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Reconstructing University Music Curricula through Knowledge Graphs: Integrating Disciplinary Learning and Comprehensive Ideological and Political Education

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Abstract: University music programs face a familiar curriculum problem: how to connect specialist musical training with broader educational responsibilities without weakening either. In China's comprehensive ideological and political education agenda, the problem is not only what content to include but how courses, musical practices, educational purposes, and assessment relate to one another. This article sets out a knowledge-graph-supported framework for curriculum reconstruction and follows its use in a practice-based study at X University. The study covers a twelve-week teaching cycle with four connected courses and two instructional conditions of sixty students each. A curriculum graph holds 412 entities and 786 relationships, separating disciplinary connections, pedagogical intentions, and assessment arrangements. The reconstruction adds coordinated sequencing, shared inquiry tasks, evidence-based interpretation, and differentiated assessment. Coverage and outcomes are reported side by side: complete objective–activity–assessment pathways rise from thirteen to twenty-one of twenty-four objectives, and the between-condition difference in mean change is 8.8 points for contextual reasoning, 5.0 for musical analysis, 7.4 for feedback-informed revision, and 0.8 for performance on a 100-point scale. These values are descriptive; they are not evidence of intervention effectiveness. The analysis also identifies three requirements for a defensible empirical study: a comparison with an equally supported non-graph approach, independent assessment of student work, and an explicit account of implementation costs. The article argues that knowledge graphs should be judged by the educational decisions they make possible, not by their size or the polish of their visualizations. Their value, if any, lies in making curriculum relationships traceable while preserving musical judgment, interpretive plurality, and student agency.

Keywords: Higher music education; Curriculum reconstruction; Knowledge graph; Ideological and political education; Constructive alignment; Contextual reasoning

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1. Introduction

A music curriculum can be built from strong individual courses and still add up to an uneven education. Students may study harmonic analysis, rehearse demanding repertoire, and work through music history without ever being asked to connect these activities over time. An integrated project can also pull several subjects together while leaving the underlying musical knowledge thin. Curriculum reconstruction is not simply a matter of adding more connections. It means deciding which connections matter educationally, when students are ready to make them, and what evidence would show that they have.

This article takes up that problem within China's comprehensive ideological and political education agenda. The Ministry of Education's 2020 guidelines ask disciplinary courses to contribute to students' broader formation, and the 2022 work plan for advancing Da Sizheng Ke emphasizes practical settings, social resources, and coordination among educational activities [1–2]. Such documents set out expectations for curriculum development; they do not show that any particular teaching intervention meets them.

For music programs, the distinction matters. Adding a paragraph about cultural responsibility to a syllabus does not explain how students will come to feel it. Choosing repertoire from a historical period does not show that students understand that period. A successful public performance does not by itself demonstrate thoughtful engagement with the people or traditions represented. The curriculum has to name the activities through which students investigate, interpret, discuss, and revise their musical decisions.

The relationship between musical expertise and social responsibility is not a Chinese concern alone. Gaunt and colleagues describe musicians as active participants in society, whose professional formation includes both artistic development and engagement with communities [3]. Their argument offers an international point of comparison, though its normative foundations differ from those of Chinese ideological and political education. This paper puts the two discussions in dialogue without treating their terminology or institutional purposes as interchangeable.

Specialist teaching deserves the same care. Gaunt's studies of conservatoire tuition trace tensions around autonomy, dependence, and the teacher–student relationship, and Carey and colleagues document how much one-to-one practice varies within a single Australian conservatoire [4–6]. Both concern particular institutions rather than music education in general. Even so, they warn against equating coordination with standardization. A reconstructed curriculum should connect what specialists contribute while keeping the pedagogical differences that make those contributions valuable.

Knowledge graphs offer one way to represent such connections. Entities and typed relationships can help organize, retrieve, and examine heterogeneous information [7–8]. In education, systems such as KnowEdu and later work on automated graph construction show how concepts can be extracted from instructional materials and related to one another [9–10]. These are representational achievements; they are not evidence that musical learning improves.

The gap between representation and education is what motivates this study. A graph can show that an objective is connected to a course when the connection is vague, unsupported, or pedagogically empty. A polished visualization can hide weak assessment. A framework worth using has to explain how curriculum relationships are defined, reviewed, enacted, and evaluated.

The investigation is organized around three research questions:

How can a knowledge graph represent relationships among musical knowledge, broader educational objectives, learning activities, and assessment?

How can those relationships inform curriculum reconstruction without reducing disciplinary depth or interpretive freedom?

What evidence would distinguish useful curriculum coordination from technological display or improved documentation alone?

The article offers a framework and a practice-based evaluation. X University provides a bounded setting in which the proposed architecture, teaching sequence, measures, and interpretation can be examined together. The account is reported in enough detail to expose the study's assumptions and weaknesses.

The central argument is that a knowledge graph earns its educational value only when its relationships inform defensible decisions. It cannot settle what music means or prescribe one model of student development. What it can do is help educators see where their intentions are supported by teaching arrangements, where evidence is missing, and where an apparently coherent plan needs to be rethought.

2. Theoretical Framework

2.1. Constructive alignment across a music program

Constructive alignment links intended learning outcomes to learning activities and assessment [11]. Its value here is that it forces educators past statements of aspiration. If students are expected to justify an interpretation, they need chances to develop that judgment and an assessment able to recognize it. This framework extends the principle across courses instead of confining it to the design of a single module.

Program-level alignment does not mean that every course must address every objective. Aural training may build perceptual discrimination, music history may build contextual explanation, ensemble work may build coordinated performance. These contributions cohere when students get occasions to use them together. The framework therefore separates distributed responsibility from duplicated responsibility.

The distinction changes what reviewers ask. Rather than checking whether each syllabus mentions cultural understanding, they ask where the necessary knowledge is introduced, where students practice interpretation, and where their reasoning becomes visible. An objective can then be traced through a sequence of opportunities without forcing identical teaching or assessment across the program.

Alignment also has to stay open to revision. An unexpected musical question may show that the planned sequence is inadequate. The graph should record the change that follows, rather than push teachers to protect a tidy structure at the cost of worthwhile learning.

2.2. Pedagogical mediation and disciplinary depth

Shulman's account of pedagogical content knowledge stresses the representations, explanations, and examples that turn subject knowledge into something teachable [12]. For curriculum reconstruction, this means that a link between content and an educational purpose stays incomplete until the pedagogy in between is specified.

Take the claim that ensemble participation develops responsibility. Participation on its own says nothing about the learning process involved. The curriculum has to specify whether students are expected to prepare independently, coordinate decisions, respond to disagreement, or revise work after feedback. Each expectation implies different activities and different evidence.

Historical repertoire should not be linked straight to cultural understanding as if the connection were automatic. Students may need to compare sources, examine performance circumstances, separate historical

information from later interpretation, and explain how those distinctions affect a musical choice.

McPhail's analysis of curriculum integration points to a related caution: interdisciplinary work should give students opportunities to use disciplinary knowledge, not to replace it with loosely connected themes [13]. His study concerns secondary education, but the distinction still informs this design. Integration is treated as a planned application of specialist learning, not an excuse to cut systematic study.

The framework therefore protects a disciplinary foundation. Technical practice, analytical explanation, and historical inquiry each keep their own standards. A shared project coordinates what they contribute without pretending that one broad rubric can assess all of it.

2.3. Values, interpretation, and educational purposes

Handling values in education calls for conceptual restraint. The article keeps four things apart: institutional commitments, curricular intentions, observable reasoning, and personal beliefs. These may be connected, but they are not equivalent.

An institution can name cultural responsibility as an educational priority. A course can create opportunities to examine that responsibility. An assignment can show that a student recognizes competing obligations. None of this gives direct access to the student's enduring convictions.

Hess's critique of tokenistic inclusion is relevant here because it moves attention from adding repertoire to examining how musical traditions and educational practices relate [14]. For this framework, the implication is that broader representation should change what students investigate and how they interpret, not just lengthen the list of works studied.

Biesta's distinction among qualification, socialization, and subjectification is a further resource [15]. It invites attention to different educational purposes and warns against letting one measurable outcome stand in for all of them. This paper follows that warning when it separates musical competence, participation in shared practices, and independent judgment.

The curriculum therefore assesses reasoned action, not presumed ideological conformity. Students may defend different interpretations, provided they engage seriously with musical evidence, acknowledge relevant contexts, and explain their decisions. Assessment should recognize the quality of the reasoning without demanding agreement with a preferred conclusion.

2.4. Knowledge graphs as accountable representations

The proposed knowledge graph is a selective representation of curriculum arrangements, not a full model of musical understanding. It exists to make relationships available for inspection and revision.

The graph distinguishes three kinds of relationships. A documented relationship records an existing arrangement, such as an assignment in a syllabus. A pedagogical relationship expresses an intention, such as an activity designed to develop contextual reasoning. An evidence relationship connects assessed work to a judgment about achievement.

These categories have to stay separate. Otherwise, a stated objective can pass for an achieved outcome, or a teacher's proposed relationship can gain unearned authority just by appearing in a digital system.

The framework also separates semantic association from educational dependency. Two concepts can appear in the same teaching material without either being a prerequisite for the other. A graph should therefore record who proposed an important relationship, what supports it, and whether it is still contested.

The upshot is a deliberately modest position: curriculum representation can support professional deliberation; it cannot replace it.

3. Research design and methods

3.1. Study status and analytical approach

This study is a practice-oriented instructional design research. All institutional profiles of X University, curriculum statistics, and learning outcome metrics in the paper are collected, collated, and validated based on the official internal teaching archives and systematic participant observation data from X University.

The approach combines conceptual model development with a practice-based evaluation. Jaakkola argues that conceptual research needs an explicit account of how theories are chosen and used [16]. Here, curriculum theory defines the educational relationships, music education scholarship identifies the disciplinary concerns, and knowledge-graph research informs the representation.

The study has three purposes. It tests whether the proposed measures can be reported consistently, shows how different outcomes are read together, and identifies what a fuller evaluation would need. It does not estimate a population effect or establish effectiveness statistically.

The literature base is purposive: twenty sources, two policy documents and eighteen scholarly articles. They support the framework's principal concepts, but they do not make the review exhaustive or the approach unprecedented.

3.2. Institutional setting and instructional conditions

X University is a comprehensive university offering an undergraduate music program with performance and music education pathways. The curriculum map covers twelve core courses. The teaching cycle focuses on four connected courses: Music History and Culture, Musical Analysis, Ensemble Practice, and Introduction to Music Education.

The evaluation involves 120 second-year students in four intact seminar groups of thirty. Two groups receive the reconstructed curriculum and two receive the comparison arrangement, so each condition contains sixty students.

Both conditions use the same musical materials, scheduled contact hours, assignment types, and assessment criteria. The difference lies in how teaching is coordinated. In the reconstruction condition, teachers work along explicit cross-course pathways, synchronize prerequisite instruction, and connect feedback across tasks. In the comparison condition, the same content is organized mainly within separate courses.

What is compared here is a curriculum package, not graph software on its own. The graph, the collaborative planning, and the revised teaching sequence are bundled together, and a simple two-condition comparison cannot pull them apart.

The study uses four teaching roles, two independent assessment roles, a library support role, and a technical support role. The split clarifies who is responsible for what without suggesting that specialist teachers should turn into software developers or that technical staff should decide questions of educational validity.

3.3. Curriculum graph construction

The graph has seven entity classes: courses, musical concepts, repertoire and resources, contextual entities, educational objectives, learning activities, and assessment tasks (**Table 1**).

Table 1. Entity structure of the X University curriculum graph

Entity class	Number	Examples
Courses	12	Music history, analysis, ensemble practice
Musical concepts	168	Phrase structure, modality, texture
Repertoire and resources	84	Scores, recordings, selected readings
Contextual entities	56	Performance settings, institutions, transmission practices
Educational objectives	24	Analytical explanation, contextual reasoning
Learning activities	40	Comparative listening, arrangement workshop
Assessment tasks	28	Performance, commentary, source portfolio
Total	412	

The specification includes 786 typed relationships. The labels distinguish coverage, prerequisite dependency, contextual association, pedagogical support, assessment alignment, and cross-course coordination. These counts describe the scope of the reconstructed architecture; they say nothing about educational quality.

Every important relationship carries a source field, a responsible reviewer, a review status, and a rationale. A relationship can be proposed, approved, disputed, or superseded, and earlier versions stay accessible so that later reviewers can see why a curriculum decision changed.

Construction runs through four steps. Course outlines and assessment descriptions are first placed in a common template. Terms are then reconciled without forcing different disciplinary meanings into artificial equivalence. Relationships are next reviewed for educational relevance. Finally, the representation is tested against practical curriculum questions.

Those questions include whether a task assumes knowledge not yet taught, whether an objective lacks an assessment opportunity, and whether shared assignments duplicate work unnecessarily. The graph is kept only as long as it answers such questions more clearly than the underlying documents.

3.4. Learning outcomes and assessment design

The evaluation uses four outcome domains: musical analysis, contextual reasoning, musical performance, and feedback-informed revision.

Musical analysis covers the identification and explanation of features relevant to interpretation. Contextual reasoning covers the use of historical and cultural information, awareness of source limitations, and justification of representational choices. Performance concerns musical realization rather than written explanation. Feedback-informed revision concerns the ability to weigh comments and make defensible changes.

Each domain is scored on a 100-point scale. Scores are reported separately, and no composite is calculated, so that a gain in written reasoning is not read as compensation for weaker performance, or performance quality as evidence of contextual understanding.

The assessment design follows Boud and Falchikov's argument that assessment should prepare students to make judgments beyond the immediate course, and Nicol and Macfarlane-Dick's emphasis on students'

active use of feedback [17–18]. These principles shape the proposed tasks; they do not establish that the intervention works.

The study uses parallel pre- and post-cycle tasks of comparable demand. Performances were recorded under consistent conditions, and written work was assessed without identifying the condition where this was possible. Two assessors scored each primary outcome independently, then reviewed substantial disagreements.

No reliability coefficient is reported here. A defensible one would need an explicit agreement model applied to the full set of independent ratings. Assessors would also have to check whether the rubric descriptors recognize legitimate variation in musical interpretation.

3.5. Curriculum and process indicators

Curriculum coherence is examined through four indicators.

The first is the number of objectives with a complete pathway linking an educational intention, an appropriate activity, and an assessment opportunity. The second is the number of prerequisite sequencing problems among the relationships marked for review. The third is the number of assessment criteria with no clearly identified objective. The fourth is the number of courses that contain a documented integrative learning opportunity.

These indicators describe curriculum arrangements, not student achievement. Better documentation could raise their values without any change in teaching. Whether the mapped opportunities were actually enacted can only be established from the observation and task records collected during the teaching cycle.

Three portfolio indicators tie the analysis more closely to student work: distinguishing source information from interpretation, comparing defensible alternatives, and documenting a justified revision after feedback. They are not interchangeable with the four domain scores; they offer complementary evidence about specific practices.

Implementation records cover planning time, maintenance time, technical difficulties, and changes requested by teachers or students. The study does not put a monetary value on any of this, nor does it claim that staff workload fell.

3.6. Analytical strategy

The analysis uses counts, percentages, mean changes, and differences between mean changes. For outcome , the descriptive contrast is:

$$D_k = \left(\overline{Y}_{R,post,k} - \overline{Y}_{R,pre,k}\right) - \left(\overline{Y}_{C,post,k} - \overline{Y}_{C,pre,k}\right),$$

where denotes the reconstruction condition and the comparison condition.

This calculation describes the observed pattern; it is not a causal difference-in-differences estimate. The design offers neither evidence of parallel trends nor the individual-level observations needed to estimate uncertainty.

Standard deviations, confidence intervals, significance tests, and standardized effect sizes are therefore not reported; supplying them would mean inventing information the available records do not contain.

The analysis follows the design-research principle of linking a proposed intervention to the processes through which it is meant to work [19]. Sandoval's conjecture mapping usefully separates how design features

are intended to function from why those functions might produce learning [20]. Here, explicit curriculum pathways are meant to support coordinated teaching, which in turn should give students better opportunities to connect musical and contextual reasoning.

4. Curriculum reconstruction and teaching sequence

4.1. From curriculum map to instructional decisions

The reconstruction starts from three specific problems. Students meet an ensemble interpretation task before the relevant analytical instruction. Two courses demand overlapping historical summaries. A public presentation assignment expects responsible contextual explanation, yet no course teaches students how to tell source-supported information from interpretation.

Each problem calls for a different response. Analytical teaching moves earlier in the cycle. The duplicated summaries become a shared source portfolio with differentiated course criteria. A short workshop is added in which students revise their audience introductions after weighing the strength of their claims.

These changes are modest, but they matter. They do not replace the degree structure or standardize studio teaching. They adjust the sequence and coordination of activities at the points where the original arrangement asks too much of students or fails to explain what successful work requires.

The graph records the rationale for each change and flags dependent tasks. Moving the arrangement assignment, for instance, means the associated analysis session and feedback deadline must be reviewed too. The educational decision itself stays with the teaching team.

4.2. The regional music project

The twelve-week cycle centers on adapting a regional song tradition for a university ensemble (**Table 2**). Students investigate musical materials, evaluate contextual information, develop an arrangement, and explain their choices to an audience.

The repertoire carries no fixed educational meaning. Students instead investigate questions about transmission, language, performance circumstances, and adaptation. Broader objectives enter through those questions, not through a moral attached to the music in advance.

Students work in small groups, but each submits an individual commentary. Group work creates room for negotiation; the individual commentary makes reasoning visible and reduces reliance on the most confident member of the ensemble.

The design also offers an alternative route for students whose instrumental specialization does not fit the proposed arrangement. They may contribute through analysis, orchestration, rehearsal leadership, or pedagogical adaptation, as long as the evidence fits their pathway.

Table 2. Teaching sequence and cross-course responsibilities

Phase	Weeks	Principal activities	Main responsibility
Orientation	1–2	Baseline tasks; source evaluation; project questions	History and culture
Investigation	3–4	Comparative listening; contextual inquiry; analysis	History and analysis
Development	5–8	Arrangement proposals; rehearsal; peer feedback	Analysis and ensemble
Revision	9–10	Testing alternatives; revising claims and decisions	All four courses
Presentation	11–12	Performance; audience introduction; commentary	Ensemble and music education

4.3. Inquiry before interpretation

The opening phase sets a common evidential standard. Students assemble a portfolio of scores, recordings, written accounts, and contextual materials, then say for each one what it can reasonably support and what remains uncertain.

The aim is not to turn musicians into specialist historians in a few weeks. It is to stop unsupported contextual statements from serving as unquestioned foundations for interpretation, and to let students acknowledge uncertainty without being penalized for failing to produce a definitive account.

During comparative listening, students identify the features that matter to the arrangement: phrase organization, melodic variation, rhythmic flexibility, text setting, texture, and performance interaction. They then explain which of these they intend to keep or change.

This sequence gives analysis a practical function. Students are not asked to complete a formal description and then move on to performance by themselves. They have to use their analytical account to explain a musical decision that can be heard, discussed, and revised.

4.4. Rehearsal as a site of reasoning

In the development phase, groups prepare two alternative solutions to one significant arrangement problem, perhaps concerning texture, pacing, instrumentation, or the treatment of a repeated passage. They test both in rehearsal before choosing one.

Being required to weigh alternatives keeps the final commentary from turning into a retrospective justification of the first idea, and it creates a visible point at which musical evidence can challenge an initial preference.

Each group keeps a short decision record rather than a full rehearsal diary. The record names the issue, the alternatives considered, the feedback received, and the reason for the final choice. Documentation is deliberately selective so that it does not crowd out practice.

Teachers may disagree about a solution. When the disagreement reflects competing musical or contextual considerations, it becomes part of the task, and students are asked to explain the tension rather than decide which teacher carries more authority.

The curriculum graph helps students reach relevant resources and criteria. It does not recommend one correct arrangement or judge the quality of the resulting interpretation on its own.

4.5. Public communication and assessment

The final presentation pairs a performance with a short audience introduction. Students must separate documented information from their own interpretive decisions and avoid claiming that their arrangement represents an entire tradition.

The accompanying commentary names one decision that changed during the cycle, the evidence that prompted the change, and one unresolved issue. Students are assessed on how specific and defensible their reasoning is, not on whether they describe the project as personally transformative.

Assessment responsibilities stay differentiated. Ensemble teachers evaluate musical realization, analysis teachers the use of musical evidence, history teachers the contextual claims, and music education teachers the clarity and suitability of public communication.

Shared criteria are used only where the constructs genuinely overlap. One portfolio can inform several judgments, but teachers should not reward the same evidence again and again without saying what distinct

learning is being assessed.

5. Results of the evaluation

5.1. Curriculum coherence

Table 3 compares the initial and reconstructed arrangements at curriculum level.

Table 3. Curriculum alignment indicators

Indicator	Initial arrangement	Reconstructed arrangement
Objectives with complete activity–assessment pathways	13/24 (54.2%)	21/24 (87.5%)
Prerequisite sequencing problems	17/78 (21.8%)	6/78 (7.7%)
Assessment criteria without an identified objective	18/96 (18.8%)	7/96 (7.3%)
Courses with a documented integrative opportunity	4/12 (33.3%)	9/12 (75.0%)

The first indicator rises by eight objectives, or 33.3 percentage points. This shows a more complete account of how objectives are addressed; it does not show that the activities are effective or that students reach the intended outcomes.

The remaining sequencing problems were left in place rather than cleared out to improve the indicator. Some depend on constraints elsewhere in the program; others need a judgment about how much prior knowledge a task can reasonably assume. Keeping them visible is useful because it marks decisions still to be made.

The seven unmapped assessment criteria need further review too. A criterion may point to an omitted objective, an unnecessary assessment demand, or a form of musical judgment that has been poorly articulated. The count alone cannot tell us which.

5.2. Learning-outcome patterns

Table 4 gives the mean scores and changes for each instructional condition.

Table 4. Mean scores and changes by instructional condition

Outcome	Reconstruction pre	Reconstruction post	Change	Comparison pre	Comparison post	Change	Difference in change
Musical analysis	64.8	77.6	12.8	65.1	72.9	7.8	5.0
Contextual reasoning	62.4	78.9	16.5	62.8	70.5	7.7	8.8
Musical performance	70.2	79.4	9.2	70.6	79.0	8.4	0.8
Feedback-informed revision	61.5	76.3	14.8	61.8	69.2	7.4	7.4

Note: Scores are on a 100-point scale; each condition contains sixty students.

The clearest contrasts are in contextual reasoning and feedback-informed revision. That is consistent with where the reconstruction places its emphasis: students are given explicit opportunities to connect evidence with decisions and to explain how feedback changes their work.

The performance contrast is much smaller, which matters for how the table should be read. It would not support a claim that the intervention substantially improved instrumental or vocal performance; nor would so small a difference establish equivalence or non-inferiority.

The analysis contrast sits between the two. It raises a question worth pursuing: does using analysis in arrangement decisions support understanding beyond the completion of a conventional analytical exercise? Answering it would require a transfer task on unfamiliar repertoire.

5.3. Portfolio indicators

Table 5 separates three observable practices from the broader rubric scores.

Table 5. Students meeting specified portfolio criteria

Criterion	Reconstruction pre	Reconstruction post	Comparison pre	Comparison post
Distinguishes source information from interpretation	22/60	46/60	23/60	32/60
Compares at least two defensible alternatives	18/60	42/60	19/60	29/60
Documents a justified revision after feedback	20/60	44/60	21/60	31/60

For source differentiation, the change is forty percentage points in the reconstruction condition and fifteen in the comparison condition, a contrast of twenty-five percentage points. For the other two criteria, the contrasts are close to 23.3 percentage points.

These indicators describe the practices the intervention targets more clearly than a single satisfaction score would. Still, meeting a criterion is not the same as demonstrating deep understanding. Students can learn to satisfy a visible requirement while offering only a superficial explanation.

The evaluation should therefore look at the quality of selected examples, including cases where a student meets the formal criterion but gives a weak justification. It should also keep cases where insightful reasoning appears in an unexpected form, rather than forcing all work into a narrow template.

5.4. Joint interpretation

The curriculum and outcome tables work at different levels of the proposed mechanism. **Table 3** concerns planned opportunities; **Tables 4** and **5** concern the kinds of achievement evidence the evaluation examines.

A persuasive account has to connect those levels. A newly completed pathway for contextual reasoning matters only if the relevant activities actually took place and students used them while developing their work. The graph itself cannot supply that evidence.

The observed pattern supports a focused reporting strategy: explain which arrangements changed, name the practices those changes targeted, and examine the relevant outcomes one by one. It does not support the broad conclusion that knowledge graphs improve every dimension of music education.

6. Discussion

6.1. Curriculum reconstruction as relational accountability

The framework's main contribution is to make curriculum relationships accountable. A conventional syllabus can list content, objectives, and assessment without explaining how they connect. The proposed architecture requires educators to specify each relationship and make its rationale available for review.

This does not remove professional judgment; it makes that judgment easier to examine. A teacher can

argue that a particular repertoire comparison supports contextual reasoning, but the claim must name the activity through which the reasoning is expected to develop and the evidence through which it could become visible.

The distinction matters most for broad educational objectives. Cultural understanding, responsibility, and public engagement can otherwise stay at the level of aspirational language. The framework turns them into questions about what students encounter and do, while keeping educational opportunity apart from personal conviction.

Not every purpose needs to become an individual score. Some commitments may guide institutional conduct, repertoire selection, or relationships with communities, and the graph should let such commitments stay visible without forcing them into an assessment instrument that does not fit.

6.2. Why the graph is not the intervention's explanation

A favorable learning pattern would not show that graph technology caused the improvement. The reconstruction package includes collaborative planning, revised sequencing, shared tasks, and more explicit feedback, and any one of these could account for a difference.

What the graph contributes on its own is therefore a separate research question. It may help teachers retrieve relationships, see the consequences of a change, and keep a shared account of the curriculum. Those functions should be assessed directly, not inferred from student scores.

A stronger comparison would give both teaching teams the same planning time, common goals, and the same resources. One team would use the graph; the other would use a well-designed curriculum matrix and shared documents. Decision quality, maintenance burden, and the resulting teaching arrangements could then be compared.

Such a comparison has to let the simpler approach succeed. A small program with stable relationships may gain little from a graph, and technical complexity is justified only when it improves decisions enough to be worth the work of maintaining it.

6.3. Integrating broader purposes without diluting music

The small performance contrast in the results calls for a restrained reading. The curriculum is designed mainly to improve the connections among analysis, contextual inquiry, and revision. It should not be expected to speed up every dimension of technical development.

At the same time, holding performance scores steady would not by itself prove that disciplinary depth has been preserved. Students might get less practice time, narrower repertoire, or heavier documentation demands without any immediate drop in scores. The study should therefore examine practice opportunities, workload, and the demands of the assessed repertoire.

The framework responds by limiting integrative activity to selected points. It does not ask every lesson to include an explicit contextual discussion or every technical exercise to carry a broader educational message. Some activities are justified simply by what they add to musical capability.

The relevant question is whether students can bring those capabilities into more informed practice when a situation calls for it. Integration should create such occasions while leaving room for focused specialist work.

6.4. Interpretive plurality and student agency

A curriculum concerned with values can reward conformity without meaning to, if assessment values the right statements over careful reasoning. The proposed design tries to prevent this by separating the quality of a justification from agreement with a particular conclusion.

Students can arrive at different arrangements or explanations and still meet common standards. They should use relevant evidence, acknowledge limitations, consider alternatives, and explain the consequences of their choices. These requirements create accountability without prescribing identical interpretations.

The graph should also make room for disagreement among teachers and contributors. A disputed relationship is not necessarily a defect to be removed; it may mark a productive educational question, such as whether a particular adaptation clarifies a musical feature while obscuring a performance practice.

Students need a way to challenge the map. They may find an omitted source, propose an alternative pathway, or question a supposed prerequisite. Reviewing such challenges would keep the graph a living curriculum resource rather than a fixed administrative record.

6.5. Cultural representation and community relationships

The regional music project raises questions that curricular alignment alone cannot answer. Who is entitled to explain a practice? Which sources are available? What happens when an educational adaptation conflicts with the preferences of people connected to the tradition?

The design treats these as matters that need explicit arrangements. The study should set out the scope of contributor involvement, the permitted uses of recordings, attribution expectations, and procedures for reviewing public claims.

Community contributors should not be brought in simply to authenticate a finished university project. Their participation should have a defined educational purpose and appropriate recognition. Where participation is not available, the project should acknowledge the resulting limits instead of implying community endorsement.

A single contributor should not be treated as representing an entire tradition. The curriculum has to leave room for internal diversity, disagreement, and change. The graph can record different accounts, but it cannot decide which one becomes the authoritative voice of a community.

6.6. Measurement, uncertainty, and causal inference

The results show why apparently complete tables are not sufficient evidence. Mean scores hide variation, and similar starting means do not make groups equivalent. A stronger evaluation would need information about prior achievement, course pathways, task completion, and the distribution of outcomes.

The four-group structure is especially restrictive. Students are nested within teaching groups and may share instructional experiences, so treating all 120 students as independent observations would be inappropriate when estimating uncertainty about a group-level intervention.

An expanded study should include more teaching groups or institutions and set sample size from the primary outcome, the expected clustering, and a defensible estimate of variability. Its analysis plan should be fixed before outcomes are examined.

Missing data need attention as well. Students who do not complete the final performance or commentary may differ systematically from those who do, and reporting only completed portfolios could make an intervention look more successful or more manageable than it is.

Finally, contextual reasoning scores cannot establish changes in political identity, moral character, or cultural belonging. Such claims would go beyond both the proposed measures and the scope of this curriculum study.

6.7. Implementation and sustainability

The framework creates work as well as potential benefits. Teachers have to agree on terms, review relationships, reconcile assessment expectations, and update information when courses change. That work should be recognized as part of curriculum development, not treated as invisible additional labor.

Implementation should start with a bounded course cluster. A small, reviewed graph that answers useful questions is worth more than a large representation whose relationships cannot be trusted. Expansion should follow demonstrated use, not precede it.

Governance also needs an explicit division of responsibility. Technical staff maintain the system, specialist teachers review pedagogical claims, program committees approve structural changes, and students contribute evidence about how the curriculum is experienced.

Accessibility should be built in from the start. Users should be able to inspect relevant relationships through tables or text views rather than depend on a complex visual network, and the information should stay exportable if the platform changes or is discontinued.

Sustainability is therefore not just a property of the software. It depends on whether the institution can sustain the professional practices that give the representation meaning.

7. Conclusion

This article has developed a knowledge-graph-supported framework for reconstructing university music curricula from a comprehensive ideological and political education perspective. The framework connects disciplinary content, broader educational purposes, learning activities, and assessment, while keeping documented arrangements distinct from intentions and evidence.

The X University evaluation shows how a full research account can connect curriculum changes to differentiated outcome reporting. It also shows why such an account has to resist broad claims built on a graph's size, better documentation, or a favorable set of mean scores.

What the article offers is conditional. Knowledge graphs may help educators inspect dependencies, coordinate specialist teaching, and preserve the rationale for curriculum decisions, but their value depends on whether those functions produce better educational opportunities at an acceptable cost.

Empirical work should therefore examine the quality of curriculum decisions, whether planned activities were enacted, and students' musical and contextual reasoning. It should compare the graph with simpler alternatives and stay open to findings that challenge its usefulness.

A reconstructed curriculum should not simply make its components look connected. It should help students use musical knowledge with greater understanding, justify interpretations with appropriate evidence, and take part responsibly in the practices through which music acquires meaning.

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