

Feedback Use in Process-Based Assessment in University Piano Courses

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Abstract: Process-based assessment has become an area of interest in research on assessment in university piano courses. However, the fact that assessment takes place during the learning process does not necessarily mean that the information generated through assessment will naturally inform students' subsequent learning. Existing studies have examined the relationship between feedback and learning from various perspectives, including formative assessment in piano courses, teacher feedback, private practice, technology-mediated feedback, self-regulation, and subsequent performance. Building on this research, the present study focuses on a specific issue concerning feedback use in process-based assessment in university piano courses: after teachers provide evaluative feedback in class, how do students understand this information, continue to address it during independent practice between lessons, and reassess changes in the problems previously identified through subsequent performance? Within the scope of the literature reviewed in this study, previous research has addressed several components of this process, while relatively limited attention has been given to the continuous learning process as a whole. Drawing on research on formative assessment, feedback literacy, feedback in music performance, and music practice, this study examines how teachers identify problems that require priority attention on the basis of students' actual performance, how students understand feedback and continue to address these problems during independent practice, and how subsequent performance provides information for reassessing changes in previously identified problems. This study argues that process-based assessment in university piano courses should attend not only to whether teachers provide feedback, but also to whether students understand the assessment information they receive, continue to address the problems identified in class during independent practice, and reassess changes in those problems through subsequent performance. Focusing on feedback use can contribute to a more detailed understanding of the connections among classroom assessment, students' independent practice, and subsequent performance.

Keywords: university piano courses; process-based assessment; feedback use; piano practice

1. Research Foundations and Problem Formulation for Process-Based Assessment in University Piano Courses

1.1 Piano Course Assessment Has Begun to Attend to Students' Learning Processes

Piano performance develops gradually through sustained practice and repeated adjustment. From initial score reading to a relatively complete performance of a piece, students must continually address issues involving fingering, rhythm, touch, tone, relationships between musical parts, phrasing, and musical expression. The problems that need to be addressed vary across different stages of learning, and even the same problem may change over the course of practice. A single examination or complete performance can therefore reflect a student's learning outcome at a particular point in time, but it cannot fully reveal how the student identifies problems, adjusts practice, and gradually modifies the performance. Assessment in piano courses consequently needs to attend not only to performance outcomes at particular stages, but also to students' actual learning and practice processes. From the perspective of curriculum requirements, attention to students' learning processes is not a recent development. In 2006, the General Office of the Ministry of Education of the People's Republic of China issued the Teaching Guidelines for Compulsory Undergraduate Courses in Musicology (Teacher Education) at Regular Institutions of Higher Education. In its section on piano course assessment, the document calls for the integration of

formative and summative assessment and includes students' learning attitudes, disciplinary foundations, learning processes and outcomes, performance in examinations, and in-class and out-of-class assignments within the scope of assessment.¹ This policy document provides a basis for attending to the learning process in piano course assessment, although it does not in itself indicate how these requirements have actually been implemented across different universities.

Research on piano teaching has further examined the implementation of formative assessment. In a study of foundational piano courses, Wang Dan developed a formative assessment system integrating online and offline learning and addressed assessment content, assessors, and assessment methods. Online assessment included individual learning records, learning trajectories, self-correction, and learning portfolios, while offline assessment covered classroom learning, after-class learning, and reflection after learning.² This study extended the scope of assessment beyond examination results to encompass multiple aspects of students' ongoing learning.

Hu Limin further proposed a formative assessment cycle of "performance–evidence–feedback–re-performance" in the context of piano education at normal universities, linking students' actual performance, assessment evidence, feedback, and subsequent performance.³ This indicates that formative assessment, feedback, and attention to the learning process have already entered research on piano course assessment. Accordingly, the present study does not treat a "shift from outcome

¹ General Office of the Ministry of Education of the People's Republic of China. (2006). Teaching Guidelines for Compulsory Undergraduate Courses in Musicology (Teacher Education) at Regular Institutions of Higher Education.

² Wang Dan. (2021). A study on the construction of an "online + offline" formative assessment system for foundational piano courses. *Panorama of Chinese Nationalities*, (19), 66–67, 70.

³ Hu Limin. (2026). A study on the construction of a formative assessment system for piano education at normal universities oriented toward music classroom competence in primary and secondary schools. *Advances in Education*, 16(8), 2106–2112.

assessment to process assessment” as a new proposition that needs to be advanced again.

1.2 The Generation of Feedback During Assessment Does Not Mean That Students Have Used It

To further define the scope of the present study, the preliminary literature search drew on research concerning piano assessment, piano feedback, and piano practice in CNKI and RISS, supplemented by English-language studies retrieved from relevant journal websites and institutional repositories. Search terms included “piano,” “university piano,” “formative assessment,” “process-based assessment,” “feedback,” “practice,” “piano feedback,” “studio piano,” and “private practice.” The present article is not a systematic review. Rather, the purpose of the search was to identify representative studies directly relevant to the research question. The discussion of previous research below is therefore limited to the scope of this search.

International research on piano pedagogy has directly examined feedback and its relationship with students’ practice. Through four cases of one-to-one piano instruction, Haughton examined classroom feedback involving students aged 11–14, drawing on lesson observations, teacher and student interviews, lesson records, and practice diaries. The study found that although students continually received teacher feedback during lessons, there was relatively limited evidence concerning how they actually used feedback and feed-forward guidance in their private practice.¹ This study is directly relevant to the issue addressed in the present article, but its participants were adolescent individual piano learners in the United Kingdom rather than students enrolled in university piano courses.

In higher education piano teaching, Hamond, Himonides, and Welch examined feedback in piano studio instruction involving three teacher–student dyads in Brazilian higher education, drawing on video recordings of lessons, interviews, and data concerning the use of digital technologies.² Their study shows that feedback in university-level piano teaching has already received direct scholarly attention and that the relationship between feedback and students’ learning outside lessons is not being proposed here for the first time.

Research on feedback in music more broadly has further extended attention to learners’ understanding and use of feedback. Blackwell, Matherne, and McPherson conducted a systematic review of research on feedback in music education and music psychology published between 1973 and 2021, including 153 studies. Their review found that the existing literature had focused more extensively on teacher feedback and learners’ observable behaviours, while comparatively less attention had been paid to learners’ cognition, affect, and feedback oriented toward future learning.³ McPherson, Blackwell, and Hattie, in turn, discussed feedback in music performance teaching, emphasizing that feedback involves not only the provision of information by teachers but also learners’ understanding of their current performance, learning goals, and what needs to be done next, together with the gradual development of self-regulatory capacity.⁴ Recent research on piano feedback has also examined subsequent performance and students’ self-evaluation following feedback. Nusseck et al. investigated audio-playback feedback with 25 piano students, incorporating an initial performance, a feedback intervention, a second performance, student self-evaluations, and expert evaluations. Some student self-rating measures showed between-group

¹ James F. Haughton. (2015). *The Efficacy of Feedback in Pianoforte Studies*, PhD diss., University of Warwick.

² Luciana Hamond, Evangelos Himonides, and Graham Welch, “The Nature of Feedback in Higher Education Studio-Based Piano Learning and Teaching with the Use of Digital Technology,” *Journal of Music, Technology & Education* 13, no. 1 (2020): 33–56.

³ Jennifer Blackwell, Nathan Matherne, and Gary E. McPherson. (2023). A PRISMA Review of Research on Feedback in Music Education and Music Psychology. *Psychology of Music*, 51(3), 716–729.

⁴ Gary E. McPherson, Jennifer Blackwell, and John Hattie. (2022). Feedback in Music Performance Teaching. *Frontiers in Psychology*, 13, Article 891025.

differences, whereas external evaluations by professional pianists did not reveal significant intervention effects.¹ This study further demonstrates that research on piano feedback has already extended to subsequent performance following feedback and to learners' judgments of changes in their own performance.

Existing research has therefore examined the relationship between feedback and subsequent learning from a number of perspectives, including teacher feedback in piano teaching, private practice, technology-mediated feedback, self-regulation, and subsequent performance. The present study consequently does not claim that "students need to use feedback" as a new theoretical proposition, nor does it begin from the assumption that research on piano pedagogy has neglected feedback use. Instead, it focuses on a more specific issue within process-based assessment in university piano courses: after teachers provide evaluative feedback in class, how do students understand this information, continue to address the problems identified in class during independent practice between lessons, and reassess changes in those problems through subsequent performance? Within the scope of the literature reviewed here, previous studies have addressed several of these components individually, whereas relatively limited research has taken students' use of feedback between classroom feedback and subsequent performance as its primary object of analysis while examining these components as a continuous process. On this basis, the present study does not attempt to construct another formative assessment system for piano courses. Instead, it focuses on how students continue to use assessment information after classroom feedback has been provided.

1.3 This Study Focuses on How Classroom Feedback Enters Students' Independent Practice

In this study, "process-based assessment" refers to the assessment context of piano courses in which attention is directed toward students' ongoing learning processes and changes over time, whereas "feedback use" refers to students' understanding of information obtained through assessment and their use of that information to adjust subsequent piano practice and learning. The two concepts are therefore not equivalent. Process-based assessment concerns assessment information generated during the learning process, whereas feedback use asks a further question: how is that information subsequently used by students?

Existing research on feedback in music performance has emphasized the importance of learners' reception of feedback, their understanding of what needs to be done next, and their self-regulation.² Building on this research, the present study locates the discussion more specifically within the relationship between classroom feedback and independent practice in university piano courses.

Research on music practice has examined learners' activities in terms of preparation before practice, behaviour during practice, and reflection following practice. Research involving Chinese undergraduate piano majors has also examined relationships among metacognition, self-regulated learning, and performance.^{3,4} These studies did not directly investigate teacher feedback and therefore cannot be used to determine whether teacher feedback affects students' practice or performance. They are cited here only to establish that independent practice is not simply an activity of

¹ Martin Nusseck, Florian Wild, Christian Sischka, et al. (2025). Effects of Audio Feedback Interventions with the Disklavier on the Performance of Piano Students. *Frontiers in Psychology*, 16, Article 1568021.

² See Jennifer Blackwell, Nathan Matherne, and Gary E. McPherson. (2023). A PRISMA Review of Research on Feedback in Music Education and Music Psychology. *Psychology of Music*, 51(3), 716–729; Gary E. McPherson, Jennifer Blackwell, and John Hattie. (2022). Feedback in Music Performance Teaching. *Frontiers in Psychology*, 13, Article 891025.

³ Gary E. McPherson, Margaret S. Osborne, Paul Evans, and Peter Miksza. (2019). Applying Self-Regulated Learning Microanalysis to Study Musicians' Practice. *Psychology of Music*, 47(1), 18–32.

⁴ HWANG, S. S. (2022). The mediating effect of self-regulated learning on the relationship between metacognitive skills and performance among Chinese university students majoring in piano. *Journal of Learner-Centered Curriculum and Instruction*, 22(8), 807–820.

repetition but involves learners' own judgment, regulation, and action.

The present study focuses on learning activities occurring after classroom feedback and before subsequent performance. It examines how teachers identify problems that need to be addressed, how students understand feedback and continue to work on those problems after class, and how subsequent performance provides information for judging changes in previously identified problems. For analytical clarity, the discussion is organized around the sequence of "actual performance–problem identification–teacher feedback–independent practice–subsequent performance and judgment."

This sequence serves only as an analytical framework for organizing the discussion. It is not an empirically validated stage model, nor does it imply that piano learning in practice always proceeds in a fixed sequence. Previous studies have already examined relationships among feedback, private practice, subsequent performance, and future improvement.¹ Accordingly, the present study does not propose "feedback–practice–re-performance" as a new theoretical model. Its focus is instead on how students continue to work with assessment information after feedback has been provided and before they perform again.

2. Theoretical Basis for Feedback Information to Inform Subsequent Learning

2.1 The Role of Feedback Extends Beyond the Provision of Information by Teachers

Teacher feedback is an important component of process-based assessment, but whether it informs subsequent learning also depends on how students understand and process the information. Piano teachers may identify problems through verbal explanations, demonstrations, or targeted corrections, thereby helping students recognize discrepancies between their current performance and learning expectations. The provision of feedback by the teacher, however, does not mean that the student has already made use of that feedback.

Nicol and Macfarlane-Dick, examining the relationship between formative assessment and self-regulated learning, emphasize students' active role in the feedback process. They argue that students are not merely recipients of external feedback; during learning, they also generate internal feedback on the basis of goals, standards, and judgments of their own performance, and use it to regulate their learning.² This perspective suggests that classroom feedback should not be understood solely in terms of whether a teacher has identified a problem. It is also necessary to consider how students understand the relationship between the information they receive and their own performance. In piano courses, teachers' professional judgments need to be understood by

¹ See Hu Limin. (2026). A study on the construction of a formative assessment system for piano education at normal universities oriented toward music classroom competence in primary and secondary schools. *Advances in Education*, 16(8), 2106–2112; James F. Haughton. (2015). The Efficacy of Feedback in Pianoforte Studies, PhD diss., University of Warwick; Luciana Hamond, Evangelos Himonides, and Graham Welch. (2020). The Nature of Feedback in Higher Education Studio-Based Piano Learning and Teaching with the Use of Digital Technology. *Journal of Music, Technology & Education*, 13(1), 33–56; Martin Nusseck, Florian Wild, Christian Sischka, et al. (2025). Effects of Audio Feedback Interventions with the Disklavier on the Performance of Piano Students. *Frontiers in Psychology*, 16, Article 1568021.

² David J. Nicol and Debra Macfarlane-Dick. (2006). Formative Assessment and Self-Regulated Learning: A Model and Seven Principles of Good Feedback Practice. *Studies in Higher Education*, 31(2), 199–218.

students before they can continue to inform subsequent practice.

This understanding is also consistent with discussions of feedback in music performance research. McPherson, Blackwell, and Hattie emphasize that feedback in music performance teaching needs to help learners understand their current performance, their goals, and the direction of subsequent improvement, while allowing scope for learners' own self-regulation.¹ The present study therefore looks beyond the teacher's provision of feedback to consider how students understand and process that information.

2.2 Feedback Needs to Inform Students' Subsequent Learning Actions

After understanding teacher feedback, students still need to adjust their subsequent learning on the basis of that feedback before the assessment information can continue to serve a formative function. Carless and Boud identify "taking action" as an important component of student feedback literacy, emphasizing that learners need to use feedback to improve their work or learning.² The present study draws on this perspective not to introduce a separate form of "feedback-use assessment" into piano courses, but to examine whether information generated through process-based assessment actually informs students' subsequent practice.

This distinction is particularly important in piano courses. Classroom assessment occurs primarily while students are receiving direct instruction from the teacher, whereas a substantial proportion of practice takes place during periods of independent learning. Between lessons, immediate teacher guidance is temporarily absent, and students need to continue working independently on problems identified in class. Feedback use therefore cannot be reduced to whether students remember what the teacher said. It is also necessary to consider whether

the teacher's comments subsequently become issues that students actually address during practice.

Feedback use is also different from "completing homework" in a general sense. Completing assigned repertoire, practising for a specified amount of time, or being able to repeat the teacher's instructions does not, in itself, demonstrate that feedback from the previous lesson has been used. What needs to be examined further is whether problems identified in class continue to influence students' attention, judgment, and practice after the lesson.

2.3 Feedback Use Requires Students to Judge Changes in Their Performance

After practising in response to feedback, students still need to judge whether their performance has changed. Taking action during practice does not in itself demonstrate that the original problem has improved. Students also need to compare their performance before and after practice and decide whether to continue with the same approach or redirect their attention. Feedback use therefore involves not only understanding and action but also judgment of learning outcomes.

Tai et al. define "evaluative judgement" as the capability to make decisions about the quality of one's own and others' work and argue that this capability can help learners judge the quality of work in subsequent contexts.³ In piano learning, this means that students need gradually to relate their own performance to relevant expectations and to compare changes in their playing before and after practice.

The "judgment" discussed in this study does not refer to introducing a separate student self-assessment procedure into piano courses, nor does it require students to replace teachers in making professional evaluations. Teachers' professional judgment remains important. Students, however, need gradually to learn to hear and compare

¹ Gary E. McPherson, Jennifer Blackwell, and John Hattie. (2022). Feedback in Music Performance Teaching. *Frontiers in Psychology*, 13, Article 891025.

² David Carless and David Boud. (2018). The Development of Student Feedback Literacy: Enabling Uptake of Feedback. *Assessment & Evaluation in Higher Education*, 43(8), 1315–1325.

³ Joanna Tai, Rola Ajjawi, David Boud, Phillip Dawson, and Ernesto Panadero. (2018). Developing Evaluative Judgement: Enabling Students to Make Decisions about the Quality of Work. *Higher Education*, 76(3), 467–481.

changes in their own playing during independent practice when the teacher is absent, so that their subsequent practice has a basis for self-adjustment. These three aspects should not be regarded as fixed stages. Rather, they represent several dimensions that need to be considered when analysing students' use of feedback.

3. The Specific Process of Feedback Use in Process-Based Assessment in University Piano Courses

3.1 Identifying Problems That Require Priority Attention from Actual Performance

Whether students can continue to use feedback after class first depends on whether a clear problem focus has been established during the lesson. Piano performance involves many aspects, including score reading, rhythm, fingering, touch, tone, relationships between musical parts, phrasing, and musical expression, and several different problems may occur simultaneously in a single performance. If teachers identify every problem they hear one by one, students may receive a large amount of assessment information but still be unable to determine what should be addressed first in their practice after class. Feedback within process-based assessment therefore needs to be selective in relation to the student's current stage of learning.

Being selective does not mean ignoring other problems. Rather, teachers need to determine what should be addressed first in light of the student's current stage of learning. As the same piece develops from initial learning toward greater maturity, the teacher's focus may also change. In the early stages, score reading, rhythm, fingering, and basic playing techniques may need to be addressed first; as the piece becomes more familiar, attention may shift toward relationships between musical parts, phrase organization, tone control, and musical expression. Even when the same symptom is observed—for example, instability in a fast passage—the underlying cause may be unsettled

fingering, a premature increase in tempo, or a particular technical difficulty. If the teacher merely comments that "this passage is unstable," the student may still not know where to begin when practising independently.

For students with relatively limited learning experience, receiving numerous technical and musical requirements after a single performance can make it difficult to establish priorities in subsequent practice. For example, if a performance contains several wrong notes, rhythmic instability, and incomplete phrasing, and the rhythmic problem is already affecting the continuity of the entire passage, rhythm may first be treated as the immediate priority. Once this problem has improved, attention can then turn to tone and musical expression. There is no fixed sequence applicable to every student; teachers need to make judgments on the basis of the actual performance and the student's current learning needs.

Establishing priorities for feedback can also create continuity across successive lessons. At the next lesson, the teacher can first return to the principal problem identified previously and compare whether it has changed following the student's practice, rather than generating an entirely new list of problems each time. The focus of feedback should emerge from problems evident in the student's current performance and should also change as the performance develops.

3.2 Making Assessment Language Usable for Students' Practice

Research on feedback in music performance emphasizes that feedback needs to help learners understand both their current performance and what they need to do next.¹ In piano courses, however, a teacher's ability to identify what is wrong with a student's performance does not necessarily mean that the student knows how to address the problem after class. General comments such as "the tone is not good," "the playing is too

¹ Gary E. McPherson, Jennifer Blackwell, and John Hattie (2022). Feedback in Music Performance Teaching. *Frontiers in Psychology*, 13, Article 891025.

flat,” “it lacks musicality,” or “the phrase has no direction” can communicate the teacher’s judgment of the performance, but they may not directly provide a basis for the student’s independent practice.

“Unstable rhythm,” for example, is first of all a judgment about the result of a performance. The student still needs to understand where the problem occurs, under what circumstances it tends to occur, and what to attend to when practising the passage again. Similarly, “the melody does not stand out enough” is an evaluative judgment. If a student interprets it simply as “play the right hand louder,” practice may become a matter of merely increasing the volume of the right hand without actually addressing the balance between melody and accompaniment.

When pointing out that the melody is insufficiently prominent, a teacher can help the student identify where it tends to be obscured by the accompaniment and compare different performance outcomes so that the student can hear changes in the balance between the parts. When a phrase lacks direction, the teacher can work with the specific phrase, directing the student’s attention to its progression and resolution and comparing the audible effects of different approaches. In this way, students receive not only the teacher’s judgment of the performance but also information about what they need to attend to when practising again after class.

From the perspective of students’ subsequent practice, teachers’ evaluative judgments need to be made sufficiently specific for students to continue working on the identified problems. Teachers need to help students understand what the assessment is referring to, while students need gradually to understand the relationship between the teacher’s expectations and the actual sound of their own performance. Feedback use therefore cannot be assessed only by whether the teacher has accurately identified a problem. It is also necessary to consider whether students know what they need to address once they leave the lesson.

Teachers do not need to design every step of the practice process for students. When students have limited experience in addressing a particular type of problem, more explicit practice guidance may be appropriate. As students gain experience, they can first be asked to explain how they intend to address the problem, with the teacher providing further guidance as necessary. The key issue is not whether students can repeat the teacher’s words, but whether they understand the main problem that currently requires attention and can begin the next stage of practice accordingly.

Hattie and Timperley point out that the effects of feedback vary according to its level, content, and context.¹ This suggests that the adequacy of feedback in a piano lesson cannot be judged simply by the number of problems a teacher identifies. Both lesson time and students’ attention during subsequent practice are limited. Rather than leaving students with numerous fragmented comments, it may be more useful to ensure that problems requiring priority attention are adequately understood and can continue to be addressed after the lesson.

3.3 Continuing to Address Problems Identified in Class During Independent Practice

Whether classroom feedback continues to inform subsequent learning can, to a considerable extent, be observed through students’ independent practice after they leave the lesson. Direct teacher instruction constitutes only part of the learning process in piano courses. Becoming familiar with a piece, repeatedly addressing technical problems, and gradually stabilizing a performance all require practice outside the lesson. Whether students continue to work on problems identified in class during their independent practice is therefore an important aspect of feedback use examined in this study.

A distinction first needs to be made between “having practised” and “having used feedback.” Completing a prescribed amount of practice time or repeatedly playing a piece from beginning to end

¹ John Hattie and Helen Timperley. (2007). The Power of Feedback. *Review of Educational Research*, 77(1), 81–112.

does not in itself demonstrate that feedback from the previous lesson has been used. If the teacher has identified rhythmic instability in a particular passage, the student's subsequent practice needs to continue to address that problem. If the teacher has identified an unclear relationship between melody and accompaniment, the student needs to continue listening to the relationship between the two parts rather than focusing solely on playing the correct notes.

Understanding feedback during the lesson also does not mean that students will continue to use it after class. Once they return to the practice room, students face other demands involving score reading, tempo, technical difficulties, and the overall completeness of the piece. When their attention shifts back to "playing the right notes," "increasing the tempo," or "getting through the whole piece," comments made in class concerning tone, balance between parts, or phrasing may gradually become secondary. Students may therefore remember what the teacher said while continuing to practise in much the same way as before.

Haughton's case study of piano teaching found that students continually received teacher feedback during lessons, but there was relatively limited evidence concerning how they actually used feedback and feed-forward guidance in private practice.¹ Because the participants were adolescent individual piano learners, the findings cannot be directly generalized to university students. Nevertheless, the study suggests that receiving feedback during a lesson and actually using it in subsequent practice need to be distinguished.

From the perspective of independent practice, feedback use concerns not only whether students understand the teacher's comments during the lesson but also whether they can sustain attention to the main problems over an extended period of

practice. For some students, marking passages that need further work in the score or briefly recording one or two problems that currently require priority attention may help them maintain their practice focus when the teacher is absent. The record itself is not the goal; it serves only to help students remember what they still need to address.

McPherson et al. used self-regulated learning microanalysis to examine the practice of two first-year Bachelor of Music students at three points during a semester as they prepared études for a performance examination. Their analysis considered forethought, performance, and self-reflection.² With only two cases, the study cannot be used to characterize university music students in general. It is cited here primarily to demonstrate that music practice can be examined through activities before, during, and after practice rather than solely in terms of practice time or repetition.

Huang Xiaoxiao examined relationships among metacognitive skills, self-regulated learning, and performance among 468 undergraduate piano majors from four Chinese universities and discussed musical self-regulated learning in terms of cognitive, motivational, and behavioural regulation.³ The study did not investigate teacher feedback. It is therefore not used here to infer any effect of feedback on self-regulated learning or performance, but only as relevant research for understanding the independent learning activities of university piano students.

Teacher feedback also does not need to turn students' practice into a completely prescribed procedure. When students lack experience in addressing a particular type of problem, teachers can provide more explicit guidance. As students gain experience, they can gradually be encouraged to explain how they intend to address a problem, why they have chosen a particular approach, and what changes they hear after practising. From the

¹ James F. Haughton. (2015). *The Efficacy of Feedback in Pianoforte Studies*, PhD diss., University of Warwick.

² Gary E. McPherson, Margaret S. Osborne, Paul Evans, and Peter Miksza. (2019). Applying Self-Regulated Learning Microanalysis to Study Musicians' Practice. *Psychology of Music*, 47(1), 18–32.

³ HWANG, S S. (2022). The mediating effect of self-regulated learning on the relationship between metacognitive skills and performance among Chinese university students majoring in piano. *Journal of Learner-Centered Curriculum and Instruction*, 22(8), 807–820.

perspective of process-based assessment, the important issue is not how many practice records students produce, nor simply how much practice they complete, but whether problems identified in the previous lesson continue to influence their attention, judgment, and practice when the teacher is absent.

3.4 Comparing Changes in Previously Identified Problems Through Subsequent Performance

After a period of practice, students need to use a subsequent performance to judge whether previously identified problems have changed. Practising in accordance with the teacher's comments does not mean that the original problem has necessarily been resolved, nor can the teacher conclude that feedback has been effective simply because the student reports having practised. A subsequent performance provides new information that allows both teacher and student to compare the problems identified previously.

Such comparison requires continuity between the problem identified previously and what is examined subsequently. For example, if the previous lesson focused on rhythmic stability in a particular passage, the subsequent performance can first be used to determine whether the location that had previously been problematic has changed. If the earlier feedback concerned the balance between melody and accompaniment, the adjusted relationship between the parts needs to be heard and assessed again. In this way, the subsequent performance is not an entirely independent assessment event but remains connected to the preceding feedback.

If the problem has clearly improved, the teacher can introduce further requirements on that basis. If little change is evident, the reasons need to be reconsidered. The result should not simply be attributed to the student "not practising seriously." The student may not have accurately understood the

previous feedback, the practice strategy used may not have addressed the actual problem, or the teacher's original feedback may have been too general. The teacher can also ask the student to describe the practice undertaken after the previous lesson in order to understand whether adjustments were made in response to the feedback. Such accounts can provide supplementary information about feedback use, but they still need to be considered together with the student's actual performance.

Likewise, improvement in a subsequent performance should not automatically be attributed entirely to teacher feedback. Between lessons, students' performance may also be influenced by increased practice time, greater familiarity with the piece, other practice strategies adopted independently, and other learning experiences. Subsequent performance can provide important information about learning after previous feedback, but differences between two performances alone cannot demonstrate that a particular form of feedback produced a specific effect.

Experimental research on piano feedback also suggests that changes in subsequent performance need to be interpreted cautiously. Nusseck et al. investigated audio-playback feedback with 25 piano students. Following the second performance, some student self-rating measures showed between-group differences, whereas external evaluations by professional pianists did not reveal significant intervention effects.¹ This finding suggests that subsequent performance and students' own judgments of change can provide important information, but neither can independently establish the effectiveness of a particular form of feedback.

If future empirical research examines feedback use in university piano courses, simply comparing two performances before and after practice will not be sufficient. It will also be necessary to investigate

¹ Martin Nusseck, Florian Wild, Christian Sischka, et al. (2025). Effects of Audio Feedback Interventions with the Disklavier on the Performance of Piano Students. *Frontiers in Psychology*, 16, Article 1568021.

what feedback teachers provided in class, how students understood that feedback, how they practised after class, and how they themselves explained the practice process. Classroom observations, student interviews, practice records, and performance materials collected at different stages could provide complementary forms of evidence.

Students' own judgment is also important in this process. Students do not need to attain the same level of professional judgment as their teachers, but they do need gradually to become capable of comparing their own performances—for example, whether a previously unstable passage has become more continuous, whether the melody is clearer than before, or whether an adjusted phrase is closer to the intended result. Teachers can use demonstrations, comparisons, and further explanation to help students revise inaccurate judgments.

Previous research on formative assessment in piano education has already proposed a cycle of “performance–evidence–feedback–re-performance,” while research on piano feedback has also examined private practice, technology-mediated feedback, and subsequent performance.¹ The present study therefore does not treat “subsequent performance” or “continued practice after feedback” as new research topics in themselves. Rather, it focuses more specifically on how students continue to work with assessment information between classroom feedback and subsequent performance.

Subsequent performance can both reflect students' learning following the previous lesson and generate new assessment information. Teachers can use this information to redefine learning priorities, after which students enter another stage of practice. In this way, process-based assessment remains connected to students' continuing piano learning rather than simply adding a number of separate assessment events.

4. Conclusion

The significance of process-based assessment in university piano courses lies not simply in increasing the frequency of ongoing assessment, but in using information that continually emerges during learning to adjust subsequent teaching and practice. Taking process-based assessment as the assessment context and feedback use as the specific issue under investigation, this study has focused on how students understand information after teachers provide evaluative feedback, how they continue to address it during independent practice, and how they reassess previously identified problems through subsequent performance.

The provision of feedback by teachers and the use of feedback by students cannot be treated as equivalent. Teachers need to identify problems in students' actual performance that require priority attention and help students understand the specific issues to which the assessment refers. Students, in turn, need to continue addressing these problems during independent practice and gradually learn to compare changes in their performance before and after practice. From this perspective, examining

¹ See Hu Limin. (2026). A study on the construction of a formative assessment system for piano education at normal universities oriented toward music classroom competence in primary and secondary schools. *Advances in Education*, 16(8), 2106–2112; James F. Haughton. (2015). The Efficacy of Feedback in Pianoforte Studies, PhD diss., University of Warwick; Luciana Hamond, Evangelos Himonides, and Graham Welch. (2020). The Nature of Feedback in Higher Education Studio-Based Piano Learning and Teaching with the Use of Digital Technology. *Journal of Music, Technology & Education*, 13(1), 33–56; Martin Nusseck, Florian Wild, Christian Sischka, et al. (2025). Effects of Audio Feedback Interventions with the Disklavier on the Performance of Piano Students. *Frontiers in Psychology*, 16, Article 1568021.

feedback use requires classroom assessment information, students' independent practice after class, and subsequent performance to be considered in relation to one another, rather than focusing only on whether the teacher has provided feedback.

Focusing on feedback use does not require the introduction of complex additional assessment procedures. In piano courses where process-based assessment is already being implemented, further attention needs to be given to whether problems identified in class continue to inform students' actual practice after class. A student's ability to repeat the teacher's comments, complete assigned practice, or demonstrate improvement in a subsequent performance cannot, on its own, establish that feedback has been effectively used. Understanding how students use feedback requires consideration of classroom assessment content, students' practice processes, and subsequent performance.

This study has analysed feedback use in university piano courses primarily on the basis of research on

formative assessment and feedback, music practice, and existing studies of piano course assessment. It has not empirically investigated students' actual use of feedback through classroom observation, interviews, or records of students' practice. The analytical framework proposed here is therefore intended primarily to facilitate understanding of the relationship between classroom assessment and students' independent practice. It cannot be used to determine the actual effectiveness of a particular form of feedback, nor should the aspects discussed in this article be regarded as empirically validated fixed stages. Future research could examine authentic university piano teaching contexts by bringing together teachers' classroom feedback, students' understanding of that feedback, their practice processes after class, and performance at different stages, thereby investigating more closely how students actually use feedback and how this process may differ among students.

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