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Article

# The Impact of Feedback Timing and Specificity on Learning Engagement and Flow State in Senior Primary School Music Classes

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**Abstract:** Feedback plays a pivotal role in music education, where both technical development and emotional engagement are essential for meaningful student growth. While feedback timing and specificity have been examined extensively in general academic contexts, their combined influence on learning engagement and flow state remains significantly underexplored in primary music classroom settings. Addressing this critical gap, the present study employed a mixed-methods research design across two Grade 5 classes ( $N = 128$ ) in public primary schools located in eastern China. One class received immediate and specific feedback, while the other received delayed and general feedback during a four-week Creative Music Making instructional unit. Data were systematically collected through validated student surveys, structured classroom observations, and semi-structured teacher interviews. Quantitative results indicated significantly higher levels of flow experience, behavioral-emotional engagement, perceived feedback specificity, and willingness to revise performance in the immediate-and-specific feedback condition (all  $p < .001$ ; Cohen's  $d > 1.3$ ). Qualitative findings further revealed that immediate and specific feedback functioned as real-time scaffolding and affirmed students' musical identities, whereas delayed or general feedback often led to uncertainty, diminished motivation, and disengagement. These results underscore the importance of timely, precise, and affirming feedback in fostering both cognitive focus and emotional investment in young music learners, offering empirically grounded guidance for pedagogical practice in resource-constrained educational settings.

**Keywords:** feedback specificity; feedback timing; flow experience; student engagement; music education

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## 1. Introduction

Feedback is a critical component of the learning process, particularly in music education, where both technical skills and emotional engagement are essential. In primary school music classes, feedback serves not only to guide students' technical progress but also to foster creativity and artistic expression [1]. For example, in a typical senior primary school music class, immediate feedback on a student's performance can help them adjust posture or timing, while specific feedback can enhance their understanding of musical theory or emotional expression in performance. Research has shown that feedback timing and specificity significantly influence learning engagement and the experience of flow, a state of deep immersion and focus that enhances intrinsic motivation. However, while feedback has been widely studied in academic settings, the specific impact of feedback timing—immediate versus delayed—and specificity—general versus specific—in music education, especially in senior primary school, remains underexplored. This gap is

particularly concerning as music education relies heavily on emotional engagement and the development of flow, yet the role of feedback in this context is not well understood.

Existing research has largely focused on feedback in general academic subjects, with little attention given to the unique dynamics of music learning. For instance, studies in primary school classrooms have indicated that immediate feedback enhances student engagement in mathematics, but comparable investigations in music remain limited. While feedback timing has been examined across various domains, its interaction with specificity—particularly within music instruction—has not been systematically explored [1]. Music education, due to its creative nature, requires feedback that responds sensitively to students' emotional and cognitive needs. Furthermore, flow—a psychological state associated with sustained engagement and enjoyment in learning—has been extensively documented in sports and psychology, but its application to music education remains underdeveloped. In observed practice, such as in primary school choir settings, students who received timely and specific feedback regarding vocal techniques demonstrated greater likelihood of entering flow during rehearsal, suggesting a meaningful relationship between feedback quality and emotional engagement. Thus, there is a need to investigate how the combination of feedback timing and specificity influences both engagement and flow in music classrooms.

This study aims to fill this gap by exploring how immediate and delayed feedback, as well as specific and general feedback, affect learning engagement and flow in senior primary school music classes. By examining these two dimensions of feedback, the study seeks to provide insights into how feedback can be used more effectively to enhance students' engagement and emotional connection to the learning process [1]. The innovative aspect of this research lies in its focus on the intersection of feedback timing and specificity within the unique context of music education, where emotional involvement plays a significant role in student success.

The research will employ a mixed-methods approach, combining case studies, surveys, and interviews. This methodology will allow for a comprehensive analysis of how feedback impacts student engagement and flow, drawing on both qualitative and quantitative data [1]. The findings will not only contribute to the academic understanding of feedback in music education but also offer practical recommendations for music educators, enabling them to create more engaging learning environments that foster both technical proficiency and emotional engagement.

## 2. Literature Review

The significance of feedback in the learning process is well-documented, with numerous studies emphasizing its role in improving student engagement, motivation, and achievement. In music education, feedback is crucial, as it not only helps refine technical skills but also fosters students' emotional and creative engagement. Research on feedback timing and specificity reveals clear advantages in both academic and music settings. Immediate feedback, particularly when specific, enables students to make real-time adjustments and enhances their understanding of the subject. It also has the potential to increase motivation and prevent errors from becoming ingrained. Specific feedback, in turn, helps students focus on precise areas for improvement, creating a more targeted learning experience. In music education, feedback that guides both technical execution and expressive interpretation can facilitate students' cognitive and artistic development [1]. Moreover, feedback that encourages reflection and creative exploration may support students' ability to enter deeply immersive and intrinsically rewarding states of learning, which are essential for optimal development in the arts.

Despite these promising findings, the literature on feedback in music education remains limited and underdeveloped. While research on feedback timing and specificity has been widely explored in general academic fields such as mathematics, language, and science, the application of these findings to music education is far more complex. Music learning requires not only technical proficiency but also emotional engagement, artistic interpretation, and creative expression. The traditional focus of feedback research on

factual accuracy and task completion does not fully account for these aspects of music education. The primary limitation of current research is its failure to recognize the multifaceted nature of music learning. Feedback that is effective in a science classroom, for example, may not work in the same way for music students who need to connect emotionally with their performance. The research also tends to prioritize cognitive outcomes, overlooking the emotional and creative aspects of learning, which are just as crucial in music education [2].

Furthermore, much of the existing research tends to isolate feedback timing from feedback specificity, rarely considering how these two variables interact in influencing student outcomes [3]. The majority of studies on feedback timing emphasize the benefits of immediate feedback, suggesting that it helps students correct mistakes as they arise and reinforces learning. On the other hand, studies on feedback specificity highlight the importance of providing detailed and precise guidance rather than general comments. Yet, these studies rarely address the combined effects of both factors. For example, whether immediate, specific feedback is consistently more effective than delayed, specific feedback remains unclear. Similarly, it is uncertain whether specific feedback always outperforms general feedback, or whether more general comments may sometimes better support creativity and self-reflection. These questions remain largely unexplored. There is a clear gap in research on how these factors intersect in music education, where both timing and specificity may interact in unique ways to affect student engagement and emotional involvement in the learning process.

Another critical gap in the literature is the limited exploration of deeply immersive and intrinsically rewarding learning states in music education. Such states—characterized by sustained attention, intrinsic enjoyment, and seamless integration of challenge and skill—are central to understanding how students engage with and excel in music [4]. While these phenomena have been extensively studied in fields such as sports psychology and education, their application to music education has been largely overlooked. Few studies have examined how feedback can promote or hinder such states in music classrooms, particularly at the primary school level. The absence of such research leaves a significant void in our understanding of how feedback can influence not just technical learning but also emotional and psychological engagement in music learning. This is a particularly crucial gap because these states are not merely incidental outcomes of practice but foundational conditions that enable students to fully immerse themselves in musical learning, leading to improved outcomes.

This study seeks to address these gaps by investigating how feedback timing and specificity interact to influence engagement and deeply immersive learning states in senior primary school music classes. Unlike previous studies that have isolated feedback timing or specificity, this research will examine their combined effects in the context of music education, where emotional engagement and creativity are just as important as cognitive outcomes [5]. By exploring these dimensions of feedback in music classrooms, this study aims to provide a more nuanced understanding of feedback practices and their impact on both technical and emotional learning. Additionally, this study will contribute to the literature on immersive learning states by exploring how feedback can help facilitate such conditions in young music learners, offering a new perspective on its role in music education.

### **3. Theoretical Framework and Methodology**

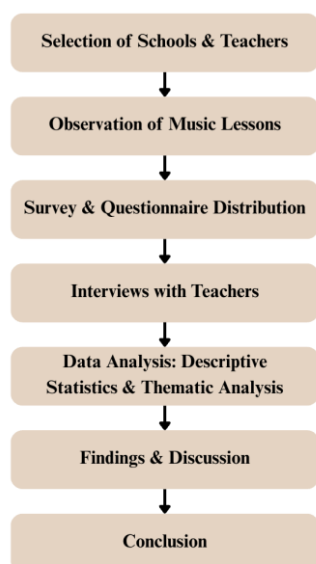
#### *3.1. Theoretical Framework*

This study is grounded in Flow Theory and Self-Determination Theory, offering a foundation for understanding how feedback influences both cognitive and emotional engagement in music education [6].

Flow Theory explains how learners experience deep immersion and intrinsic motivation during activities [7]. In music education, such immersion supports sustained practice and expressive performance. Optimal flow arises when task demands align

closely with the learner's current skill level. Timely and specific feedback helps maintain this alignment by enabling prompt adjustments, reinforcing incremental progress, and mitigating disengagement. Feedback that reflects learners' developmental goals increases the likelihood of entering flow states, thereby strengthening both cognitive focus and emotional involvement—key dimensions in musical learning. Specific and immediate feedback further supports performance refinement, helping learners sustain attention and derive satisfaction from demonstrable improvement.

Self-Determination Theory emphasizes the importance of supporting psychological conditions that foster sustained motivation: perceived competence, meaningful choice within structured guidance, and supportive interpersonal connections. In music education, feedback plays a central role in cultivating perceived competence by clarifying progress and highlighting actionable pathways for growth [8]. Constructive, non-evaluative feedback affirms learners' capacity to guide their own learning journey within pedagogical frameworks, while also reinforcing respectful teacher–student relationships. This theory informs the design of feedback practices that jointly support motivation, engagement, and flow—factors critical to long-term development in music. To illustrate the research process, a flowchart (Figure 1) depicts the stages from data collection to analysis and interpretation.



**Figure 1.** Research Process Flowchart: From Data Collection to Analysis and Interpretation

The research begins with selecting participating schools and teachers. Observations of music lessons follow to capture feedback delivery and its impact on student engagement. Surveys and questionnaires are then administered to students and teachers to collect quantitative and qualitative data on feedback practices and engagement levels. In-depth interviews with teachers provide further insight into implementation strategies and contextual considerations. Data analysis employs descriptive statistics for survey responses and thematic analysis for interview transcripts, yielding a comprehensive understanding of how feedback timing and specificity influence student engagement and flow experiences. The final stage involves interpreting findings, which are discussed in the conclusion.

### 3.2. Research Methodology

This study adopts a convergent mixed-methods design, integrating qualitative and quantitative approaches to comprehensively examine how feedback timing (immediate versus delayed) and specificity (specific versus general) influence learning engagement and flow in upper-primary music classrooms [9].

A multiple-case study approach was employed across two Grade 5 classes in two public primary schools located in the same city [10]. These schools were selected based on comparable curricular structures, similar student demographics, and the availability of experienced music teachers (each with over five years of teaching experience). One class consistently received immediate and specific feedback during music activities (e.g., after each short performance, the teacher offered precise comments on pitch accuracy or expressive intent), while the other class typically received delayed and general feedback (e.g., summary remarks at the end of the lesson such as "Good effort today").

Classroom observations were conducted over four consecutive weeks during a structured "Creative Music Making" unit [11]. Each 40-minute lesson was audio-recorded and partially video-recorded (with consent), and field notes were taken to capture instances of feedback delivery, student behavioral responses (e.g., eye contact, posture, verbal reactions), and indicators of engagement or disengagement.

Quantitative data were collected via a student survey administered at the conclusion of the instructional period. The instrument included: (1) A 6-item adapted version of the Flow Short Scale (e.g., "I lost track of time during the music activity"); (2) A 5-item Learning Engagement Scale focusing on behavioral and emotional dimensions (e.g., "I tried my best even when the task was hard"); (3) Four Likert-scale items assessing perceived feedback quality (e.g., "The teacher told me exactly what I did well and what to improve"). All scales used a 5-point Likert format (1 = strongly disagree to 5 = strongly agree) and demonstrated acceptable internal consistency (Cronbach's  $\alpha > 0.75$ ) in pilot testing.

Qualitative data were gathered through semi-structured interviews with the two participating music teachers. Interview questions explored: (1) Their rationale for selecting particular feedback timing and wording; (2) Observed differences in student responses under varying feedback conditions; (3) Challenges in delivering specific or immediate feedback in large classes. Each interview lasted approximately 30 minutes, was audio-recorded, and transcribed verbatim for analysis.

### *3.3. Data Analysis and Interpretation*

Data analysis employed a two-strand integration strategy. Quantitative data were analyzed using descriptive statistics—including means and standard deviations—and independent-samples t-tests to compare engagement and flow scores across the two feedback conditions. Effect sizes were calculated using Cohen's *d* to evaluate practical significance.

Qualitative data from observation notes and teacher interviews underwent thematic analysis following a widely adopted six-phase approach [6]. Initial codes were generated inductively and subsequently organized into broader themes, including "feedback as scaffolding," "timing and student receptivity," and "the emotional tone of feedback." Triangulation was achieved by cross-verifying teacher accounts with observed student behaviors and survey responses.

For example, a recurring theme indicated that immediate feedback proved most effective when delivered with emotional warmth—a pattern consistently reflected in observation notes ("Teacher smiled while correcting intonation"), teacher interviews ("I try to say it gently so they don't feel criticized"), and student survey comments ("My teacher's voice makes me want to try again").

By integrating these analytical strands, the study provides a holistic understanding of how the interplay between feedback timing and specificity—mediated by relational and contextual factors—shapes students' engagement and flow experiences in authentic music classroom settings [12].

## **4. Findings and Discussion**

This chapter presents the empirical findings of the study, organized into quantitative results from student surveys and qualitative insights from classroom observations and teacher interviews. Data were collected over four weeks of music instruction in two Grade

5 classes from public primary schools in an eastern Chinese city. Class A (n = 63) received immediate and specific feedback, whereas Class B (n = 65) received delayed and general feedback during a structured "Creative Music Making" unit centered on rhythm improvisation and melodic phrasing.

4.1. Quantitative Findings: Engagement and Flow by Feedback Condition

At the conclusion of the instructional activity, students completed a survey assessing their perceived flow experience and behavioral-emotional engagement [5]. Table 1 displays the means, standard deviations, and independent-samples t-test results comparing the two groups.

Table 1. Comparison of Flow and Engagement Scores between Feedback Conditions (N = 128)

| Variable                          | Class A<br>(Immediate+Specific) M (SD) | Class B<br>(Delayed+General) M (SD) | t     | p     | Cohen's d |
|-----------------------------------|----------------------------------------|-------------------------------------|-------|-------|-----------|
| Flow Experience                   | 4.12 (0.58)                            | 3.24 (0.71)                         | 8.03  | <.001 | 1.34      |
| Behavioral Engagement             | 4.31 (0.52)                            | 3.45 (0.68)                         | 8.76  | <.001 | 1.42      |
| Perceived Feedback Specificity    | 4.48 (0.61)                            | 2.89 (0.83)                         | 13.21 | <.001 | 2.18      |
| Willingness to Revise Performance | 4.05 (0.64)                            | 3.10 (0.79)                         | 7.89  | <.001 | 1.31      |

Note. All scales ranged from 1 (strongly disagree) to 5 (strongly agree). M = mean; SD = standard deviation.

As shown in Table 1, students in Class A reported significantly higher levels of flow, engagement, and willingness to revise their musical performance than those in Class B. The effect sizes (Cohen's d > 1.3) indicate large practical differences between conditions. Notably, perceived feedback specificity showed the largest gap (d = 2.18), confirming that students clearly distinguished between the two feedback approaches. To visualize these differences, Figure 2 presents a grouped bar chart comparing mean scores for flow and engagement.

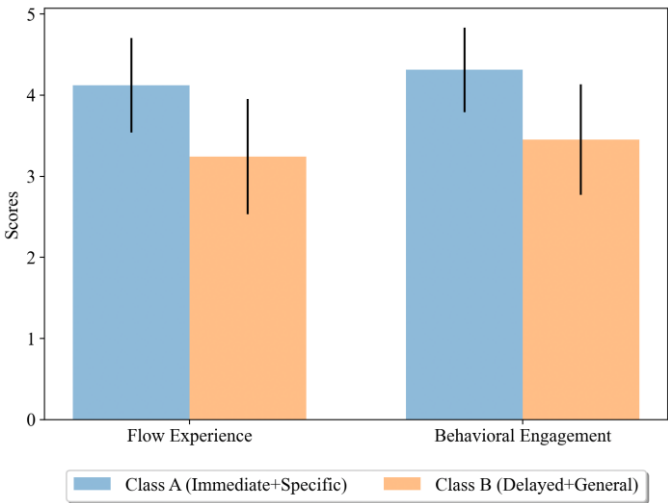


Figure 2. Mean Flow and Engagement Scores by Feedback Condition

Figure 2 underscores a consistent pattern: the immediate-and-specific feedback condition was associated with markedly higher student-reported immersion and active participation.

4.2. Qualitative Findings: Teacher Perspectives and Classroom Dynamics

Thematic analysis of teacher interviews and observation notes identified three interconnected themes concerning how feedback timing and specificity influence the learning environment. These are summarized in Table 2.

**Table 2.** Key Themes from Thematic Analysis of Teacher Interviews and Observations

| Theme                               | Description                                                                                           | Illustrative Quote / Observation                                                                                                                                                                        |
|-------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Feedback as Real-Time Scaffolding   | Immediate, specific feedback functions as in-the-moment support, helping students adjust and persist. | Teacher A: "When I say 'your tempo drifted at bar 3, try tapping your foot,' they fix it right away and keep going."<br>Observation: Student re-attempted rhythm pattern within 10 seconds of feedback. |
| Delayed Feedback Breeds Uncertainty | General or delayed comments leave students unsure about what to improve, leading to disengagement.    | Teacher B: "I often summarize at the end, but by then, they've forgotten what they played."<br>Observation: 40% of students looked away or doodled during whole-class feedback.                         |
| Specificity Builds Musical Identity | Detailed feedback validates students' creative choices, fostering autonomy and competence.            | Teacher A: "If I say 'I loved how you added that syncopation, it made the phrase exciting,' they start seeing themselves as composers."                                                                 |

These themes illustrate that feedback serves not only a corrective function but also supports learners' sense of agency and capability. In Class A, teachers used precise language to acknowledge individual musical choices, reinforcing students' confidence and ownership of their learning process [7]. In contrast, feedback in Class B—though supportive—was frequently general (e.g., "Good job!") or delayed, limiting its utility for iterative improvement. Both teachers noted practical considerations related to class size and workload. Teacher B remarked: "With 45 students, I can't give everyone immediate feedback." This reflects a common challenge between optimal instructional practices and operational conditions, a point further addressed in Chapter 5.

4.3. Triangulation of Findings

The convergence of quantitative and qualitative data enhances the study's validity. For instance: (1) High flow scores in Class A align with observed behaviors—sustained eye contact, spontaneous repetition of tasks, and verbal expressions such as "Can I try again?"; (2) Low engagement in Class B corresponds to frequent off-task behavior and survey comments including "I didn't know what to fix." Collectively, the evidence indicates that immediate and specific feedback fosters a feedback loop sustaining both cognitive focus and emotional investment—key conditions for flow in music learning.

5. Discussion

The findings confirm that immediate and specific feedback significantly enhances flow and engagement in upper-primary music classrooms, outperforming delayed and general feedback. Students receiving precise, timely guidance—such as "your dynamics were clear, but extend the last note"—reported higher immersion, persistence, and willingness to revise their work. These results align with established theoretical frameworks on optimal experience: real-time feedback helps sustain the balance between challenge and skill. The large effect sizes (Cohen's  $d > 1.3$ ) indicate not only statistical significance but also meaningful implications for classroom practice [4].

This pattern also reflects well-documented principles concerning motivation and learning. Specific feedback supports students' sense of competence by clarifying pathways for improvement, while supportive phrasing (e.g., "What if you tried...?") encourages ownership and creative exploration. In contrast, vague or delayed comments left students uncertain about their performance, leading to disengagement—a finding consistent with research on feedback effectiveness. Crucially, timing alone is insufficient; specificity and

emotional tone are equally vital. The most impactful feedback was not only immediate but also actionable and affirming.

Nevertheless, practical limitations—including class size—pose challenges to delivering individualized feedback consistently. While evidence-based practices are well established, scalable approaches—such as structured peer feedback or brief digital recordings—deserve further investigation [11]. Ultimately, this study affirms that in music education, the quality of feedback shapes not only technical growth but also students' emotional connection to music-making.

## 6. Conclusion

This study contributes a grounded, empirically supported understanding of how feedback characteristics—specifically timing and specificity—shape student engagement and flow in real-world primary music classrooms. By combining classroom observations, student surveys, and teacher interviews across two public schools in an eastern Chinese city, the research demonstrates that immediate, task-specific feedback significantly enhances both cognitive focus and emotional investment, whereas delayed or general feedback often leads to uncertainty and disengagement. These findings offer concrete validation of established theoretical frameworks within the context of compulsory music education in China, a setting underrepresented in existing literature.

For practitioners, the implications are direct and actionable. Music teachers can improve student motivation not by increasing feedback quantity, but by refining its quality: delivering concise, behavior-focused comments during or immediately after performance, and linking them to clear musical goals (e.g., "Your rhythm was steady, now try adding a crescendo here"). Even in large classes, brief, targeted remarks to small groups or individuals during practice time proved more effective than whole-class summaries at lesson's end. Teacher training programs should therefore prioritize micro-skills in feedback delivery, including phrasing, timing, and balancing correction with affirmation.

Future research should build on these findings in feasible directions. First, studies could test structured peer feedback protocols, such as using simple rubrics for student pairs to exchange specific comments, as a scalable strategy in resource-constrained settings. Second, longitudinal work is needed to examine whether sustained use of high-quality feedback translates into longer-term outcomes, such as continued music participation beyond compulsory schooling. Finally, comparative studies across different regional or school-type contexts (e.g., rural versus urban) would clarify the generalizability of these results.

In sum, this research moves beyond abstract ideals to offer practical, evidence-based guidance for enhancing everyday music teaching, showing that small, intentional shifts in how teachers respond to student performance can meaningfully deepen learning and nurture lifelong musical engagement.

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