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Peer Learning in University-Level Piano Pedagogy

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Abstract: Peer learning has become an increasingly significant pedagogical approach in higher music education, particularly in contexts where students are expected to develop not only technical proficiency but also critical listening, reflective judgement, and collaborative musicianship. This article examines the role of peer learning in university-level piano pedagogy, focusing on its application through peer assessment, group collaboration, four-hand piano, and two-piano performance. It argues that peer learning can extend the traditionally teacher-centred model of piano instruction by creating structured opportunities for students to observe, evaluate, communicate, and learn from one another. Peer assessment enables students to develop evaluative criteria and reflect critically on performance quality, while group collaboration encourages shared problem-solving and collective musical interpretation. Four-hand piano and two-piano performance further provide ensemble-based contexts in which students cultivate rhythmic coordination, musical responsiveness, balance, and a heightened awareness of co-performance. At the same time, the implementation of peer learning requires careful pedagogical design, including clear task structures, appropriate feedback criteria, and teacher guidance to ensure constructive participation. By situating peer learning within university-level piano pedagogy, this article suggests that collaborative and dialogic learning practices can enrich students' musical understanding, performance confidence, and professional competence.

1. Introduction

Piano pedagogy in higher education has traditionally been shaped by a teacher-centred model of instruction, in which the teacher functions as the primary source of technical correction, musical interpretation and evaluative authority. This model is particularly visible in the one-to-one lesson, where the student's progress is often understood through direct interaction with an expert teacher. The value of this model should not be underestimated. Individualised instruction enables detailed attention to touch, tone production, pedalling, phrasing, stylistic understanding and the physical coordination required for advanced piano performance. Nevertheless, when piano learning is organised almost exclusively around teacher-led correction and individual practice, students may have limited opportunities to learn through observation, dialogue, peer feedback and collaborative musical decision-making.

In recent decades, higher music education has increasingly been required to reconsider the

relationship between individual expertise and collaborative learning. The professional musician is no longer expected only to master an instrument in isolation, but also to communicate, collaborate, evaluate, adapt and participate in diverse musical and educational contexts. For university-level piano students, these capacities are especially important. Many students will become performers, accompanists, chamber musicians, teachers, arts practitioners or music educators. Their future professional lives therefore require not only pianistic competence, but also the ability to listen critically, work with others, articulate musical judgements and respond constructively to different interpretations.

Peer learning offers a productive framework for rethinking piano pedagogy in this context. Broadly understood, peer learning refers to learning practices in which students learn from and with one another through structured interaction, mutual support, shared reflection and collaborative problem-solving. Without clear pedagogical design, peer assessment may become superficial, group collaboration may become uneven, and ensemble-based learning may fail to move beyond technical coordination. For peer learning to be meaningful in piano pedagogy, teachers must provide clear learning objectives, appropriate feedback criteria, structured tasks and reflective follow-up. In this sense, peer learning should be understood not as a reduction of teacher responsibility, but as a reconfiguration of the teacher's role: from the sole authority in the classroom to a designer, facilitator and mediator of collaborative learning processes.

2. Theoretical Framework: Peer Learning, Collaborative Learning and Music Pedagogy

The theoretical foundation of peer learning is closely related to social constructivist understandings of learning. From this perspective, learning is not simply the passive reception of knowledge from an expert, but an active process through which learners construct understanding in social, cultural and dialogic contexts. Vygotsky's concept of the zone of proximal development is particularly relevant here, since it suggests that learners may achieve higher levels of understanding through interaction with more capable peers or supportive others than they could achieve independently [1]. Although Vygotsky did not write specifically about piano pedagogy, his theory provides a useful basis for understanding why peer interaction can become pedagogically meaningful in music learning.

In higher education, Boud, Cohen and Sampson define peer learning as a form of learning in which students learn from and with each other without immediate teacher intervention. Their work is important because it shifts attention away from the assumption that valid learning must always be transmitted directly from teacher to student. Instead, peer learning emphasises reciprocity, shared responsibility and the active role of students in constructing knowledge [2]. This perspective is highly relevant to university-level piano pedagogy, where students are often capable of making increasingly sophisticated observations about performance but may not always be given structured opportunities to articulate them.

Peer learning also intersects with theories of collaborative learning. Johnson and Johnson argue that effective cooperative learning requires positive interdependence, individual accountability, promotive interaction, interpersonal skills and group processing [3]. These principles are particularly applicable to piano pedagogy because musical collaboration requires both individual preparation and collective responsiveness. In a four-hand or two-piano context, for example, each student must prepare their own part, but the artistic outcome depends on shared timing, balance, listening and interpretative negotiation. Similarly, in group-based piano learning, students must contribute individually while also participating in collective reflection and problem-solving.

Within higher music education, collaborative learning has been discussed as a way of challenging the dominance of the master-apprentice model. Gaunt and Westerlund argue that higher

music education has long contained social forms of learning, such as ensembles, chamber music and rehearsals, yet these practices have often been interpreted through models of transmission from expert to novice rather than through theories of collaboration [4]. Their work is significant for piano pedagogy because piano learning has often been imagined as an individualised activity, even though pianists frequently engage in accompaniment, chamber music, teaching, rehearsal direction and ensemble performance. Peer learning therefore makes visible a dimension of pianistic development that is sometimes marginalised in traditional piano curricula.

Research on one-to-one instrumental teaching further supports the need to rethink the structure of learning in higher music education. Carey et al. observe that one-to-one teaching remains highly valued in conservatoire contexts, but they also note that such teaching is resource-intensive and requires more systematic investigation into its practices and limitations [5]. This does not mean that one-to-one piano teaching should be rejected. Rather, it suggests that university-level piano pedagogy should be understood as a broader ecology of learning that includes individual lessons, group classes, peer feedback, ensemble-based experiences and reflective discussion.

Peer assessment is one of the most widely researched forms of peer learning in higher education. Topping defines peer assessment as an arrangement in which students consider and specify the level, value or quality of a product or performance by other students of similar status [6]. In the context of piano pedagogy, the "product or performance" may include a prepared piece, a technical study, a sight-reading task, an accompaniment exercise or a collaborative performance. Topping's research is useful because it highlights both the potential and the conditions of peer assessment. Peer assessment can promote reflection, evaluative judgement and active engagement, but its effectiveness depends on the clarity of criteria, the quality of training and the structure of the assessment process.

Music education research has also shown that peer and self-evaluation can be meaningful in applied performance contexts. Bergee's study of faculty, peer and self-evaluation in applied brass jury performances found strong correlations between faculty and peer evaluations, suggesting that students can make reliable evaluative judgements when appropriate rating criteria are provided [7]. Although Bergee's study focuses on brass rather than piano, its findings are relevant to university-level piano pedagogy because they challenge the assumption that only teachers are capable of valid performance judgement. In piano classrooms, carefully guided peer assessment may therefore help students develop the evaluative listening skills necessary for both performance and teaching.

Peer learning has also been explored in relation to popular music pedagogy. Lebler's work is particularly useful because it shows how peer learning can support self-directed and collaborative learning communities in higher music education [8]. While the stylistic context of popular music differs from classical piano training, the pedagogical principle is transferable: students learn not only by receiving instruction, but also by listening to peers, offering feedback, experimenting collectively and taking responsibility for learning processes. For piano pedagogy, this suggests that peer learning can support a shift from passive correction to active musical inquiry.

Taken together, these theoretical and empirical perspectives suggest that peer learning in university-level piano pedagogy should not be treated as a minor classroom technique. It is better understood as a pedagogical orientation that changes how knowledge, authority and responsibility circulate in the learning environment. The teacher remains essential, but students are no longer positioned merely as recipients of correction. Instead, they become listeners, evaluators, collaborators and co-constructors of musical understanding. This theoretical framework provides the basis for the following discussion of peer assessment, group collaboration, four-hand piano and two-piano performance.

3. Peer Assessment in University-Level Piano Learning

The moving target tracking system based on wireless sensor network is composed of multiple sensor nodes, 1 converging node and a PC. The tracking target is workshop product, which realizes the detection and tracking of the moving target in the network coverage area. Peer assessment is one of the most practical forms of peer learning in university-level piano pedagogy. In the context of higher education, peer assessment refers to learning activities in which students evaluate the quality, value or level of their peers' work according to explicit or implicit criteria. In piano learning, this "work" is most often a musical performance, but it may also include technical exercises, sight-reading, accompaniment tasks, practice strategies, interpretative decisions or reflective presentations. When carefully structured, peer assessment can help students move beyond the passive reception of teacher feedback and become more active listeners, evaluators and reflective learners.

In traditional piano lessons, evaluative authority is usually concentrated in the teacher. The teacher listens, diagnoses problems, provides corrections and offers interpretative suggestions. This structure is pedagogically valuable because advanced piano performance requires expert guidance in areas such as touch, tone production, pedalling, phrasing, tempo control and stylistic understanding. Many piano students are able to sense that a performance is convincing or unconvincing, but they may struggle to explain why. A structured peer assessment task can require students to describe specific musical features, such as rhythmic stability, tonal control, dynamic contrast, melodic shaping, harmonic direction, phrase structure, stylistic appropriateness and expressive coherence. This process helps students transform intuitive musical responses into analytical language. Such verbalisation is particularly important in university-level piano pedagogy, where students are expected not only to perform but also to explain, justify and communicate musical ideas.

The use of peer assessment may also strengthen students' reflective learning. When students listen to peers, they are often able to notice problems more easily than when they are performing themselves. This distance creates a reflective space in which they can compare different approaches to the same repertoire, observe alternative practice strategies and recognise common technical or interpretative challenges. For instance, if several students perform the same étude or sonata movement, peer assessment can help them understand how different performers solve similar problems of tempo, voicing, articulation or structure. Through comparison, students may realise that musical interpretation is not a fixed answer provided by the teacher, but a process of informed decision-making.

However, peer assessment in piano learning should not be reduced to casual comments such as "good performance" or "you need more expression". Without clear guidance, peer feedback may remain superficial, overly positive, excessively negative or focused only on obvious mistakes. Topping emphasises that the effectiveness of peer assessment depends on the clarity of criteria and the structure of the assessment process. In piano classrooms, this means that teachers should provide students with specific listening focuses and feedback frameworks. For example, a peer assessment rubric may include categories such as technical accuracy, rhythmic control, tonal quality, phrasing, pedalling, stylistic understanding and stage presence. Students can then be asked to provide both descriptive observations and constructive suggestions rather than general judgements. The role of the teacher remains crucial in this process. Peer assessment does not mean that students replace the teacher's professional judgement. Rather, the teacher designs the assessment activity, clarifies the criteria, models appropriate feedback language and helps students interpret peer comments critically. In some cases, the teacher may first demonstrate how to give feedback by analysing a short performance excerpt. Students can then practise identifying strengths and areas for

improvement before applying the same process to their peers.

In a beginning or intermediate university piano class, students may be asked to focus on basic elements such as rhythm, notes, fingering, hand coordination and dynamic contrast. In more advanced classes, peer assessment can address interpretation, style, tone colour, structural understanding and performance communication. Peer assessment may also be used before formal performance assessments, allowing students to receive feedback during the preparation process rather than only after a final performance. In this way, assessment becomes formative rather than merely summative. In addition, peer assessment can support the development of future music teachers. Many university piano students, especially those in music education programmes, will need to evaluate their own students' playing in future professional contexts. Peer assessment provides an opportunity to practise pedagogical listening: listening not only to judge whether a performance is correct, but also to identify causes of problems and suggest practical solutions. For example, when a student notices that a peer's melodic line is unclear, they may need to consider whether the problem results from insufficient finger control, poor voicing, excessive accompaniment weight or unclear phrasing. This type of diagnostic listening is central to piano teaching. For peer assessment to be effective, it should be integrated into the broader pedagogical design of the piano course. It should not appear as an occasional activity disconnected from the aims of the lesson. Instead, peer assessment can be linked to repertoire study, technical training, performance preparation and reflective writing.

4. Group Collaboration in Piano Classrooms

Group collaboration represents another important dimension of peer learning in university-level piano pedagogy. While piano study is often associated with individual practice and one-to-one instruction, university piano courses frequently take place in group or class settings, particularly in music education programmes, piano pedagogy courses, keyboard skills classes and performance workshops. In these contexts, group collaboration can provide a valuable structure through which students share ideas, observe different approaches, solve problems collectively and develop a more dialogic understanding of piano learning.

Collaborative learning is not simply a matter of placing students in the same room or asking them to work together informally. Effective collaboration requires structured tasks, shared goals, individual responsibility and opportunities for reflection. The cooperative learning depends on positive interdependence, individual accountability, promotive interaction, interpersonal skills and group processing. These principles are highly relevant to piano classrooms. Students must not only participate in a collective activity, but also make meaningful individual contributions to the learning process. Without such structure, group work may become passive, uneven or dominated by a small number of more confident students.

In piano pedagogy, group collaboration can take several forms. Students may work together to analyse a piece, discuss technical difficulties, compare practice strategies, prepare performance presentations or observe each other's playing. For example, a group of students studying a Chopin nocturne may be asked to discuss questions of melodic shaping, rubato, pedalling and left-hand accompaniment patterns. In a collaborative setting, students can demonstrate how they practise, compare different solutions and reflect on the effectiveness of each method. This process can make practice strategies more visible. Instead of assuming that technical improvement depends only on repetition, students learn to analyse problems, test solutions and evaluate outcomes with their peers.

Moreover, group collaboration can contribute to the development of verbal communication in piano learning. Piano performance is often experienced as a non-verbal form of musical expression, but university-level students also need to explain musical decisions, justify interpretative choices

and communicate pedagogical ideas. Collaborative tasks require students to translate listening experience into language. For instance, when discussing why a phrase sounds unconvincing, students may need to refer to breath, direction, harmonic tension, tempo flexibility or tonal balance. Such discussion helps students develop a more precise vocabulary for musical analysis and performance feedback.

The value of group collaboration is particularly significant for students preparing to become music teachers. Many university piano students, especially those in teacher education programmes, will later teach piano, accompany choirs, work with school ensembles or guide students in classroom music settings. These professional roles require not only performing ability, but also the ability to explain, organise, listen, respond and collaborate. Group-based piano learning can therefore function as a form of pedagogical preparation. By participating in collaborative learning activities, students practise giving instructions, responding to peers' questions, diagnosing problems and presenting musical ideas clearly.

It allows students to learn through discussion, observation, shared problem-solving and collective reflection. When properly structured, group collaboration can develop students' critical listening, musical vocabulary, interpretative flexibility, pedagogical awareness and sense of learning community. Its value lies not in reducing the importance of individual practice, but in situating individual pianistic development within a broader collaborative environment. For university piano students, such experience is essential because professional musicianship increasingly requires the ability to think, listen and act with others.

5. Four-Hand Piano as a Peer Learning Practice

Four-hand piano offers a particularly productive context for peer learning because it transforms the piano from an individual instrument into a shared musical space. In solo piano performance, the student is responsible for the whole musical texture alone. In four-hand piano, however, two performers must negotiate touch, timing, phrasing, balance, pedalling and physical coordination on the same instrument. This shared condition requires students to listen beyond their own part and to understand performance as a collaborative process rather than an individual display of technical ability. In university-level piano pedagogy, four-hand piano can help students develop ensemble awareness at a relatively accessible level. Unlike larger chamber music settings, four-hand piano does not require students to coordinate with different instrumental timbres. Both performers work within the same keyboard sound world, yet they must still manage distinct registers, textures and musical functions. The primo player may carry melodic material in the upper register, while the secondo player often provides harmonic foundation, rhythmic stability or bass movement. Through this division of roles, students learn that musical responsibility is distributed rather than isolated. A successful performance depends not only on whether each part is correct, but also on how the two parts interact.

The pedagogical value of four-hand piano is closely connected to listening. Students must learn to hear their own part in relation to the whole texture. For example, a student playing an accompaniment figure may need to reduce dynamic weight in order to allow the melodic line to emerge clearly. Conversely, a student playing the melody may need to shape phrases in ways that remain rhythmically connected to the harmonic support. This kind of relational listening is central to peer learning, because students learn through immediate musical interaction with another performer. They receive feedback not only through words, but also through timing, sound, gesture and shared musical response.

Four-hand piano also encourages students to develop non-verbal communication. Williamon and Davidson's study of two expert pianists preparing piano duo and duet repertoire shows that co-

performers develop coordinated gestures, eye contact and other forms of non-verbal communication during the rehearsal process [9]. Although their study concerns expert performers, its implications are relevant to university piano teaching. Students can be encouraged to observe how breathing, head movement, body timing and visual attention contribute to ensemble coordination. These elements are often difficult to teach through verbal explanation alone, but they become concrete and observable in four-hand performance. Another important aspect of four-hand piano is its capacity to make rehearsal processes visible. In solo practice, many decisions are made privately. In four-hand rehearsal, students must discuss tempo, articulation, balance and expressive character with a partner.

6. Two-Piano Performance and Collaborative Musicianship

Two-piano performance provides a more advanced context for peer learning in university-level piano pedagogy. Unlike four-hand piano, in which two performers share one instrument, two-piano performance gives each pianist an independent instrument and a wider musical space. This independence allows each performer to develop a fuller sound and more complete technical responsibility, but it also requires a higher level of coordination, listening and interpretative negotiation. A central pedagogical value of two-piano performance lies in the balance between independence and interdependence. Each student must prepare their own part accurately, yet the musical result depends on how the two parts relate to each other. Students need to consider questions of timing, texture, balance, articulation and musical dialogue. In this process, they learn that performance is not only an individual achievement, but also a shared construction shaped by mutual listening and adjustment.

Two-piano work also strengthens ensemble awareness. Because the performers sit at separate instruments, they cannot rely on the physical closeness of four-hand playing. Instead, they must coordinate through sound, visual attention, breathing and gesture. Research on piano duo and duet performance shows that co-performers develop forms of non-verbal communication during rehearsal, including coordinated gestures and eye contact. In a university classroom, such experience helps students understand that ensemble precision depends not only on correct rhythm, but also on anticipation, responsiveness and shared musical intention. In addition, two-piano performance encourages students to engage in collaborative interpretation. Many two-piano works involve thematic exchange, textural contrast and large-scale musical dialogue. Students must therefore discuss how to shape phrases, match or contrast tone colour, coordinate climaxes and control balance across two instruments. These discussions create valuable opportunities for peer learning, as students explain, question and refine musical decisions together.

Two-piano pedagogy also has professional relevance. Pianists often work as accompanists, chamber musicians, rehearsal pianists, ensemble partners and teachers. These roles require communication, flexibility and collaborative responsibility. Two-piano learning can therefore help students move beyond a purely soloistic model of pianism and prepare them for the collaborative realities of professional musical life. However, two-piano activities require careful planning. Teachers need to consider students' technical levels, repertoire difficulty, rehearsal time and the availability of instruments. If the repertoire is too difficult, students may focus only on technical survival; if the partnership is unbalanced, one student may dominate the process. For this reason, teachers should select appropriate repertoire, provide clear rehearsal aims and include reflective discussion after rehearsals or performances.

Overall, two-piano performance extends peer learning into a more complex collaborative setting. It develops students' structural listening, rhythmic coordination, communication and shared interpretative responsibility. As part of university-level piano pedagogy, it can cultivate collaborative musicianship while preparing students for broader professional contexts.

7. Challenges and Pedagogical Implications

Although peer learning has considerable value in university-level piano pedagogy, it requires careful design. It should not be understood as simply allowing students to work together without guidance. If peer learning is unstructured, peer assessment may become superficial, group collaboration may become unequal, and ensemble-based learning may remain limited to mechanical coordination.

One challenge is the difference in students' performance levels. In many university piano classrooms, students have varied technical backgrounds and levels of confidence. Stronger students may dominate discussion or rehearsal, while less confident students may become passive. Teachers should therefore design tasks that allow different forms of contribution. For example, students may take roles as performers, listeners, score analysts, rhythm observers or feedback summarizers. This helps ensure that peer learning is not limited to the most advanced performers. Another challenge is the quality of peer feedback. Students may initially lack the language or critical awareness needed to provide useful comments. Feedback may be too general, overly positive or insufficiently connected to musical evidence. Research on peer assessment stresses the importance of clear criteria and preparation. In piano classrooms, teachers can provide rubrics, listening focuses and models of constructive feedback so that students learn how to describe problems, explain their significance and suggest practical solutions.

The emotional dimension of performance should also be considered. Piano performance is often closely connected to students' confidence and artistic identity. Public peer evaluation may cause anxiety if the classroom atmosphere is competitive. For this reason, teachers should create a supportive environment in which feedback is understood as part of shared learning. A balanced feedback model, such as identifying one strength, one issue for improvement and one practical suggestion, can help maintain both honesty and respect. Institutional conditions may also limit peer learning. Four-hand and two-piano activities require suitable instruments, rehearsal rooms and time. Large classes may make detailed peer discussion difficult. Teachers therefore need to adapt peer learning to available resources. Where two pianos are not available, students may use four-hand repertoire, score discussion, listening tasks or video analysis as alternative forms of collaborative learning. These challenges suggest that the teacher's role remains central. Peer learning does not reduce the importance of teacher guidance; rather, it changes the teacher's role from sole evaluator to designer and facilitator of learning. Teachers select tasks, clarify expectations, guide interaction and connect peer observations to broader musical principles.

8. Conclusion

This article has examined peer learning as a meaningful pedagogical approach in university-level piano pedagogy, arguing that although piano teaching in higher education has traditionally relied on teacher-centred instruction and individual practice, this model alone may not fully support the development of students' critical listening, reflective judgement, communication skills and collaborative musicianship. Peer learning broadens the learning environment by encouraging students to learn from and with one another through multiple classroom forms, including peer assessment, group collaboration, four-hand piano and two-piano performance. Peer assessment helps students develop evaluative judgement and a more precise vocabulary for discussing performance, while group collaboration enables them to share practice strategies, analyse musical problems and engage in collective interpretation. Four-hand piano creates a shared musical space in which students develop ensemble awareness, relational listening and non-verbal communication, and two-piano performance further extends these skills by requiring more advanced coordination, structural listening and collaborative interpretation. However, peer learning should not be

understood as a replacement for teacher guidance, as its effectiveness depends on careful pedagogical design, clear learning objectives, structured tasks, appropriate feedback criteria and a supportive classroom atmosphere. Teachers therefore remain central to the process, not only as musical experts, but also as facilitators who organise peer interaction and connect students' observations to broader pianistic and pedagogical principles. Overall, peer learning can enrich university-level piano pedagogy by shifting the classroom from a solely teacher-directed model towards a more dialogic, reflective and collaborative learning environment, encouraging students to become active listeners, thoughtful evaluators and responsive musical partners, and contributing not only to their piano performance development but also to their broader formation as collaborative and reflective musicians.

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