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Book Name:	An Overview of Literature, Language and Education Research
Manuscript Number:	Ms_BPR_2825
Title of the Manuscript:	Improving machine learning application to evaluation of musical development in early childhood: Quantifying eye movement correspondent features simultaneously when capturing body motion during musical expression
Type of the Article	Book Chapter

PART 1: Review Comments

Compulsory REVISION comments	Reviewer's comment	Author's Feedback (Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.	This manuscript introduces a novel approach to assessing musical development in early childhood by integrating 3D motion capture, eye-tracking data, and machine learning models. It bridges the gap between traditional observational methods and modern data-driven approaches, providing a more objective and scalable way to evaluate children's musical expression. The manuscript's innovative use of machine learning has the potential to transform early childhood education by offering educators practical tools for personalized learning. To enhance its impact, some sections require improved clarity and structure to make complex technical details more accessible to a broader audience.	
Is the title of the article suitable? (If not please suggest an alternative title)	The current title is suitable but could benefit from being more concise and less technical, making it clearer and more engaging for a broader academic audience. Long titles can be cumbersome and make it harder for readers to quickly grasp the main point of the study. A more concise and impactful version could be: " Applying Machine Learning to Assess Musical Development in Early Childhood Using Eye and Body Movement Data. "	
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	The abstract could be improved by providing more details about the study's objective, key findings, and potential applications. Simplifying the methodology and emphasizing the significance of the results will make it more accessible and informative.	
Are subsections and structure of the manuscript appropriate?	Yes	
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.	This manuscript is scientifically robust and technically sound due to its rigorous methodology and use of advanced technologies, such as 3D motion capture and eye-tracking, to quantify musical development in early childhood. The integration of machine learning models, like MLP-NN and SVM, to classify and predict musical development is an innovative approach that enhances the objectivity and accuracy of the analysis. Additionally, the statistical methods applied, such as the three-way ANOVA, provide a strong foundation for analyzing complex data. The manuscript's reliance on well-established machine learning algorithms and statistical techniques demonstrates a high level of technical competence, contributing to its scientific validity.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	The references are relevant and generally sufficient.	

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<p>Minor REVISION comments</p> <p>Is the language/English quality of the article suitable for scholarly communications?</p>	<p>The language quality is generally suitable for scholarly communication, but it requires refinement to address clumsy phrasing, grammatical errors, and overly complex sentences. Enhancing these aspects would make the paper more accessible and easier to follow for a scholarly audience.</p>			
<p>Optional/Generalcomments</p>	<p>The paper presents a well-structured exploration of using machine learning to analyze musical expression in early childhood, utilizing both body movement and eye-tracking data. The inclusion of advanced methodologies, such as 3D motion capture and machine learning models, demonstrates innovation. However, there are areas where clarity and refinement could improve the overall readability and impact of the research.</p>			
<p>Strengths</p>	<p>1. Innovative Methodology: The use of simultaneous body movement and eye-tracking data is a novel approach that adds depth to the research.</p> <p>2. Comprehensive Analysis: The statistical analysis and comparison of different machine learning models are thorough and well-supported.</p> <p>3. Clear Purpose: The study's aim to improve the evaluation of musical development in early childhood is clearly articulated.</p>			
	<p>Comments</p>	<p>Excerpts</p>	<p>Suggestions for Improvement</p>	
<p>1. Examine the Thesis</p>	<p>The thesis centers on developing a method to classify musical development in early childhood by using body movement and eye-tracking data, enhanced through machine learning. While the topic and approach are clear, the thesis could be made more compelling by explicitly stating the potential implications or practical applications of this research. Emphasizing how this method could transform early childhood music education would strengthen the argument.</p>	<p>1. Current Thesis Statement: "This study aims to investigate characteristic results and verify the machine learning as an effective classification and prediction method regarding musical development in early childhood."</p> <p>This sentence explains the general purpose of the study, but it does not clearly convey the broader significance or potential practical applications of the findings.</p> <p>2. Current Supporting Sentences: "The author conducted machine learning to exploit a quantitative method to classify musical development. The author has also tried to add a new effective feature quantity based on eye movement analysis."</p>	<p>Need to make the thesis statement more compelling, it could be expanded to explicitly mention the implications for early childhood education.</p> <p>Need to clarify the practical application and emphasize the significance of the research</p>	

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			<p>These sentences describe the technical process but lack emphasis on <i>why</i> this is important or <i>how</i> it can be applied in practice.</p> <p>3. Current Conclusion to the Thesis: "It was verified that the author has progressed a more appropriate method of machine learning using effective feature quantities based on the result of simultaneous analysis of both eye movement and body movement in musical expression."</p> <p>This sentence confirms the findings but doesn't convey the broader educational impact or potential applications of these findings in early childhood settings.</p>	<p>Need to conclude the thesis with a stronger emphasis on potential transformation in music education</p>	
	<p>2. Review the Introduction and Structure</p>	<p>The introduction provides a clear context by discussing previous research and gaps addressed by this study. However, the paper could benefit from a more engaging opening to capture readers' attention. The transition between sections is generally smooth, but some paragraphs could use clearer topic sentences to improve the flow of ideas. For example, the shift from quantitative analysis to machine learning implementation in the middle sections feels abrupt and might benefit</p>	<p>1. Current Opening of the Introduction: "Early childhood children spontaneously show pretend play and dramatization in everyday life and musical expression using their own body. They often express pretend movement capturing body motion during musical expression." This opening provides useful context but lacks the engagement needed to captivate the reader from the start. It begins too narrowly, focusing on a specific</p>	<p>Need to make the opening more engaging, start with a broader, more compelling statement that captures the reader's attention.</p>	

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		<p>from a bridging statement.</p>	<p>behavior, and doesn't immediately highlight the significance of the study.</p> <p>2. Current Transition Example (Quantitative Analysis to Machine Learning): "The author has conducted body movement analysis utilizing 3D motion capture regarding musical expression by each phase's activity in early childhood to investigate the musical development. Using feature quantities extracted from the results of quantitative analysis regarding body movement in musical expression for several years, the author conducted machine learning to exploit a quantitative method to classify musical development."</p> <p>This transition from quantitative analysis to machine learning feels abrupt and could use a clearer connection between the two concepts.</p> <p>3. Current Topic Sentence Example: "In previous research, Burger's study regarding music and movement (2013), and audience experiment and video analysis on the relationship between performer's actions and expression (Dahl & Friberg, 2007; Thompson & Luck, 2012) did not analyze musical expression in</p>	<p>Need to improve the flow, a bridging statement that explains <i>why</i> the shift from analysis to machine learning is important would help.</p> <p>To improve clarity and flow, the topic sentence could better introduce the gap in previous research</p>	
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			<p>early childhood."</p> <p>This topic sentence introduces a specific study, but it doesn't clearly set up the paragraph or explain why the mentioned research is relevant to the current study.</p>		
	<p>3. Evaluate Evidence and Arguments</p>	<p>The paper offers substantial evidence through quantitative analysis and comparisons between different machine learning models. The evidence provided, such as the results of the motion capture and eye-tracking data, supports the claims made. However, some sections—like the exploration of machine learning algorithms—could benefit from deeper explanations of why certain models performed better than others. Additionally, including a few more visual aids or tables could clarify complex data points, such as those in sections discussing the accuracy of different classifiers.</p>	<p>1. Current Explanation of Machine Learning Algorithms: "The author used several classifiers such as J48 of decision tree and Random Tree, Sequential Minimal Optimization algorithm (SMO), Support Vector Machine (SVM), and Multilayer Perceptron of Neural Network (MLP-NN)."</p> <p>This sentence lists the machine learning models but doesn't provide sufficient detail on why certain models were chosen or how they performed relative to each other.</p> <p>2. Current Statement Regarding Model Performance: "As a result of machine learning, the classification accuracy was 47.3% for J48, 42.1% for Random Tree and 46.1% for SMO. The classification accuracy of MLP-NN was 63.6% (70% for learning sample, 30% for test sample)."</p> <p>While this provides the results, it doesn't explain why certain</p>	<p>Need to enhance the explanation, include more detail about why each model was used and how they differ in performance.</p> <p>Need to clarify the results and provide deeper insights into the performance of the models, this section could be expanded.</p>	

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			<p>models performed better or worse, which would help the reader understand the significance of the results.</p> <p>3. Current Use of Visual Aids: "Table 1-a shows the classification accuracy of MLP-NN using only body movement data, and Table 1-b shows the results when both body movement and eye movement data were used."</p> <p>This mention of tables lacks detail and doesn't emphasize the importance of the visual aids in clarifying complex data.</p>	<p>Need to improve clarity and make the results more accessible, the text could emphasize the role of the tables and suggest additional visual aids, such as charts or diagrams.</p>	
	<p>4. Assess Organization and Clarity</p>	<p>Overall, the organization follows a logical progression, from background research to methodology and results. However, the clarity of some sections, particularly those involving statistical analysis and machine learning results, could be improved. For instance, the description of the machine learning process in Section 3.2 is dense, and rephrasing this with simpler language or step-by-step explanations would enhance understanding.</p>	<p>1. Current Dense Description in Section 3.2 (Machine Learning Process): "The author used several classifiers such as Multilayer Perceptron (MLP-NN), Support Vector Machine (SVM), Naive Bayes, and k-nearest neighbors (KNN) for machine learning method. 58 cases were used as training input of classifiers. 43 cases were used for output to evaluate classification accuracy with regard to respective feature quantities. Developmental degree of musical expression was classified into three levels of high, middle, and low by way of video observation."</p>	<p>Need to improve clarity, rephrase the description with simpler language and present the process step-by-step.</p>	

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			<p>This description is dense and can be challenging to follow, particularly for readers unfamiliar with machine learning terminology. Breaking it down into simpler, step-by-step explanations would enhance clarity.</p> <p>2. Current Dense Statistical Analysis Description: "Concerning the result of a three-way ANOVA (non-repeated four standards as facilities, non-repeated three standards as ages, and non-repeated four standards as activity phase), the moving distance and the moving average acceleration of the pelvis and the right hand were characteristic. Next, an analysis result is shown in the moving distance of the right hand."</p> <p>This statement is cluttered and difficult to follow, particularly because the explanation of the statistical method and its results is packed into one sentence.</p> <p>3. Current Lack of Step-by-Step Explanation in Machine Learning Results: "For MLP-NN as classifiers, the result of machine learning using feature quantities of body movement showed 55.81% as classification accuracy</p>	<p>Need to improve clarity, break this information into multiple, easier-to-follow sentences and provide a brief explanation of the statistical method used.</p> <p>Need to clarify the results and their significance, provide a step-by-step explanation of the findings.</p>	
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			<p>shown in Table 1-a. The result of applying both body movement and eye movement data, MLP-NN showed accuracy 74.42% and has superior prediction distribution in confusion matrix."</p> <p>The explanation jumps between accuracy percentages without explaining the importance of the confusion matrix or how these results should be interpreted.</p>		
	<p>Conclusion</p>	<p>The paper demonstrates significant potential, offering a novel and data-rich approach to assessing musical development in early childhood. By refining the thesis, simplifying technical sections, and ensuring smooth transitions, the author can enhance both the clarity and impact of the research. The study's innovative use of technology is commendable, and further polishing will ensure the paper is a valuable contribution to the field.</p>			

PART 2:

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p>Are there ethical issues in this manuscript?</p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

Reviewer Details:

Name:	Bryan V. Catama
Department, University & Country	School of Teacher Education and Liberal Arts, Saint Louis University, Philippines