

Spatial Awareness in Dance Among High School Students

Anabelle Torrejos Japay,LPT, Bryan Cancio,EdD*

anabelle.japay@gmail.com, bryan.cancio@hcdc.edu.ph

Holy Cross of Davao College, Graduate School, Davao City 8000, Philippines

Abstract

To execute choreography with precision, creativity, and emotion, a dancer must be able to see, understand, and control the space around them in addition to their own body movements. Spatial awareness is the term for this ability. This study used a quantitative and descriptive comparative approach to measure the degree of spatial awareness in dance among high school students. 30 high school respondents were the intended sample for this study, carried out at Davao City's private and public institutions. This study was anchored on the theory of Social Cognitive Theory by Albert Bandura which seeks to emphasize the importance of observational learning, modeling, and cognitive processes in shaping behavior. An adapted and modified survey questionnaire was used to collect the data for this study, the questionnaire passed through a reliability test resulting in a .91 Cronbach Alpha. Using Mean, the findings revealed that students perceived all indicators as moderate with dance training as the highest, followed by the urge to dance, body awareness, and social dance. Students' gender, dance experience, and spatial awareness did not differ significantly, according to the results of the ANOVA test; nevertheless, there was a significant difference between students' spatial awareness and age. Age-appropriate strategies that encourage complexity and foster the growth of the mind and body shall be taken into account to increase students' spatial awareness, dance lessons should be tailored to incorporate a range of exercises that prioritize proprioception, visualization, and movement exploration.

Keywords: spatial awareness; dance; experience; urge; body awareness; social dance.

1. Introduction

Space is a fundamental component to our cognition and behavior, as it surrounds us and affords us opportunities to function adaptively Ishikawa and Newcombe (2021). In the context of dance, awareness in space is a critical aspect that significantly contributes to the artistic expression and technical precision of a dancer's performance, in support to the idea of Ravn, S. (2016) the relationship between the body and space can be modified and changed, leading to a unique and dynamic performance. However, many students find it hard to understand where they are in the space when they dance, making it tough for them to move their bodies correctly within the dance area, based on Barzon (2022) understanding spatial formations and figures in the dance may be easy, but identifying the symmetries of reflection and rotation within it may be more challenging. As such, adjusting movements and changing one's awareness of the body may make it even harder to comprehend how the body relates to space when dancing Canavarro and Prieto (2018).

In the United States, there are only a few studies on spatial awareness, without the inner sense of

timing and accuracy, the injury rate would be a lot higher, and simple movements would require an enormous amount of cognitive energy Jovanović, S. et al (2020)) and dancers might be less careful in deciding what movements are safe, suggesting they may not always consider the risks Tarampi, et al (2014).

While dancers are expected to accurately orient and position themselves in space, In the Philippines, it has been found that dancers' previous injuries have been shown to result in decreased proprioceptive abilities in the injured area Bajar, J.V.P (2016). Otherwise known as kinesthesia, proprioception is your body's ability to sense movement, action, and location, poor proprioception is associated with an increased risk of injury and decreased postural balance control, especially in elderly individuals Sakai et al (2022).

Meanwhile, in Mindanao, many students learn to dance without a deep understanding of dance fundamentals or spatial awareness, influencing their character development leading to uncontrolled dancing behaviors Amrina, et al (2023) and struggling to execute movements accurately Temple (2020).

The need for a more sophisticated knowledge of how spatial awareness is created and enhanced in dance education is the root of the research gap in spatial awareness in dance. While previous research has recognized the value of spatial awareness, it has not thoroughly examined the pedagogical strategies, teaching techniques, and intervention strategies that specifically improve spatial awareness in dancers of all skill levels and genres. A major gap in dance education is the lack of comprehensive research into teaching methods and intervention techniques aimed at improving spatial awareness. If this lack of awareness is not addressed, dancers of all skill levels and styles could still have trouble with spatial awareness, which would limit their creative growth and raise their risk of harm. It is crucial to close this research gap to protect both the global dancers' welfare and the efficacy of dance instruction.

1.1 Statement of the Problem

This study aimed to describe the level of spatial awareness in dance among high school students. Specifically, it sought to answer to the following questions:

1. What is the profile of respondents in terms of:
 - 1.1 age;
 - 1.2 sex; and
 - 1.3 years of experience in dancing?
2. What is the level of spatial awareness in dancing in terms of:
 - 2.1 body awareness;
 - 2.2 social dancing;
 - 2.3 urge to dance; and
 - 2.4 dance training?
3. Is there any significant difference on the level of spatial awareness in dancing when analyzed across the profile of the respondents?

2. Methodology

This chapter presents the methods used in this study. These comprise the research design, research locale, research respondents and participants, and the research instrument.

2.1 Research Design

This study's quantitative research utilized a descriptive comparative approach. According to Williams, M. et al., (2022), quantitative research design is about quantities and measurement; how much something there is; how long something has been happening; or about explaining why something happened and possibly predicting if, or to what extent, it will happen in the future. Furthermore, a descriptive-comparative is considered a bridge between the research question asked and the research answer proposed by Keman, H. & Pennings, P. (2014). The approach and research design were chosen to systematically measure and examine numerical data pertaining to different aspects of spatial awareness in the setting of dancing. It

centered on important aspects including social dancing, bodily awareness, the need to dance, and dance training.

2.2 Research Locale

The study was conducted among high school students in private and public schools in Davao City. Davao City Division is the most prominent Division in Region XI. DepEd Davao City Division comprises three districts (District I, District II, and District III), and a District Supervisor head. The Division has supervised over 500 private & public schools, 348 of which are high school institutions.

2.3 Research Respondents

Thirty high school students in grades 7 through 12 from Davao City's private and public high schools participated in this study. A letter of intent to conduct the study was given to the school principal and advisers to ensure the respondents willingness to answer the survey as well to exercise data privacy.

2.4 Research Instrument

An adapted and modified questionnaire was used as the research instrument for this study that was distributed online and passed through reliability testing using the Cronbach's Alpha. Each of the 20 items in the questionnaire was scored on a 5-point scale, with 1 indicating very low, 2 low, 3 moderate, 4 high, and 5 very high. The demographic profile of the respondents was covered in the first section of the survey, while the level of spatial awareness in dance among high school students was explored in the second part with reference to body awareness, social dancing, the urge to dance, and dance training.

In order to obtain the samples that represented high school students, this study also relied on the gathering and analysis of structured data. Structured data is a sort of data that has been arranged into a prepared repository, typically a database. This was done for the purpose to address each element of the data for more efficient processing and analysis. The data was contained in a record or file's fixed field Ben Luckovich (2023).

The gathering of data was conducted through an online survey. The chosen respondents were asked first about the survey and gave their consent agreeing to participate before the researcher gave the Google form link containing the survey questionnaire. The respondents rated each item according to the given choices, which corresponded to their answers. The respondents were given not less than 10 minutes to fill in the survey. Once the survey was fully completed by all the respondents, the data was later analyzed along with the computation. Above all, the researcher followed the research protocols in surveying by including ethical considerations that were necessary for this study.

3. Result and Discussion

3.1 Profile of the Respondents

This section presents the profile of the respondents in terms of age, gender, and year of dance experience. Table 1 presents the respondent's profile, frequency, and percentage.

In terms of age, the result shows that 15 to 16 years old obtained the highest percentage of 53.3, while the lowest percentage is garnered by 19 and above with 13.3. This means that more than half of the respondents are around 15 to 16 years old.

The next profile variable is gender, it is categorized as male, female, and non-binary. The result shows that 50 percent of respondents are male, 43.3 percent are female, and 6.7 percent are non-binary.

The last profile variable is the year of dance experience of the respondents. It shows that 16 respondents have less than a year of dance experience, while 8 have 1 to 3 years of dance experience, 5

respondents have 7 or more years, and only 1 has 4 to 6 years of dance experience. Furthermore, the respondents tally a total of 30.

Table 1. Demographic Profile of the Respondents

Profile	Frequency	Percentage
1.1. Age		
13-14 years old	10	33.3%
15-16 years old	16	53.3%
19 and above	4	13.3%
Total	30	100%
1.2. Gender		
Female	13	43.3%
Male	15	50.0%
Non-binary	2	6.7%
Total	30	100.0%
1.3. Dance Experience		
less than a year	16	53.3%
1-3 years	8	26.7%
4-6 years	1	3.3%
7 or more years	5	16.7%
Total	30	100%

3.2 Level of Spatial Awareness in Dance among High School Students

The table below provides an overview of the spatial awareness in dance among high school students, which evaluates a number of factors such as body awareness, social dancing, the urge to dance, and dance training. In Table 2, the findings revealed an overall mean rating of 2.9, indicating a moderate level of spatial awareness in dance among the students. This indicates that the spatial awareness in dance of the students is moderately evident within the school environment. It implies that they have a fair awareness of where they are and how to move in the performance area, which probably allows them to handle choreography to some extent. This supports the idea of Temple, et al (2020) that students who engage in dance show improved spatial awareness and their ability to think creatively and their performance in dance.

The results of the research of four indicators that determined high school students' spatial awareness in dance showed that body awareness, which obtained the mean score of 3.1, is interpreted as moderate. This indicates that students' body awareness is moderately evident. Students implies to be somewhat aware of their body and how they hold themselves which makes it easier for them to control their movements.

This supports the idea of Youhong, et al (2019), that by improving body awareness, dancers can prevent injuries, improve dynamic alignment, enhance expressivity and artistry in their movements, and to have a better understanding of their body's structure, limits, and center of gravity, which leads to easier control over movements Baird (2022).

Next is social dance, with a mean rating of 2.9, which is interpreted as moderate, this indicates that high school students' exposure to social dance is moderately evident in school. Students entail that they can adapt dance movements easily based on available space and the proximity of other dancers even when the dance floor is crowded.

Table 2. Summary of the Level of Spatial Awareness in Dance of High School Students.

Indicators	Mean	Descriptive Level
Body Awareness	3.1	Moderate
Social Dance	2.9	Moderate
Urge to Dance	3.5	Moderate
Dance Training	3.6	Moderate
Overall Mean	2.9	Moderate

Aiding the idea of Temple (2020), that “experiential learning” in and through the arts specifically dancing benefits young students. Exposing the students in partner-based activities that promote connection and cooperation and introducing students to coordinated floor movement exercises that highlight closeness and direction change are very useful to the enhancement of their spatial skills.

Then followed by urge to dance of the students, considering the mean score of 3.5. which is interpreted as moderate. This means that the spatial awareness of students in dance in terms of their urge to dance is moderately evident in school. Students perceived that listening to a great track made them want to dance, and that imagining music in their minds made their bodies want to move which makes them enjoy dancing spontaneously in various locations.

This reinforces the statement of Colton, et al (2016) that dancers are uniquely aware of the relationship between their body and the environment, making them spatial experts, allowing them to perceive and interact with their environment more effectively Daskalakos (2019).

Lastly, is the students’ dance training, with a mean rating of 3.6 also interpreted as moderate, indicating that students’ dance training at school is moderately evident which implies that students had experience of formal training or joining dance practices, especially for school performances.

This result strengthens the idea of da, Silva, et al (2018), which states that dance in schools contributes to the motor and psychosocial development of students, stimulating new corporal abilities and improving general motor coordination, balance, and spatial awareness.

3.3 Test of Difference in the Level of Spatial Awareness in Dance among High School Students When Analyzed Across the Profile of the Respondents

Table 3 presents the test of difference in the level of spatial awareness in dance among high school students when analyzed across the profile of respondents.

In terms of age, it garners an F-value ∞ with a p-value of .00 which is lower than .05 in the level of significance, indicating that there is a significant difference. The null hypothesis is rejected, indicating that the level of spatial awareness in dance among high school students varies significantly across different age groups.

In terms of gender, it records an f-value of .66 with a p-value of .75 which is greater than .05 in the level of significance, indicating that there is no significant difference. It fails to reject the null hypothesis. Moreover, it indicates that the level of spatial awareness in dance of high school students between male, female, and non-binary is similar.

Additionally, in terms of dance experience, it marks an f-value of 6.56 with a p-value of 1.4 which is greater than .05 in the level of significance, indicating that there is no significant difference. The null hypothesis cannot be rejected, indicating that the level of spatial awareness in dance does not significantly vary among a number of years of experience among high school students from grade 7 to grade 12.

Table 3. Test of Difference in the Level of Spatial Awareness of High School Students when Analyzed Across the Demographic Profile of the Respondents.

Profile	F/t-value	p-value	Decision on Ho	Interpretation
Age	∞	.00	Reject Ho	Significant
Gender	.66	.75	Failed to reject Ho	Not Significant
Dance Experience	6.56	1.4	Failed to reject Ho	Not Significant

The findings reveal that, compared to gender and dance experience, age has a significant impact on high school students' level of spatial awareness in dance. Except for the student's age, their spatial awareness is only consistent in the demographic factors of their gender and experience in dance.

The result supports the idea of Temple, et al (2020) that the age of the student appears to have an impact on their spatial awareness in dance. Older observers were found to be less sensitive to targets with coarse structure (low spatial frequencies) compared to younger observers, in addition, the decline in visual spatial performance with age may be due to changes in cognitive processes, such as working memory and attention, as well as changes in brain structure and function Samantha, Farrell (2017). Since spatial awareness in dance appears to be a cognitive skill largely unrelated to an individual's gender and dance experience it can be inferred that spatial awareness is a universal ability that transcends gender differences, with both males and females including the non-binaries displaying comparable levels of proficiency. Further, while dance experience can enhance specific aspects of movement execution, fundamental spatial awareness seems to be influenced more by inherent cognitive abilities than by dance background.

4. Conclusion

The study revealed significant differences in high school students' spatial awareness in dancing between various age groups, with age having a major impact on this ability. This validates other studies that suggest aging-related changes in cognitive functions and brain anatomy lead to a loss in spatial awareness. Spatial awareness, on the other hand, did not significantly change based on gender or dance experience, indicating that this skill is more broadly developed in all genders and less influenced by past experience with dance.

5. Recommendation

Based on the study, age-appropriate spatial awareness instruction is included into dance education programs to help students become more proficient in this area. Teachers shall also keep stressing the value of spatial awareness in dance as a basic cognitive skill that is independent of gender and only little impacted by dance experience. Students will see their environment more clearly, comprehend how their body moves in space, and perform dance more effectively overall by doing this.

References

- Amado, D., Molero, P., Del Villar Álvarez, F., Tapia-Serrano, M. Á., & Sánchez-Miguel, P. A. (2020). Implementing a Teacher-Focused Intervention in Physical Education to Increase Pupils' Motivation towards Dance at School. *Sustainability*, 12(11), 4550. <https://doi.org/10.3390/su12114550>
- Baird, E. (2022). A qualitative investigation of what "Body awareness" means to dancers at a public Midwestern university. *Journal of Dance Education*, 22(2), 71–82. <https://doi.org/10.1080/15290824.2022.2037610>
- Barzon, L. (2022). The space of the body from classical to contemporary dance a matter of coloniality. In *The Space of the Body from Classical to Contemporary Dance A Matter of Coloniality*. <https://doi.org/10.30687/978-88-6969-675-6/010>
- Bonilla-Sánchez, J. C., Pérez-Tenemaza, J. B., Pinos-Carangui, E. P., & Urgilés-Calle, J. F. (2023, August 17). Folkloric dance and its incidence in the educational system. <https://lingcure.org/index.php/journal/article/view/2268>
- Canavarro, A. P., & Prieto, M. (2018). Desenvolvimento do sentido espacial através do uso de representações múltiplas no contexto da dança tradicional: uma experiência de ensino no 1.o ciclo de escolaridade. *Quadrante*, 27(2), 33–62. <https://doi.org/10.48489/quadrante.22969>
- Daskalakos, C. (2019). Exploring the role of dance in architectural education. *South African Journal of Higher Education*, 33(1). <https://doi.org/10.20853/33-1-2690>
- Farrell, S. (2017). Age-Related Changes in Visual Spatial Performance.
- Flynn, K. C., & Popp, J. (2016). An Experiential-Based learning method aiming to improve spatial awareness utilizing GPS, geocaching, and Geo-Selfies. *The Geography Teacher*, 13(2), 61–71. <https://doi.org/10.1080/19338341.2016.1176585>
- Gilbert, A. G. (2015). *Creative Dance for All Ages 2nd Edition*. Human Kinetics.
- Hatipoğlu, S. C., Kamaoğlu, M., Şensoy, G., & İnceoğlu, M. (2023). Body, dance and abstraction for spatial and structural comprehension in the first year of design education. *International Journal of Technology and Design Education*. <https://doi.org/10.1007/s10798-023-09821-1>
- Helegda, L. C. (2018, December 3). Contribuições da dança nos aspectos psicomotores em crianças de 6 a 8 anos de idade nas aulas de educação física: uma revisão da literatura. <https://repositorio.ufpe.br/handle/123456789/28970>
- Helmick, C. (n.d.). The relationships among proprioception, balance, and cognitive perception of body awareness in college students. Murray State's Digital Commons. <https://digitalcommons.murraystate.edu/honorstheses/190>
- Hopiani, A., & Djoehaeni, H. (2023). Identifikasi Strategi Guru dalam Mengembangkan Spatial Awareness Anak di PAUD. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 7(2), 2046–2058. <https://doi.org/10.31004/obsesi.v7i2.3606>
- Ishikawa, T., & Newcombe, N. S. (2021). Why spatial is special in education, learning, and everyday activities. *Cognitive Research: Principles and Implications*, 6(1). <https://doi.org/10.1186/s41235-021-00274-5>
- Janura, M., Procházková, M., Svoboda, Z., Bizovská, L., Jandová, S., & Konečný, P. (2019). Standing balance of professional ballet dancers and non-dancers under different conditions. *PLOS ONE*, 14(10), e0224145. <https://doi.org/10.1371/journal.pone.0224145>
- Ljubojević, A., Popović, B., Bijelić, S., & Jovanović, S. (2020). Proprioceptive training in dance sport: effects of agility skills. *Turkish Journal of Kinesiology*, 6(3), 109–117. <https://doi.org/10.31459/turkjin.742359>
- Marquis, J. M., & Metzler, M. W. (2017). Curricular space allocated for dance content in Physical Education Teacher Education Programs: A Literature review. *Quest*, 69(3), 384–400. <https://doi.org/10.1080/00336297.2016.1256223>
- Morris, T. H. (2019). Experiential learning – a systematic review and revision of Kolb's model. *Interactive Learning Environments*, 28(8), 1064–1077. <https://doi.org/10.1080/10494820.2019.1570279>
- Niyomsuk, S., & Polyiem, T. (2022). The application of TikTok in instructing Grade 7 students' Thai traditional dancing art. *Journal of Educational Issues*, 8(1), 480. <https://doi.org/10.5296/jei.v8i1.19800>
- Noguera, C., Carmona, D., Rueda, A., Fernández, R., & Cimadevilla, J. M. (2020). Shall we dance? Dancing modulates executive functions and spatial memory. *International Journal of Environmental Research and Public Health*, 17(6), 1960. <https://doi.org/10.3390/ijerph17061960>
- Putri, N. a. D., Kamaluddin, K., & Amrina, A. (2023). TikTok application on Achievement and learning Motivation at Influence Colleges. *Sciencetchno Journal of Science and Technology*, 2(1), 80–96. <https://doi.org/10.55849/sciencetchno.v2i1.62>
- Pytlík, G. (2020, March 17). Spatial awareness, your secret weapon as a dancer. *Delta.Dance*. <https://delta.dance/2020/03/spatial-awareness-dancers-secret-weapon/>
- Ravn, S. (2016). Dancing practices. *Body & Society*, 23(2), 57–82. <https://doi.org/10.1177/1357034x16677738>
- Romita, A., & Wanich-Romita, N. (2023). Functional awareness. In *Oxford University Press eBooks*. <https://doi.org/10.1093/oso/9780197586815.001.0001>
- Serkan Can Hatipoğlu, Melih Kamaoğlu, Gamze Şensoy, & Mehmet İnceoğlu. (2023). Body, dance and abstraction for spatial and structural comprehension in the first year of design education. *International Journal of Technology and Design Education*. <https://doi.org/10.1007/s10798-023-09821-1>
- Sakai, Y., Watanabe, T., Wakao, N., Matsui, H., Osada, N., Sugiura, T., Morita, Y., Kawai, K., Ito, T., & Yamazaki, K. (2022). Proprioception and geriatric low back pain. *Spine Surgery and Related Research*, 6(5), 422–432. <https://doi.org/10.22603/ssr.2021-0269>
- Tan, C. C., & Thiagarajan, P. (2020). Teaching Dance to Kindergarten Children through School Concert Dance Performance: A Self-Review. *Malaysian Journal of Performing and Visual Arts*, 6, 7–25. <https://vmis.um.edu.my/index.php/MJPVA/article/view/26460>
- Tarampi, M. R., Geuss, M. N., Stefanucci, J. K., & Creem-Regehr, S. H. (2014). A preliminary study on the role of movement imagery in spatial perception. In *Lecture Notes in Computer Science* (pp. 383–395). https://doi.org/10.1007/978-3-319-11215-2_27

- Temple, B. A., Bentley, K., Pugalee, D., Blundell, N., & Pereyra, C. M. (2020). Using Dance & Movement to Enhance Spatial Awareness Learning. *Athens Journal of Education*, 7(2), 153–168. <https://doi.org/10.30958/aje.7-2-2>
- Tondeur, J., Van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2016). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: a systematic review of qualitative evidence. *Educational Technology Research and Development*, 65(3), 555–575. <https://doi.org/10.1007/s11423-016-9481-2>
- Youhong 'Friendred' Peng, & Tanaka, A. (2019). *Body and Embodiment in Dance Performance*. University of the Arts London Research Online (University of the Arts London). <https://doi.org/10.1145/3347122.3359596>