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NEEDS OF TEACHERS AND NON-MAJOR STUDENTS FOR PROBLEM BASED LEARNING WITH PEER ASSESSMENT TO ENHANCE CREATIVE THINKING AND SKILLS IN PIANO COURSE

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Abstract: This research focuses mainly on the needs of problem-based learning with peer assessment for non-piano major college students in vocational colleges considering the traditional piano instruction often fails to develop their creative abilities and improve their piano skills. Accordingly, this study aims to identify student and teacher needs regarding the current learning situation as well as the implementation of a problem-based learning with peer assessment model (PBL-PA) in piano education by using a mixed-methods approach to conduct need assessments through questionnaires and interviews. The study included 350 non-piano college students and 5 teachers in the need assessment phase from colleges in China. Results showed there are needs and willingness for the changing from the traditional teaching method to PBL-PA model in terms of learning method, creative thinking and piano skills. These findings suggested that integrating PBL-PA model can provide the interest and motivation for non-piano students to acquire piano skills and creative thinking. The research implied that music educators should consider incorporating these approaches to better meet student needs and enhance learning outcomes.

Keywords: Needs assessment, Problem based learning, Peer assessment, Creative thinking, Piano skills

1. INTRODUCTION

Piano education serves as a cornerstone in music training, requiring a delicate balance between the development of technical skills and the cultivation of creative expression [1]. Traditional piano instruction, often centered on demonstration and imitation, may not fully engage students or adequately develop their creative thinking abilities [2]. As music education continues to evolve, there is a growing need for innovative teaching methodologies that can accommodate diverse learning styles while

promoting both technical proficiency and artistic expression. Problem-based learning and peer assessment have emerged as promising approaches that encourage active learning, critical thinking, and collaborative evaluation, potentially addressing the limitations of conventional teaching methods [3].

The problem lies in the fact that traditional piano instruction may not adequately develop creative thinking or meet the diverse learning needs of non-piano major students in colleges [4]. These students often lack formal training but require piano skills as part of their broader musical education. The current educational landscape presents a gap in understanding how to effectively implement problem-based learning with peer assessment in this specific context [5]. While problem-based learning has been successfully applied in various educational settings, its adaptation for piano education in vocational colleges requires specific consideration of the unique needs of both students and teachers.

Therefore, this research aims to identify the needs of a PBL-PA model in piano education for non- major students in colleges. By understanding these needs, the research seeks to develop a novelty teaching method by integrating PBL-PA model that can guide the teaching practice in the future research and education. The study will provide valuable insights on how the non-major students and teachers respond to the current and traditional methods as well as PBL-PA model ultimately contributing to more engaging and effective learning experiences for enhancing creative thinking and piano skills.

2. LITERATURE REVIEW

2.1 Problem-based learning

Problem-based learning (PBL) originated in medical education as a response to the limitations of traditional lecture-based instruction [6]. It was developed to address the need for more effective clinical problem-solving and lifelong learning skills among students. PBL places students at the center of the learning process, requiring them to engage with complex, real-world problems that mirror those encountered in professional settings [7]. The PBL approach typically involves small units where students identify what they need to learn, conduct independent research, and then discuss their findings and develop solutions. This cycle of exploration, discussion, and reflection helps students construct their own understanding while developing critical thinking, collaboration, and self-directed learning skills. Research has shown that PBL can lead to improved student engagement, better retention of material, and enhanced problem-solving abilities compared to traditional methods [8]. The teacher serves as a facilitator, guiding students through the learning cycle seen in Fig.1. This model begins with a problem scenario that can be made to mimic actual musical difficulties encountered in the real world [9]. For students, this immediately makes the learning process relevant and interesting. It has been successfully implemented across various disciplines beyond medicine, including business, engineering, and education. In music education specifically, PBL has shown promise in developing students' ability to analyze musical structures, interpret compositions, and develop their own musical ideas.

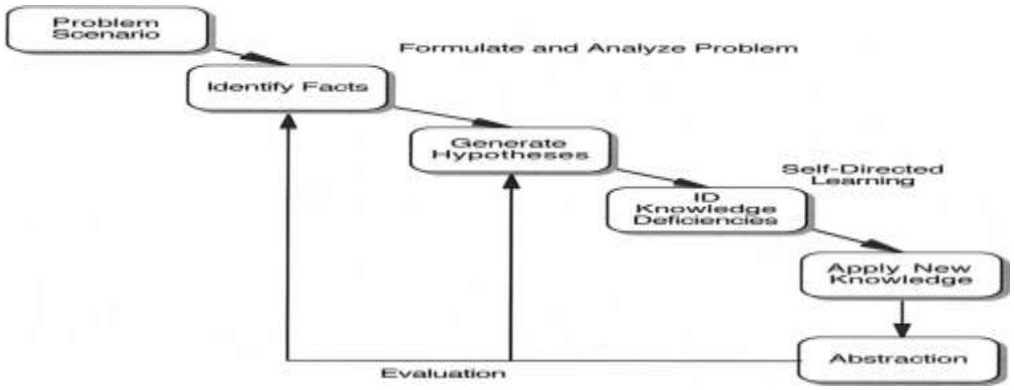

Figure 1. The problem-based learning cycle [9].

2.2 Peer assessment

Peer assessment involves students evaluating each other's work using predefined criteria and providing constructive feedback [10]. This process develops students' ability to critically analyze performance, think reflectively about their own and others' work, and articulate their judgments [11]. When implemented effectively, peer assessment can enhance learning outcomes by providing multiple perspectives on performance, increasing engagement and accountability, and fostering a collaborative learning environment [12]. Students often respond positively to feedback from peers, perceiving it as more relevant and actionable than feedback from instructors alone. Research indicates that peer assessment can improve students' self-regulation skills, critical thinking abilities, and meta-cognitive awareness. It also helps students develop a deeper understanding of assessment criteria and learning objectives. In music education, peer assessment has been shown to be particularly effective in developing students' ability to evaluate performance quality, identify areas for improvement, and refine their own musical expression [13]. Moreover, He utilized assessment cycle (Figure 2) to predicts learning outcomes based on how well peer assessment activities align with its components [14]. By linking peer and self-evaluation, the assessment cycle could offer a theoretical framework for comprehending the learning that occurs through peer assessment. The assessment cycle consists of six parts, each of which describes a distinct facet of peer evaluation with varying learning potential.

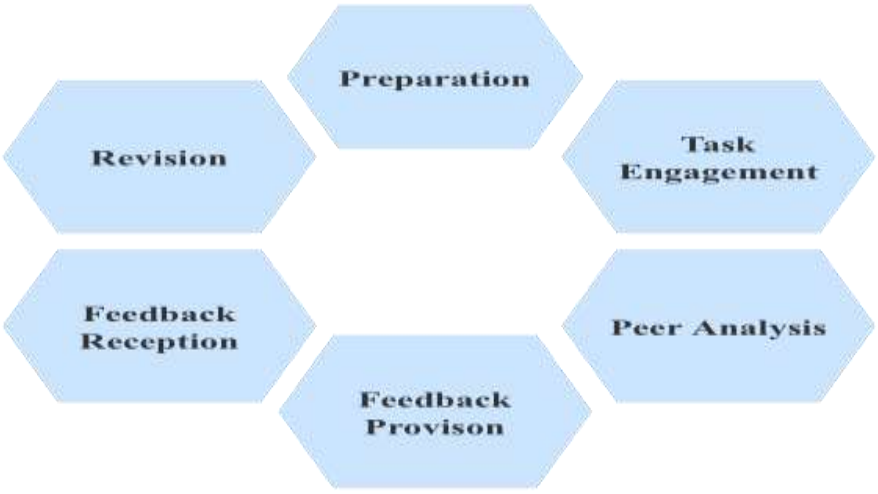

Figure 2.A Cycle scheme for Peer Assessment [14].

2.3 Problem based learning with peer assessment model

The integration of problem-based learning with peer assessment creates a powerful educational framework that combines the benefits of both approaches [15]. This model maintains the core principles of problem-based learning while incorporating structured peer evaluation to enhance learning outcomes. In this combined approach, students work collaboratively to solve complex musical problems while simultaneously developing their ability to critically evaluate their own and their peers' work. The peer assessment component provides immediate, relevant feedback that students can use to refine their approaches and improve their solutions [16]. Research suggests that this integrated model can lead to more robust learning outcomes than either approach alone [17]. Students develop not only technical skills but also higher-order thinking abilities, including creativity, critical analysis, and reflective practice [18]. The collaborative nature of this model also fosters community building and social learning, creating a supportive environment for risk-taking and experimentation.

2.4 Students creative thinking

Creative thinking in music education involves the ability to generate novel musical ideas, approaches, and interpretations [19]. In the context of piano education, creative thinking enables students to develop unique interpretations of compositions, experiment with different performance styles, and compose their own music [20]. It is closely linked to students' ability to think independently, take risks, and explore beyond established conventions. They thought creative pedagogues are responsive, flexible, and improvisatory [21]. Therefore, this research considered creative thinking as originality, flexibility, fluency, and elaboration in thinking about musical problems and solutions.

2.5 Piano skills for Non-piano students

For non-piano students, developing piano skills involves acquiring technical proficiency while often lacking formal training. These skills include understanding musical notation, developing finger dexterity, mastering rhythm and timing, and interpreting musical expression. According to the study [22], students in expert-led classes spent 59% of class time actively playing, compared to 18% in novice-led classes, resulting in stronger technical proficiency and continued musical study. He emphasized practice accountability, aural skills, and communal problem-solving are critical for non-piano students to develop transferable cognitive and motor skills. Assessment of piano skills for non-piano students typically focuses on technical accuracy, musical expression, and the ability to interpret compositions with appropriate style and emotion. The Bronson Piano Performance Achievement Rubric (BPPAR) provides a comprehensive framework for evaluating these dimensions, including notes, rhythm and timing, articulation, dynamics, and style and mood [23].

3. RESEARCH METHODS

3.1 Participants

The research employed a mixed-methods approach to comprehensively assess the needs of students and teachers regarding the current situation of teaching method and desire for the implementation of a problem-based learning with peer assessment model in piano education for non-piano college students. Participants consisted of 350 undergraduate students selected through stratified random sampling from music education and performance majors across three colleges in Yuncheng City, Shanxi Province: Yuncheng University, Yuncheng Normal College, and Yuncheng Preschool Education College (see Table 1). These students had completed basic piano courses and possessed fundamental piano knowledge. Teacher participants included five piano instructors with a minimum of five years of teaching experience

in Piano 1 courses, selected through purposive sampling. These teachers represented diverse specializations within music education and had substantial experience in piano.

Table 1. Demographic Analysis Results.

Variable	Category	Frequency(n)	Percentage (%)
Gender	Male	82	23
	Female	268	74
Major	Violin	65	19
	Cello	71	20
	Flute	79	23
	Saxophone	74	21
	Others	61	17
Year(s) of study	3-5 years	0	0
	6-10 years	52	15
	10 years above	298	85
Time spent each week	Below 10 hours	18	5
	10-20 hours	166	47
	21-30 hours	85	24
	30 hours above	81	23

3.2 Instruments

Student needs assessment utilized a five-point Likert scale questionnaire designed to evaluate four dimensions: learning methods, learning environment, piano skills development, and creative thinking development ranging from “Strongly disagree” to “Strongly agree”. The questionnaire was administered through the Wenjuanwang platform, ensuring anonymity and confidentiality.

For teacher needs assessment, structured interviews were conducted to explore experiences, challenges, and recommendations across four dimensions: teaching methods, teaching conditions, student piano skills development, and student creative thinking development.

Experts in the relevant field assess each question for its alignment with the research objectives, using a rating scale from -1 to 1 (1 = consistent, 0 = somewhat consistent, -1 = not consistent). Questions that meet the evaluation criteria should have an IOC value of at least 0.5. Questions with an IOC value lower than 0.5 may need revision or replacement to better align with the research objectives. Therefore, before formally starting to do the survey, the validity of questionnaire will be measured by using Index of Item-Objective Congruence (IOC) form via 5 experts in relevant educational areas. Additionally, in order to check the reliability of the questionnaire, Cronbach analysis will be used by SPSS. The results showed (see Table 2) that all questions have good reliability (Cronbach's alpha>0.955).

Table 2. Reliability Test for students needs

Variable	Cronbach's alpha	Reliability Level
Students' learning methods needs	0.880	High
Student learning environment needs	0.830	High
Student piano skills needs	0.827	High
Student creative thinking needs	0.805	High
Total	0.955	Very High

3.3 Data collection

In order to scientifically collect data, the following methods can be adopted: first, invite a group of experts with relevant professional knowledge and teaching experience in the field to fill out the IOC form anonymously, ensuring the objectivity and independence of the evaluation. Secondly, using electronic questionnaire tool (Wenjuanxing) collects data related to the student needs. Last, in terms of interview with the experts, thematic analysis will be employed to achieve their opinions and suggestions, providing scientific basis for the improvement and optimization of teaching models.

In the process of thematic analysis, it involved familiarizing with the data by transcribing and repeatedly reviewing interview transcripts to gain a thorough understanding of the responses. Initial codes were identified to capture key ideas and themes within the data. The themes were reviewed and refined to ensure coherence and consistency. The themes were validated by cross-referencing with original transcripts and ensuring alignment with research objectives. Finally, the themes were presented in a clear and organized manner.

4. RESULTS

4.1 Student needs assessment results

The results are organized according to the different learning aspects outlined in the methodology: (1) student and teacher needs analysis, (2) development and validation of the problem-based learning with peer assessment model, and (3) comparative analysis of the model's impact on piano skills and creative thinking.

Table 3. Student Needs Assessment on Piano Learning

Question Items	Mean	Std. Deviation	Results
Student Learning methods needs	**4.16**	**0.92**	
1. During the learning process of piano 1 course, you are not satisfied that the teacher adopts the traditional face-to-face teaching method.	4.13	0.66	Agree
2. During the learning process of piano 1 course, you can not well accept the existing learning methods of "teacher lectures, student experiments, and after-school exercises".	4.19	1.18	Agree
3. During the learning process of piano 1 course, you will actively think, answer teacher's questions, and interact with them.	4.35	0.93	Agree
4. During the learning process of piano 1 course, you are very willing to try group collaboration learning.	4.08	0.88	Agree
5. During the learning process of the piano 1 course you are very willing to try peer assessment based problem-based learning.	4.06	0.94	Agree
Student Learning environment needs	**4.06**	**0.86**	
6. In the process of learning piano 1 course, a good class learning environment can effectively promote course learning.	4.04	0.93	Agree

7. During the learning process of piano 1 course, you can supervise yourself to learn and complete the tasks assigned by teacher.	4.06	0.92	Agree
8. During the learning process of the piano course, you need to discuss and learn in groups to promote course learning and achieve goals.	4.07	0.73	Agree
Student piano skill needs	**4.31**	**0.64**	
9. During the learning process of piano 1 course,it is important for you to have opportunities to practice piano skills collaboratively with peers in PBL activities.	4.35	0.48	Agree
10. During the learning process of piano 1 course, working on real-world music projects with peers in PBL will enhance your motivation to improve your piano skills.	4.09	0.93	Agree
11. In the process of learning piano 1 course under the context of PBL, you find peer assessment in identifying areas of improvement in piano playing.	4.39	0.49	Agree
12. During the learning process of piano 1 course, the PBL with peer assessment approach will help you develop the ability to self-assess your own piano playing progress.	4.31	0.83	Agree
13. During the learning process of piano 1 course, peer assessment will help you develop a deeper understanding of piano techniques and musical interpretation.	4.39	0.49	Agree
Student creative thinking needs	**4.36**	**0.70**	
14. During the learning process of piano 1 course, when facing problems, you really hope to have the ability to propose problem-solving ideas.	4.42	0.50	Agree
15. During the learning process of piano 1 course, when facing problems, you really hope to have the ability to combine the knowledge you have learned to conduct reasonable exploration and planning.	4.49	0.50	Agree
16. During the learning process of the piano 1 course, when facing problems, you really hope to have the ability to analyze and argue problems, and provide personal insights.	4.18	1.09	Agree

From the **Table 3**, it reflects strong student agreement (m=4.04–4.49 on a 5-point Likert scale) across four key learning aspects in a piano course. In terms of learning methods (mean=4.16), students expressed dissatisfaction with traditional face-to-face teaching and passive learning approaches (e.g., "teacher lectures, student experiments, after-school exercises"). They want to have more active engagement (m=4.35), group collaboration (mean=4.08), and problem-based learning (PBL) with peer assessment (mean=4.06). For the learning environment (m=4.06), it indicates high agreement among students that the learning environment critically impacts their success in piano education. This reflects a clear demand for supportive digital spaces and structured peer collaboration. A supportive classroom environment (mean=4.04) and group discussions (m=4.07) were deemed critical for effective learning. As far as the piano skill development is concerned (m=4.31), it shows a paradigm shift in piano education

that students reject passive, teacher-centric skill drills and demand active, socially embedded learning. Collaborative skill practice (mean=4.35) and peer assessment (mean=4.39) were strongly needed for improving technical proficiency and self-assessment abilities. As for student creative thinking needs (m=4.36), it indicates that students generally have a strong agreement on the importance of developing creative thinking skills during their piano learning process. Furthermore, students prioritized problem-solving method (mean=4.42), which means knowledge should be applied to explore solutions and critical analysis highlighting a desire for creative and analytical skill development. Therefore students strongly prefer interactive, collaborative, and peer-driven learning strategies over passive instruction, emphasizing the need for innovative pedagogical approaches in piano education based on the criteria for interpreting results from questionnaire (**Table 4**).

Table 4. Criteria for Interpreting Results from Questionnaire.

Average Score Ranges	Levels of Agreement
4.51-5.00	Strongly Agree
3.51-4.50	Agree
2.51-3.50	Moderate
1.51-2.50	Disagree
1.00-1.50	Strongly Disagree

4.2 Interview results for teacher needs

According to the interview results in **Table 5**, traditional piano teaching emphasizes technical proficiency through imitation-based methods and standardized exams but block the improvement of creativity and independent thinking. Shifting to a model blending problem-based learning with peer assessment-via collaborative projects, real-world challenges, and iterative feedback-enhances creative expression, critical analysis, and adaptability while maintaining technical rigor.

Therefore, the results highlighted three themes: (1) the need for structured peer assessment criteria, (2) challenges in balancing technical skill development with creative tasks, and (3) the importance of a supportive learning environment. Teachers emphasized the role of real-world problems in fostering student innovation.

Table 5. Interview results about teacher needs towards teaching methods

Questions	Themes	Sub-themes
What teaching methods have been used in the teaching of piano courses and how about the effect?	-traditional one-on-one instruction -imitation learning -teacher-centered approaches -standardized exams.	**-Imitation-based methods** Students replicate pieces, leading to technical proficiency but limited creative expression. **-Teacher dependency** Over-reliance on instructor feedback. **-Passive learning** Focus on memorization and exam preparation, resulting in uneven motivation and superficial mastery.
Do you think it is necessary to change teaching condition and	-student-centered learning -collaborative	**-Limitations of tradition** Rigid structures inhibit creativity and peer interaction. **-PBL and peer assessment benefits**

apply a new model to solve the above problems?	environments	Active learning through real-world challenges. Peer comments and assessments build analytical and communication skills.
In the model that combines peer assessment and problem based learning, what innovative methods do you think can better cultivate student's skill?	-collaborative projects -iterative feedback cycles -real-world problem-solving	-**Structured peer feedback** Rubrics guide constructive critiques on expression and originality, analytical thinking. -**Role rotation** Students alternate as performers, critics, and facilitators.
What aspects of the piano course can be designed to enhance student creative thinking under the new model?	-open-ended tasks -improvisation -reflective practice.	-**Creative prompts** "Compose a piece using non-traditional notation". -**Improvisation modules** Structured sessions on jazz or contemporary styles. -**Portfolio assessments** Combined self-reflections and peer reviews fosters innovation.

4.3 Proposed model and development

An instructional design model was created based on the hypotheses presented in the literature review. Before being used in practical teaching, the model was internally evaluated by three specialists and experts and adjusted based on their comments. The development steps of problem based learning with peer assessment model are shown as **Figure 3**.

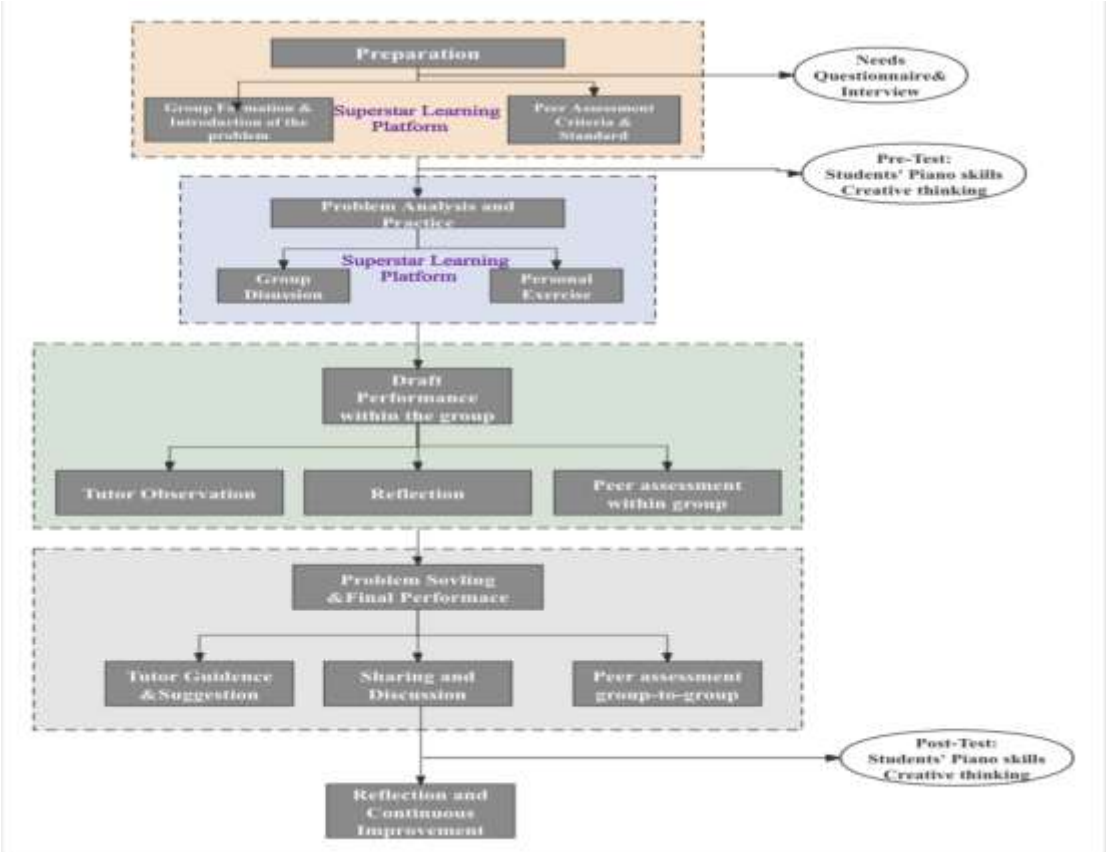

Figure 3. Development of problem-based learning with peer assessment model.

5. DISCUSSION

This study sought to identify the specific needs of students and teachers in implementing a problem-based learning with peer assessment model in piano education for non-piano students. The findings revealed distinct pedagogical and logistical requirements that underscore the necessity of tailoring this innovative approach to address both stakeholder groups' challenges and aspirations.

For students, the dissatisfaction with traditional, teacher-centered methods (e.g., rote imitation, one-on-one instruction) highlighted a critical need for collaborative and interactive learning environments. Students expressed a strong preference for peer assessment (M=4.52) and group-based problem-solving (M=4.48), aligning with research advocating for social constructivist approaches in music education [24]. Collaborative learning not only mitigated the isolation often inherent in piano practice but also fostered a sense of accountability and mutual support, as peers provided real-time feedback on technical execution and interpretive choices. This aligns with the assertion that peer assessment enhances metacognitive awareness, enabling students to critically evaluate their own progress while internalizing diverse perspectives [25]. Furthermore, students emphasized the need for creative autonomy, as traditional methods often prioritized technical accuracy over expressive exploration. The integration of problem-based learning, which encouraged experimentation with musical styles and problem-driven composition, addressed this gap by nurturing originality and flexibility, the core dimensions of creative thinking [26].

Teachers, conversely, identified structural and methodological needs essential for effective implementation. Foremost was the demand for structured peer assessment criteria to ensure consistency and fairness in evaluations. Without clear rubrics, teachers noted that feedback could become subjective or overly lenient, echoing the caution that poorly designed peer assessment risks undermining learning outcomes [27]. The development of standardized criteria (e.g., technical accuracy, rhythmic precision, expressive dynamics) provided a supported framework that guided students' evaluations while aligning with curricular objectives. Additionally, teachers highlighted the challenge of balancing technical skill development with creative exploration-a tension well-documented in music pedagogy [28]. The problem-based learning model resolved this by embedding technical exercises (e.g., scales, hand coordination drills) within authentic musical problems (e.g., composing a piece to convey a specific emotion), ensuring skill acquisition occurred contextually rather than in isolation. This approach mirrors the argument that meaningful tasks enhance motivation and retention [29]. Finally, teachers stressed the importance of a supportive learning environment to cultivate risk-taking and reduce performance anxiety. By fostering a classroom culture where mistakes were reframed as opportunities for growth-a principle rooted in Dweck's growth mindset theory-students reported increased confidence in experimenting with unconventional interpretations [30].

The developed model effectively integrates problem-based learning with peer assessment, demonstrating possibility in enhancing students' piano skills and creative thinking. The structured model will start from teaching preparation through problem analysis and practice to final performance which creates a comprehensive learning experience. Peer assessment at multiple stages encourages active engagement and reflection, while the Superstar Learning Platform facilitates both collaborative and individual practice. However, the effectiveness and usefulness of the teaching model will be validated in the future study. Overall, this model offers a valuable framework for skill-intensive disciplines, highlighting the importance of peer feedback and structured problem-solving in educational settings.

6. CONCLUSION

In conclusion, addressing the identified needs of students and teachers is pivotal for successfully integrating problem-based learning with peer assessment into piano education. By centering collaboration, structured feedback, and creative agency, this model not only bridges gaps in traditional instruction but also equips students with the technical and imaginative competencies essential for contemporary musical practice. Future research should explore the model's effectiveness and adaptability across diverse institutional settings and its long-term impact on skill retention.

REFERENCES

[1] X. Yin, 'Educational innovation of piano teaching course in universities', Educ Inf Technol, vol. 28, no. 9, pp. 11335–11350, Sep. 2023, doi: 10.1007/s10639-023-11643-6.

[2] 'Li, J. (2020). Analysis of piano curriculum education... - google scholar'. Accessed: Jun. 16, 2025. [Online]. Available: https://www.defineabc.com/scholar?hl=en&as_sdt=0%2C5&q=Li%2C+J.+%282020%29.+Analysis+of+piano+curriculum+education+and+cultivation+of+creative+thinking+ability.+Region-Educational+Research+and+Reviews%2C+2%281%29%2C+6-8.&btnG=

[3] R. Ostby, 'The impact of problem-based learning on students critical thinking skills and peer relationships'.

[4] Z. Guobin, N. Suttachitt, T. Charoensloong, and K. Daoruang, 'The development of online lessons for promoting piano playing skills for non-piano playing background students', Journal of Ecohumanism, vol. 4, no. 1, Art. no. 1, Sep. 2024, doi: 10.62754/joe.v4i1.6205.

[5] H. Song, K. Tsiakas, J. Ham, P. Markopoulos, and E. I. Barakova, '"how would you score yourself?": The effect of self-assessment strategy through robots on children's motivation and performance in piano practice', Int J of Soc Robotics, vol. 16, no. 2, pp. 327–340, Feb. 2024, doi: 10.1007/s12369-023-01080-3.

[6] J. R. Savery, 'Overview of problem-based learning: Definitions and distinctions', Interdisciplinary Journal of Problem-Based Learning, vol. 1, no. 1, May 2006, doi: 10.7771/1541-5015.1002.

[7] A. S. A. Ghani, A. F. A. Rahim, M. S. B. Yusoff, and S. N. H. Hadie, 'Effective learning behavior in problem-based learning: A scoping review', Med.Sci.Educ., vol. 31, no. 3, pp. 1199–1211, Apr. 2021, doi: 10.1007/s40670-021-01292-0.

[8] D. H. J. M. Dolmans, W. De Grave, I. H. A. P. Wolfhagen, and C. P. M. Van Der Vleuten, 'Problem-based learning: Future challenges for educational practice and research', Med Educ, vol. 39, no. 7, pp. 732–741, Jul. 2005, doi: 10.1111/j.1365-2929.2005.02205.x.

[9] C. E. Hmelo-Silver, 'Problem-Based Learning: What and How Do Students Learn?', Educational Psychology Review, vol. 16, no. 3, pp. 235–266, Sep. 2004, doi: 1023/B:EDPR.0000034022.16470.f3.

[10] D. Alt and N. Raichel, 'Problem-based learning, self- and peer assessment in higher education: Towards advancing lifelong learning skills', Research Papers in Education, vol. 37, no. 3, pp. 370–394, May 2022, doi: 10.1080/02671522.2020.1849371.

[11] X. Jin, Q. Jiang, W. Xiong, Y. Feng, and W. Zhao, 'Effects of student engagement in peer feedback on writing performance in higher education', Interactive Learning Environments, vol. 32, no. 1, pp. 128–143, Jan. 2024, doi: 10.1080/10494820.2022.2081209.

[12] T. López-Pellisa, N. Rotger, and F. Rodríguez-Gallego, 'Collaborative writing at work: Peer feedback in a blended learning environment', Educ Inf Technol, vol. 26, no. 1, pp. 1293–1310, Jan. 2021,

doi: 10.1007/s10639-020-10312-2.
[13] A. W. Røshol, 'Putting the ego aside: A case study of the peer-to-peer feedback dialogue among electronic popular music makers within higher education', Journal of Popular Music Education, vol. 8, no. 3, pp. 293–317, Sep. 2024, doi: 10.1386/jpme_00134_1.
[14] D. Reinholz, 'The assessment cycle: A model for learning through peer assessment', Assessment & Evaluation in Higher Education, vol. 41, no. 2, pp. 301–315, Feb. 2016, doi: 10.1080/02602938.2015.1008982.
[15] R. H. Shroff, F. S. T. Ting, C. L. Chan, R. C. C. Garcia, W. K. Tsang, and W. H. Lam, 'Conceptualisation, measurement and preliminary validation of learners' problem-based learning and peer assessment strategies in a technology-enabled context', Australasian Journal of Educational Technology, vol. 39, no. 1, Art. no. 1, May 2023, doi: 10.14742/ajet.7214.
[16] C. L. Chan, R. H. Shroff, W. K. Tsang, F. S. T. Ting, and R. C. C. Garcia, 'Assessing the effects of a collaborative problem-based learning and peer assessment method on junior secondary students' learning approaches in mathematics using interactive online whiteboards during the COVID-19 pandemic', IJMLO, vol. 17, no. 1/2, p. 6, 2023, doi: 10.1504/IJMLO.2023.128342.
[17] A. Golightly, 'Self- and peer assessment of preservice geography teachers' contribution in problem-based learning activities in geography education', International Research in Geographical and Environmental Education, vol. 30, no. 1, pp. 75–90, Jan. 2021, doi: 10.1080/10382046.2020.1744242.
[18] O.-L. Ng, F. Ting, W. H. Lam, and M. Liu, 'Active learning in undergraduate mathematics tutorials via cooperative problem-based learning and peer assessment with interactive online whiteboards', Asia-Pacific Edu Res, vol. 29, no. 3, pp. 285–294, Jun. 2020, doi: 10.1007/s40299-019-00481-1.
[19] W. Wan, 'The importance of developing creative thinking in the preparation of music education professionals in universities', Interactive Learning Environments, pp. 1–11, Mar. 2023, doi: 10.1080/10494820.2023.2188400.
[20] P. Burnard, "Rethinking 'musical creativity' and the notion of multiple creativities in music," in Musical Creativity: Insights from Music Education Research, 2016, pp. 27–50. doi: 10.4324/9781315596952-10
[21] J. M. Abramo and A. Reynolds, '"pedagogical creativity" as a framework for music teacher education', Journal of Music Teacher Education, vol. 25, no. 1, pp. 37–51, Oct. 2015, doi: 10.1177/1057083714543744.
[22] P. D. Pike, 'The differences between novice and expert group-piano teaching strategies: A case study and comparison of beginning group piano classes', International Journal of Music Education, vol. 32, no. 2, pp. 213–227, May 2014, doi: 10.1177/0255761413508065.
[23]J. Bronson, "Predictors of Performance Achievement among young piano students: ages 8-13," 2016. [Online]. Available: https://shareok.org/bitstream/11244/45396/2/2016_Bronson_Janci_Dissertation.pdf
[24] L. S. Vygotsky and M. Cole, Mind in society: Development of higher psychological processes. Harvard University Press, 1978.
[25] K. Topping, 'Peer assessment between students in colleges and universities', Review of Educational Research, vol. 68, no. 3, pp. 249–276, Sep. 1998, doi: 10.3102/00346543068003249.
[26] E. Menard, 'Creative thinking in music: Developing a model for meaningful learning in middle school general music', Music Educators Journal, vol. 100, no. 2, pp. 61–67, Dec. 2013, doi: 10.1177/0027432113500674.
[27] Improving assessment through student involvement | practical solutions. Accessed: Jun. 16, 2025.

[Online]. Available: https://www.taylorfrancis.com/books/mono/10.4324/9780203220993/improving-assessment-student-involvement-nancy-falchikov

[28] J. Li, ‘Analysis of piano curriculum education and cultivation of creative thinking ability’, RERR, vol. 2, no. 1, p. 6, Mar. 2020, doi: 10.32629/rerr.v2i1.85.

[29] S. MacBlain, ‘Learning theories for early years practice - SAGE publications ltd - torrossa’, Accessed: Jun. 16, 2025. [Online]. Available: https://www.torrossa.com/en/resources/an/5282231#page=100

[30] C. S. Dweck, Mindset: The new psychology of success. Random House Publishing Group, 2006.