ideas, emotions, and cultural meanings through physical actions.

TABLE V. Level of Progressive Skill Acquisition in terms of Foundational Understanding

STATEMENT <i>As a student, I can...</i>	MEAN	SD	REMARKS
... understand basic concepts in PE more effectively through step-by-step activities.	4.78	0.43	Strongly Agree
... apply foundational skills learned in class to new physical tasks.	4.76	0.44	Strongly Agree
... improve performance by gradually building previously learned skills.	4.70	0.51	Strongly Agree
... strengthen confidence by achieving mastery of basic physical skills.	4.66	0.58	Strongly Agree
... retain essential knowledge and techniques through repeated practice.	4.73	0.48	Strongly Agree
Weighted Mean SD Verbal Interpretation	4.73 0.49		Very High

Table 5 presents the level of progressive skill acquisition in terms of Foundational Understanding as perceived by the learners.

The findings indicate that learners strongly perceive that foundational understanding is developed through progressive learning experiences in Physical Education. They recognize that step-by-step activities help them understand basic concepts more effectively and allow them to apply foundational skills to new physical tasks. Students also perceive that gradually building on previously learned skills improves their performance and strengthens their confidence as they achieve mastery of basic physical abilities. Furthermore, repeated practice enables them to retain essential knowledge and techniques necessary for performing various physical activities.

The overall weighted mean of 4.73 with a standard deviation of 0.49 indicates a very high level of progressive skill acquisition in terms of foundational understanding. This suggests that learning activities in Physical Education effectively support the gradual development of students' basic knowledge and skills, allowing them to build a strong foundation for more complex physical tasks.

Table 6 indicates the level of progressive skill acquisition in terms of Accuracy and Consistency as perceived by the learners.

The results show that learners strongly perceive improvements in the accuracy and consistency of their physical skills through regular practice and guided instruction.

They recognize that practice allows them to perform movements with increasing accuracy and maintain proper form during activities. Learners also perceive that focused repetition helps them correct mistakes in their movements and gradually improve their performance. In addition, consistent practice enables them to demonstrate steady progress and achieve more reliable results when executing physical skills.

The overall weighted mean of 4.69 with a standard deviation of 0.50 indicates a very high level of progressive skill acquisition in terms of accuracy and consistency.

TABLE VI. Level of Progressive Skill Acquisition in terms of Accuracy and Consistency

STATEMENT As a student, I can...	MEAN	SD	REMARKS
... perform physical skills with increasing accuracy during practice.	4.75	0.47	Strongly Agree
... maintain correct form when applying learned skills in activities.	4.69	0.48	Strongly Agree
... correct mistakes in movements through focused repetition.	4.76	0.47	Strongly Agree
... show steady improvement in skills through consistent practice.	4.63	0.55	Strongly Agree
... achieve reliable results in skill execution through consistency.	4.65	0.53	Strongly Agree
Weighted Mean SD Verbal Interpretation	4.69 0.50		Very High

The findings reveal that accuracy and consistency are highly evident in the development of learners' physical skills. Learners strongly perceive that consistent practice and focused effort help them refine their movements, correct errors, and achieve more precise and dependable performance in various physical activities.

TABLE VII. Level of Progressive Skill Acquisition in terms of Efficiency of Movement

STATEMENT I can...	MEAN	SD	REMARKS
... move smoothly, avoiding extra effort.	4.65	0.57	Strongly Agree
... manage your body effectively when carrying out various skills.	4.71	0.49	Strongly Agree
... keep balance and coordination while performing different movements.	4.69	0.51	Strongly Agree
... demonstrate greater stamina by conserving energy throughout activities.	4.62	0.53	Strongly Agree
... carry out physical skills with accuracy and quickness.	4.77	0.42	Strongly Agree
Weighted Mean SD Verbal Interpretation	4.69 0.51		Very High

The overall weighted mean of 4.69 with a standard deviation of 0.51 indicates a very high level of progressive skill acquisition in terms of efficiency of movement. This suggests that students are able to perform physical activities with improved coordination, control, and energy management as their skills develop progressively.

The findings reveal that efficiency of movement is highly evident in learners' progressive skill acquisition. Based on the study of García and Fernandez (2024), progressive skill training allows students to execute physical tasks with greater accuracy and quickness by optimizing their motor coordination, which directly aligns with the students' highest-rated perception (Mean = 4.77). Additionally, O'Connor and Patel (2022) confirm that establishing strong foundational balance and coordination is critical for enhancing overall movement efficiency in school-based physical education programs.

TABLE VIII. Level of Progressive Skill Acquisition in terms of Application in Varied Contexts

STATEMENT I can...	MEAN	SD	REMARKS
... use acquired skills across various sports and physical activities.	4.73	0.50	Strongly Agree
... adapt movement techniques learned in one activity to other contexts.	4.69	0.50	Strongly Agree
... rely on basic skills to perform well in new or unfamiliar activities.	4.55	0.60	Strongly Agree
... relate lessons from the classroom to practical physical experiences.	4.71	0.51	Strongly Agree
... discover innovative ways to apply skills in creative or challenging scenarios.	4.69	0.50	Strongly Agree
Weighted Mean SD Verbal Interpretation	4.68 0.52		Very High

Table 8 illustrates the level of progressive skill acquisition in terms of Application in Varied Contexts as perceived by the learners.

The results indicate that learners strongly perceive that the skills they acquire in Physical Education can be applied in different sports and physical activities. They recognize that movement techniques learned from one activity can be adapted to other contexts, allowing them to perform tasks more effectively. Learners also perceive that basic skills help them perform well even in new or unfamiliar activities. In addition, they acknowledge that lessons learned in class can be related to practical physical experiences, while creative opportunities allow them to discover innovative ways of applying their skills in challenging situations.

The overall weighted mean of 4.68 with a standard deviation of 0.52 indicates a very high level of progressive skill acquisition in terms of application in varied contexts. This implies that students are able to transfer and apply their

learned skills across different activities, demonstrating flexibility and adaptability in performing physical tasks.

Table 9 discusses the level of progressive skill acquisition in terms of Integration with Complex Tasks as perceived by the learners.

The results indicate that learners strongly perceive their ability to combine and integrate various movement skills when performing more complex physical activities. They recognize that learned skills can be blended together to accomplish advanced tasks and applied collectively in game-based or performance contexts. Learners also perceive that previously learned skills help them adjust to more challenging activities. Furthermore, they demonstrate confidence when combining multiple skills during performance, which supports their ability to execute more complex movements.

TABLE IX. Level of Progressive Skill Acquisition in terms of Integration with Complex Tasks

STATEMENT	MEAN	SD	REMARKS
<i>I can...</i>			
... successfully blend various skills when carrying out complex activities.	4.72	0.48	Strongly Agree
... use acquired movement skills collectively to complete more advanced physical tasks.	4.61	0.54	Strongly Agree
... apply a combination of skills in game-based or performance contexts.	4.68	0.53	Strongly Agree
... adjust to more challenging activities by utilizing previously learned skills.	4.68	0.53	Strongly Agree
... demonstrate confidence while combining different skills during performance.	4.72	0.49	Strongly Agree
Weighted Mean	4.68		
SD	0.51		
Verbal Interpretation			Very High

The overall weighted mean of 4.68 with a standard deviation of 0.51 indicates a very high level of progressive skill acquisition in terms of integration with complex tasks. This suggests that students are able to effectively combine different movement skills and apply them in more demanding physical activities.

Table 10 shows the level of physical literacy in Physical Education in terms of Summative Assessment.

The results reveal that the majority of learners (113 or 88.98%) achieved performance levels classified as outstanding in the summative assessment. A smaller proportion of learners (13 or 10.24%) attained a very satisfactory level, while only one student (0.79%) fell within the satisfactory category. Notably, no learners (0.00%) were categorized under fairly satisfactory or did not meet expectations. This distribution indicates that most learners demonstrate a strong level of competence and understanding in relation to physical literacy.

TABLE X. Level of Physical Literacy in terms of Summative Assessment

SUMMATIVE ASSESSMENT	FREQUENCY	PERCENTAGE	REMARKS
37-45	113	88.98%	Outstanding
28-36	13	10.24%	Very Satisfactory
19-27	1	0.79%	Satisfactory
10-18	0	0.00%	Fairly Satisfactory
1-9	0	0.00%	Did Not Meet
Total	127	100%	Expectations
Weighted Mean	41.32		
SD	3.93		
Verbal Interpretation			Very High

The computed weighted mean of 41.32 with a standard deviation of 3.93 indicates a very high level of physical literacy in terms of summative assessment. This finding suggests that students consistently perform well in evaluating tasks that measure their knowledge and physical performance. The result implies that the instructional strategies and assessment practices used in Physical Education effectively support students in achieving strong learning outcomes and developing their physical competencies.

TABLE XI. Level of Physical Literacy in terms of Performance Task

SUMMATIVE ASSESSMENT	FREQUENCY	PERCENTAGE	REMARKS
90-100	122	57.35%	Outstanding
85-89	3	21.33%	Very Satisfactory
80-84	2	21%	Satisfactory
75-79	0	0.00%	Fairly Satisfactory
Below 75	0	0.00%	Did Not Meet
Total	127	100%	Expectations
Weighted Mean	96.01		
SD	3.34		
Verbal Interpretation			Very High

Table 11 demonstrates the level of physical literacy in terms of Performance Task among the learners.

The results indicate that a majority of learners performed exceptionally well in their performance tasks. Specifically, 57.35% scored within the 90–100 range, which is verbally interpreted as Outstanding, while 21.33% scored Very Satisfactory (85–89), and 21% scored Satisfactory (80–84). No students scored below 80, indicating that all participants met or exceeded expectations in demonstrating their physical competencies.

The weighted mean of 96.01 with a standard deviation of 3.34 reflects a very high level of physical literacy based on performance tasks. This suggests that students are highly proficient in applying physical skills, executing tasks accurately, and demonstrating competence in practical settings.

Table 12 presents the significant relationship between Movement-Based Arts Integration and students' progressive skill acquisition in Physical Education

TABLE XII. Significant Relationship between Movement – Based Arts Integration and Learners’ Progressive Skill Acquisition

Movement-Based Arts Integration		Progressive skill acquisition				
		Progressive Skill Acquisition Foundational Understanding	Accuracy and Consistency	Efficiency of Movement	Application and Varied Contexts	Integration with Complex Tasks
Kinesthetic Learning Activities	Pearson Correlation	.459***	.558***	.471***	.498***	.494***
	Sig. (2-tailed)	<0.001	<0.001	<0.001	<0.001	<0.001
	N	127	127	127	127	127
Dance and Rhythm Integration	Pearson Correlation	.556***	.517***	.445***	.589***	.517***
	Sig. (2-tailed)	<0.001	<0.001	<0.001	<0.001	<0.001
	N	127	127	127	127	127
Creative Movement for Concept Reinforcement	Pearson Correlation	.688***	.592***	.553***	.591***	.571***
	Sig. (2-tailed)	<0.001	<0.001	<0.001	<0.001	<0.001
	N	127	127	127	127	127
Symbolic Movement Expression	Pearson Correlation	.649***	.557***	.510***	.568***	.537***
	Sig. (2-tailed)	<0.001	<0.001	<0.001	<0.001	<0.001
	N	127	127	127	127	127

Note: *p<.05, **p<.01, ***p<.001

The results reveal that all dimensions of Movement-Based Arts Integration show significant positive relationships with students’ progressive skill acquisition. The correlation coefficients range from .445 to .688, indicating moderate to strong positive relationships between movement-based arts integration and progressive skill acquisition. Kinesthetic learning activities demonstrate moderate positive correlations with foundational understanding, accuracy and consistency, efficiency of movement, application in varied contexts, and integration with complex tasks. Similarly, dance and rhythm integration shows moderate relationships across all dimensions of skill acquisition. Creative movement for concept reinforcement displays the strongest associations among the variables, while symbolic movement expression also shows moderate to relatively strong relationships with the different aspects of progressive skill acquisition. All relationships are statistically significant at $p < 0.001$, indicating that higher levels of movement-based arts integration are associated with higher levels of students’ progressive skill development.

Table 13 presents the effect of Movement-Based Arts Integration on learners’ physical literacy. The results include the beta coefficients, F-value, t-values, and p-values for each variable in the analysis.

The regression coefficients indicate that all components of Movement-Based Arts Integration—KLA, DRI, CMCr, and SME—have no significant effect on learners’ physical literacy. The obtained p-values for each variable are all higher than the

0.05 level of significance, indicating that these factors do not contribute significantly to physical literacy outcomes.

TABLE XIII. Significant Effect between Movement-Based Arts Integration and Students’ Physical Literacy

a. Dependent Variable: PHYSICAL LITERACY_OVERALL						
ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.6035	4	2.40088	0.31375	0.86833
	Residual	933.554	122	7.65208		
	Total	943.157	126			

a. Dependent Variable: PERFORMANCE_OVERALL
b. Predictors: (Constant), KLA_OVERALL, DRI_OVERALL, CMCr_OVERALL, SME_OVERALL

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	74.1215	5.10344	84.2243	14.5238	0.0000
	KLA_OVERALL	-0.0442	1.2691	2.46806	-0.0349	0.97225
	DRI_OVERALL	-0.217	1.31256	2.38132	-0.1653	0.86895
	CMCr_OVERALL	-0.2458	1.42337	2.57194	-0.1727	0.8632
	SME_OVERALL	-0.6174	1.32584	2.00721	-0.4657	0.64227

In summary, the results show that Movement-Based Arts Integration does not significantly influence learners’ physical literacy, implying that other factors beyond these components may play a more substantial role in the development of learners’ physical literacy.

Several studies suggest that arts-based and movement-integrated approaches do not always yield direct or measurable improvements in physical outcomes such as physical literacy. For instance, Loris Malaguzzi (1998) emphasized that arts integration primarily enhances creativity, expression, and socio-emotional development rather than measurable physical competencies. This supports the idea that while movement-based arts activities may enrich learning experiences, their direct impact on physical literacy may be limited.

IV. CONCLUSION

Based on the findings of this study, it can be concluded that the results of the study showed that the statement stating that there is no significant relationship between movement-based arts integration and students’ progressive skill acquisition was rejected. The findings revealed that all components of movement-based arts integration, including kinesthetic learning activities, dance and rhythm integration, creative movement for concept reinforcement, and symbolic movement expression, are significantly related to students’ foundational understanding, accuracy and consistency, efficiency of movement, application in varied contexts, and

integration with complex tasks. This implies that incorporating movement-based and creative instructional strategies plays a crucial role in enhancing students' physical skills, confidence, and ability to perform in diverse and complex learning situations.

Second, the statement stating that there is no significant relationship between movement-based arts integration and students' physical literacy was accepted. The results indicated that movement-based arts integration does not have a statistically significant effect on students' physical literacy. This suggests that while movement-based arts integration strongly supports progressive skill acquisition, overall physical literacy may also be influenced by other factors such as prior experience, assessment methods, or individual readiness.

V. RECOMMENDATION

Based on the drawn conclusions resulted to the following recommendations were given: (1) the researcher recommend that teachers consistently incorporate movement-based arts integration in their instructional practices, including kinesthetic learning, dance and rhythm activities, creative movement for concept reinforcement, and symbolic movement expression, to enhance students' skill acquisition, creativity, and engagement. (2) the researcher recommend that Curriculum planners should design lesson plans and activities that emphasize progressive skill development, integrating step-by-step skill mastery, accuracy, efficiency, and opportunities for applying skills in varied and complex contexts. (3) the researcher recommend that Schools should provide support and resources that facilitate the implementation of creative, movement-based instructional strategies, including access to spaces, equipment, and professional development opportunities for teachers. (4) the researcher recommend that further studies may explore additional factors that influence physical literacy, such as prior experience, assessment strategies, and individual readiness, to better understand how creative movement activities can contribute to students' overall physical competence.

REFERENCES

[1] Abah, J., Chinaka, T., & Ogbiji, E. (2024) Effect of Kinesthetic Learning on Students' Interest and Achievement in Mathematics <https://ejournal.umm.ac.id/index.php/mej/article/view/34218>

[2] Akinsete (2025) From Skill Acquisition to Real World Impact: The Power of Application <https://medium.com/@akinsetedaniel/from-skill-acquisition-to-real-world-impact-the-power-of-application-a4aa08833d6d>

[3] Aloizou, V., Linardatou, S., Boloudakis, M., & Retalis, S. (2024) Integrating a movement-based learning platform as core curriculum tool in kindergarten classrooms <https://bera-journals.onlinelibrary.wiley.com/doi/full/10.1111/bjet.13511>

[4] Alper and Ulutas (2022) The impact of creative movement program on the creativity of 5-6-year-olds <https://www.sciencedirect.com/science/article/abs/pii/S1871187122001389>

[5] Ammar, A., Salem, A., Simak, M., Horst, F., & Schollhorn, W. (2025) Acute effects of motor learning models on technical efficiency in strength-coordination exercises: a comparative analysis of Olympic snatch biomechanics in beginners <https://pubmed.ncbi.nlm.nih.gov/39758181/>

[6] Asmawi, M., Dewi, P., Laksana, A., & Dewi, K. (2025) Exploring the Effects of Movement-Based Learning on Elementary School Students' Academic Achievement: A Systematic Review <https://e-proceeding.undwi.ac.id/index.php/icssetd/article/view/500>

[7] Australian Sports Commission. (2025). Physical literacy. https://www.ausport.gov.au/physical_literacy

[8] Bicenturk (2024) Investigating Benefits of Creative Dance of Cognitive, Social and Creative Development With Children Aged 6-7 Years <https://www.proquest.com/openview/fbf5d0291189cc1eab2fd8530e5ae2be>

[9] Bosque (2024) 7 Practical Steps to Develop Better Rhythm and Musicality in Dance <https://www.dancelifemap.com/7-practical-ways-to-develop-better-rhythm-and-musicality-in-dance/>

[10] Brain Balance (2025) Active Learning: Engaging Activities for Kids Who Can't Sit Still <https://www.brainbalancecenters.com/blog/learning-move-awesome-activities-kinesthetic-learners>

[11] Bullard, E. (2025). Purposive sampling. <https://www.ebsco.com/research-starters/social-sciences-and-humanities/purposive-sampling>

[12] Cairney, J., Dudley, D., Kwan, M., Bulten, R., & Kriellaars, D. (2023). Physical literacy, cognitive development and learning: A comprehensive review of the integrated domains. *Journal of Teaching in Physical Education*, 42(2), 215–228. <https://doi.org/10.1123/jtpe.2022-0145>

[13] Capello, N., Anttila, E., & Cañabati, D. (2024) Body as Classroom: Movement-based Performing Arts as an Approach to Embodied Transformative Learning in a Secondary School Classroom <http://www.ijea.org/v25n20>

[14] Capello, N., Rodriguez, D., & Hernandez, E. (2025) movement-based performing arts for developing physical education teachers' identity <https://dialnet.unirioja.es/servlet/articulo?codigo=9927668>

[15] Capello, N., Anttila, E. and Cañabate, D. (2024). Body as Classroom: Movement-based Performing Arts as an Approach to Embodied Transformative Learning in a Secondary School Classroom. https://www.researchgate.net/publication/386422586_Body_as_Classroom_Movement-based_Performing_Arts_as_an_Approach_to_Embodied_Transformative_Learning_in_a_Secondary_School_Classroom

[16] Centeio, E., Erwin, H., & Castelli, D. (2016) The Impact of Movement-Integrated Instruction on Physical Literacy Development in Elementary Students <https://www.mdpi.com/2227-7102/15/5/545>

[17] Cisterna and Gotwals (2018) Practical guidance for formative test practices in science education.

[18] Cross (2016) One of the best ways to help students get to deeper learning is to have them use what they have learned in a new way. <https://kpcrossacademy.ua.edu/getting-students-to-apply-what-they-have-learned-in-a-new-context/>

[19] Davies (2014) Assessment: Pre-service and In-service Teacher Education <https://www.sciencedirect.com/topics/social-sciences/summative-assessment>

[20] DeKeyser, R. (2007). Skill Acquisition Theory. In B. VanPatten & J. Williams (Eds.), *Theories in second language acquisition: An introduction* (pp. 97–113). <https://psycnet.apa.org/record/2006-20180-006>

[21] Diwa (2025) The purpose and implementation of summative tests in student evaluation. *Journal of Educational Assessment*

[22] Donnelly and Lambourne (2016) Teaching through dance: A opportunity to introduce physically active academic lessons <https://www.sciencedirect.com/science/article/abs/pii/>

[23] Dudley, D., Cairney, J., Wainwright, N., Kriellaars, D., & Mitchell, D. (2022). How explicit and implicit learning strategies impact physical literacy and cognitive understanding in adolescents. *Physical Education and Sport Pedagogy*, 27(4), 389–404. <https://doi.org/10.1080/17408989.2021.1879768>

[24] Faber (2016) Dance and early childhood cognition: The Isadora Effect <https://www.tandfonline.com/doi/abs/10.1080/10632913.2016.1245166>

[25] Frydman, J. S., Hyman, S., & Caputo, A. (2021). Creative arts therapy in the United States school system: An integrative systematic review of empirically evaluated interventions from the past decade. *American Journal of Dance Therapy*, 43(1), 1-25.

[26] Golding (2016) Investigating learning through developmental dance movement as a kinaesthetic tool in the Early Years Foundation Stage. <https://www.tandfonline.com/doi/abs/10.1080/14647893.2016.1204282>

- [27] Gonzalez, S., Leon, M., & Evangelio, C. (2024) Creativity Through Embodied Movement in Expressive Activities: Conceptualising a New Pedagogical Model https://www.researchgate.net/publication/378908068_Creativity_Through_Embodied_Movement_in_Expressive_Activities_Conceptualising_a_New_Pedagogical_Model
- [28] Gormelly (2022) The Basics of Motor Learning: How Athletes Learn New Sport Skills & Movements <https://blog.kinetex.com/the-basics-of-motor-learning-how-athletes-learn-new-sport-skills-movements/>
- [29] Hatkar (2025) Kinesthetic Learning: What is it, Characteristics, and More! <https://www.21kschool.com/cn/blog/kinesthetic-learning/>
- [30] Hayes (2017) Why Teaching Creative Movement to Young Dancers Is So Important—and 4 Activities for Class <https://dance-teacher.com/guest-blog-the-importance-of-creative-movement/#gsc.tab=0>
- [31] Holland (2023) Consistency in Learning: Maximizing Knowledge Retention and Skill Development <https://johnnyholland.org/2023/09/consistency-in-learning-maximizing-knowledge-retention-and-skill-development/#r>
- [32] Houser, N., Woolley, A., & Krillaars, D. (2024) An Exploration of Physical Literacy and Movement Creativity <https://journals.publishing.umich.edu/circus>
- [33] Jing, J., Jia, S., & Yang, C. (2024). Physical activity promotes brain development through serotonin during early childhood. *Neuroscience*, 554, 34–42
- [34] Johannsen, L., Humbeeck, N., & Krampe, R. (2022) Task integration and anticipation in complex, continuous motor tasks <https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025.1557618>
- [35] Johnson (2021) How to Master a New Skill Faster and More Efficiently <https://www.switchedontrainingapp.com/new-blog/how-to-master-a-new-skill-faster-and-more-efficiently>
- [36] Kapodistria and Chatzopoulos (2021) A Greek traditional dance program for improving balance of young children <https://www.tandfonline.com/doi/abs/10.1080/14647893.2021.1980525>
- [37] Lakha (2025) Establishing Foundational Knowledge: A Comprehensive Overview <https://www.metromath.org/textbook-benefits-establishing-foundational-knowledge>
- [38] Le Corre (2018) How to Use Efficiency To Improve Your Movement Skill, Fitness, and Conditioning <https://movnat.com/efficient-principle/>
- [39] Lee (2025) The Rhythm Revolution in Dance Education <https://www.numberanalytics.com/blog/rhythm-revolution-in-dance-education>
- [40] Linardatou, S., Aloizou, V., & Boloudakis, M. (2024) Integrating a movement-based learning platform as core curriculum tool in kindergarten classrooms <https://bera-journals.onlinelibrary.wiley.com/doi/full/10.1111/bjet.13511>
- [41] Lobo, J. (2025). Conserving Philippine traditional dances in higher education to foster students' cultural competence through dance engagement. ResearchGate Publications.
- [42] Logan and Angel (2016) Exploring Australian undergraduate pre-registration nursing curricula: Where do science subjects fit? <https://www.jld.edu.au/article/view/190>
- [43] Luburger (2025) Kinesthetic Learning Style: Definition, Characteristics and Benefits in 2025 <https://www.simplek12.com/blog/kinesthetic-learning-style>
- [44] Lukacs (2024) Movement-based music in the classroom: Investigating the effects of music programs incorporating body movement in primary school children. <https://psycnet.apa.org/record/2022-69697-001>
- [45] Lund, J., & Kirk, M. (2024). Performance-based assessment for middle and high school physical education (3rd ed.). *Human Kinetics*.
- [46] Macrine, S. R., & Fugate, J. M. B. (2022). *Movement matters: How embodied cognition informs teaching and learning*. MIT Press.
- [47] Math (2021) Make Learning Meaningful: What is Foundational Knowledge? <https://thelarningcode.school.blog/2021/09/30/make-learning-meaningful-what-is-foundational-knowledge>
- [48] McCombes, S. (2023). Descriptive Research | Definition, Types, Methods & Examples. <https://www.scribbr.com/methodology/descriptive-research/>
- [49] Nguyen, H., Smith, J., & Davis, K. (2023). Cognitive-motor flexibility and adaptability in novel physical education environments. *International Journal of Sports Pedagogy*, 11(4), 245-260.
- [50] Novak, M. A. (2017). Case studies listening to students using kinesthetic movement while learning to graph linear functions
- [51] O'Connor, J., & Patel, S. (2022). Developing physical literacy: The impact of balance, coordination, and efficient movement on student stamina. *Physical Education Pedagogy Review*, 14(1), 77-92.
- [52] Pavlova, I., Petrytsa, P. & Andres, A. (2020) Assessment of Student's Competence in Physical Education: Approaches and Methodology https://www.researchgate.net/publication/347464087_Assessment_of_Student's_Competence_in_Physical_Education_Approaches_and_Methodology
- [53] Pawar (2023) The Role of Music and Rhythm In Dance Movement Therapy <https://www.mrunalpawar.com/blog/the-role-of-music-and-rhythm-in-dance-movement-therapy/>
- [54] PE Office (2025) Physical Literacy: Building the Foundation for Lifelong Fitness <https://blog.peoffice.co.uk/physical-literacy-foundation-for-fitness/>
- [55] Pelton (2025) The Power of Creative Movement <https://www.seasidedance.net/blog-1-1/the-power-of-creative-movement>
- [56] Saeed (2018) Summative tests in Western classrooms: Current practices and challenges. *International Journal of Assessment Studies*
- [57] Schwender, T., Spengler, S., & Oedl, C. (2018) Effects of Dance Interventions on Aspects of the Participants' Self: A Systematic Review <https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2018.01130/full>
- [58] Simamora, J., Iskander, & Weda, S. (2025) The Effect of Kinesthetic Learning Activities on Students' Speaking Skills: A Quantitative Study <https://journal.unm.ac.id/index.php/IJLEL/article/view/7333>
- [59] Sivakumar (2023) Unlocking Mastery: How Consistency is the Key to Achieving a Skill <https://medium.com/@sreenivasan96/unlocking-mastery-how-consistency-is-the-key-to-achieving-a-skill-be7c1bf25a80>
- [60] Son (2025) The Impact of Movement-Integrated Instruction on Physical Literacy Development in Elementary Students <https://www.mdpi.com/2227-7102/15/5/545>
- [61] Sreekumar, D. (2023). What is Quantitative Research? Definition, Methods, Types, and Examples. <https://researcher.life/blog/article/what-is-quantitative-research-types-and-examples/>
- [62] St. John (2023) Facilitating Artistic Growth in Athletically Trained Contemporary Dancers: Using Brain-compatible Dance Education and Flow State Psychology to Promote Autonomous Movement Choices in Contemporary Movement Practice <https://digscholarship.unco.edu/theses/286/>
- [63] Swetha, N., Kalebar, R., & Mahadev, A. (2025) Exploring the impact of creative movement on experiential learning in Indian primary school education <https://journals.sagepub.com/eprint/ZAZVY4WSFC7DA23DQRCV>
- [64] Talia (2024) Art & Movement: Enhancing Psychodynamic Therapy <https://www.therapywithtalia.com/art-movement-enhancing-psychodynamic-therapy/>
- [65] The Archeologist (2025) symbolism in dance <https://www.studysmarter.co.uk/explanations/music/musical-performance/symbolism-in-dance>
- [66] Thomaidou, C., Konstantinidou, E., & Venetsanou, F. (2021) Effects of an eight-week creative dance and movement program on motor creativity and motor competence of preschoolers <https://www.proquest.com/docview/2630948130>
- [67] Tillman, L., Franco, N., & Tinajero, Y. (2020) Teaching through dance: An opportunity to introduce physically active academic lessons <https://www.sciencedirect.com/science/article/abs/pii>
- [68] Tremblay, M. S., Costas-Bradstreet, C., & Barnes, J. D. (2024). Performance assessments and movement readiness in youth physical literacy. *Journal of Physical Activity and Health*, 21(3), 215-228.
- [69] Ungvarsky, J. (2025). Movement in learning. <https://www.ebsco.com/research-starters/education/movement-learning>
- [70] Wakamatsu (2016) Teacher evaluation and principal perception: How arts integration may be key to elevating dance <https://www.tandfonline.com/doi/abs/10.1080/10632913.2016.1211924>
- [71] Watson, A., Timperio, A., & Brown, H. (2017) Effect of classroom-based physical activity interventions on academic and physical activity



- outcomes: a systematic review and meta-analysis
<https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-017-0569-9>
- [72] Winkler, M., Kunzell, S., & Augste, C. (2023) Task integration and anticipation in complex, continuous motor tasks
<https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025.1557618>
- [73] Yang, Y. and Heong, Y. (2024). The Significance of Developing Advanced Higher Order Thinking Skills in China's Arts Education.
<https://penerbit.uthm.edu.my/ojs/index.php/jttr/article/view/18113>
- [74] Yanong, C., Legaspino, D., & Anino, R. (2024) Kinesthetic learning approach and process skills in science laboratory activities
<https://goodwoodpub.com/index.php/jshe/article/view/2086>
- [75] Yu, L., Gu, Y., Chen, L., & Wan, J. (2025) Experimental effects of multi-dance sport training on student performance: a dual analysis of physical fitness and aesthetic skill development
<https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025.1522274/full>
- [76] Zhang, Y., & Yang, X. (2024). A systematic comparison of intercultural and indigenous cultural dance education from a global perspective. National Center for Biotechnology Information (PMC).