



Review Article

A systematic literature review of collaborative learning in conservatoire education

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ABSTRACT

This review aims to synthesize the literature on relations between context factors, learning activities, and learning outcomes from collaborative learning in conservatoire education. 157 peer-reviewed full-text articles were screened from an electronic database search and major journals in music education published between 2000 and 2023. Assessment resulted in 27 articles complying with all selection criteria. The results indicated strong interactions exist between context factors, learning activities, and learning outcomes. Collaborative learning appeared to support development of both cognitive and affective outcomes, more specifically the development of craftsmanship, metacognitive skills, social and collaborative skills.

1. Introduction

Following online learning during the COVID-19-related lockdown of their institution, conservatoire students stated that the live interaction and collaborative effort with their peers was the aspect they had missed the most, more than lessons and formal activities (Schiavio et al., 2021). However, conservatoire education is generally centred around the one-on-one interaction in the teacher-student dyad which has been found to dominate also in group contexts such as group lessons, masterclasses, and ensembles (Gaunt, 2008, 2010; Hanken, 2016). Moreover, contemporary professional performance and teaching practices demand the ability to engage in a variety of collaborative settings with a broad range of competencies and skills [see, e.g., Carey et al., 2013, Carey and Grant, 2015, Gaunt, 2008, Hanken, 2016, Virkkula, 2016a], such as ensemble, performance, teamwork, and self-critical skills; all hard to address in a one-on-one learning context (Luff et al., 2013). Based on their criticism of conservatoire curricula, Carey and Lebler (Carey & Lebler, 2012) designed a different curriculum which better prepares students for their prospective careers, including skills such as critical awareness, functioning in groups, movement and improvisation, self-assessment, and reflection. One of their recommendations included offering a wider variety of pedagogical approaches and implementing collaborative learning activities where appropriate. As argued by Gaunt (Gaunt et al., 2013a) and Gaunt & Westerlund (Gaunt et al., 2013b) it is

crucial to further investigate how collaborative learning can be implemented in the conservatoire curriculum next to other approaches to teaching and learning. It is potentially an excellent means to achieve learning goals such as critical thinking and problem-solving skills; also, students' development of creativity and collaborative skills may be facilitated through interaction with their peers. This systematic literature study aims to contribute insights into the teaching context, learning activities, and learning outcomes of collaborative learning as applied in conservatoire education.

Collaborative learning is used as an umbrella term for a range of "educational approaches involving joint intellectual effort by students, or students and teachers together" (Smith et al., 1992, p. 11), such as cooperative, collective, peer, reciprocal, and team-based learning, where students work in pairs or in small groups with the aim of learning together (Hunter, 2006). In higher education, collaborative learning has been found to foster academic, interpersonal, and educational outcomes (see, e.g., Johnson et al., 2007, Slavin, 1996). Subsequently, according to Udvari-Solner (Udvari-Solner and Seel, 2012) collaborative learning changes the dynamics of the classroom by requiring discussion among learners. Instead of the teacher's interpretation of what they need to learn, students are encouraged to question the curriculum and create personal meaning. Possibilities to organise, clarify, elaborate, or practice information are included, and listening, disagreeing, and expressing ideas are as important as coming up with the 'right answers'

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(Udvari-Solner and Seel, 2012, p. 631).

2. Aims

This study is framed by two previous literature reviews regarding collaborative learning in the context of conservatoire education. First, this type of learning was under investigation in a narrative literature review (Luce, 2001) in which the employed search led to only three articles and the author concluded that social aspects of music-making and learning had been quite ignored in higher music education up till then. Regarding the three studies, the author pointed out some of the learning outcomes of collaborative learning such as increased interdependence between students and implications for the teaching context like a change in teacher role. The second study, a systematic literature review on creativity and collaboration includes a paragraph on collaborative learning in higher education, reviewing eight articles. In their study, Barrett et al. (Barrett et al., 2021) provided short descriptions of the collaborative learning activities, for example in performance and improvisation workshops, taking place in the included studies. However, the connections between factors from student learning processes, learning outcomes, and teaching context, were not the explicit focus of these two review studies. To our knowledge, no other literature review on the subject of collaborative learning in conservatoire education has been published after Luce's (Luce, 2001); therefore, we will focus on literature from after the year 2000. An investigation of empirical research regarding educational system factors of conservatoire collaborative learning has not yet been conducted.

This study attempts to evaluate research on conservatoire-based collaborative learning from the perspective of educational system factors (Biggs, 2003). According to Biggs (Biggs, 2003), educational system factors form the basic components of student learning and are included in the sequence of Presage-Process-Product stages. These three P stages represent student factors and teaching & learning context, learning-focused activities, and learning outcomes. The 3 P model moves from left to right, although all aspects influence each other and are interrelated. In the current study, we adapted the model to develop understanding of collaborative learning in conservatoire education (see Table A1). This study was directed by the following questions.

- (1) How are student factors and teaching & learning context related to collaborative learning?
- (2) Which collaborative learning activities can be distinguished?
- (3) What are learning outcomes from collaborative learning?

3. Methodology

In line with the methodology of a systematic literature review, we used PRISMA principles (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) as guidelines to commence, carry out, and report our review (Liberati et al., 2009; Moher et al., 2009) we also consulted the updated version (Page et al., 2021).

3.1. Search strategy

An extensive electronic database search was performed on all databases available at a European research university library to retrieve the relevant literature. This meta-database includes databases such as Web of Science, JSTOR, Springer Open, SAGE complete, ScienceDirect, and Taylor & Francis. Search terms were grounded in the definition of collaborative learning put forward by Smith and MacGregor (Smith et al., 1992). Databases were searched using keywords and Boolean logic, including conservatoire, higher music education, music academy, collaboration, peer, group, team, and community. The first search resulted in 1389 database items; the search was repeated using the same keywords on March 1, 2023; this also served as the cut-off date for our last check for evidence of published articles, resulting in 1454 database

items.

3.2. Selection procedure

A PRISMA flow chart (Page et al., 2021) is used to demonstrate the various steps in the study selection process (Fig. 1). Besides the database search result of 1454 articles, we browsed a relevant selection of major music education journals by hand, bringing about 62 extra items. Searches were merged and overlap was removed in Endnote X9 software, following which 894 items remained. Peer-reviewed studies were included if they met these criteria.

- (a) Must relate directly to the research questions.
- (b) Recency: must have been published from 2000 onwards.
- (c) Language: must be written in English.
- (d) Participants: must include undergraduate students (Bachelor's or first cycle of studies).
- (e) Must be based on empirical research (any design).

Based on these criteria, the first author assessed 894 studies to determine "yes", "maybe", or "no" (Liberati et al., 2009). Studies with "yes" or "maybe" were shifted into the next phase (see Fig. 1). The combined total of full-text articles that were screened ($n = 157$), led to a total of 27 articles to review, which complied with all selection criteria, consisting of articles from automated search ($n = 19$) and from snowballing (Wohlin, 2014) ($n = 8$). For comparison of the study selection procedure, we referred to randomly selected systematic literature reviews across disciplines (Dakalbab et al., 2022; El Boghdady & Ewalds-Kvist, 2020; Ordoña & Asgedom, 2022).

3.3. Data extraction and analysis

Descriptive data (author(s), date, country, methodology, aims, results) and data related to our three research questions were extracted from studies meeting all inclusion criteria (Table A3). Related to our research questions data were extracted from the results and conclusion sections. Given the rather limited amount of selected research articles, we refrained from quality appraisal of those studies. The co-authors independently reviewed twenty percent of the articles; all authors discussed their outcomes. The authors discussed disagreements until they were resolved. Subsequently, a thematic analysis of selected studies was performed in stages (Braun & Clarke, 2006). First, a systematic description was made for the included studies in a descriptive map (see Appendix Table A4). Subsequently, the analysis of our findings was guided by the research questions and by the adopted conceptual framework of Biggs's 3 P model (Biggs, 2003). To organise and synthesize our findings, we used an adapted version of the 3 P model framework (Table A1). We categorized our findings according to the educational system factors of Table A1.

Next, we compared and grouped our findings according to the verbs and descriptors related to the Structure of the Observed Learning Outcome (SOLO) taxonomy (Biggs & Collis, 1982; Biggs & Tang, 2007), describing development in learning from basic to complex tasks, including cognitive and affective outcomes. Verbs associated with quantitative and qualitative cognitive outcomes, the uni- and multi-structural, relational, and extended abstract levels of understanding (Biggs and Tang, 2007, p. 80), are displayed in Table A2. Affective outcomes refer to involvement and engagement in the learning situation including attitudes, emotions and values. Our findings are summarized in Tables A5 and A6.

4. Results and discussion

The review included 27 studies on collaborative learning (Table A3). In the paragraphs 3.1 to 3.4 we will refer to the selected research articles with their ID (see Table A3). We did not find any overlap with Luce's

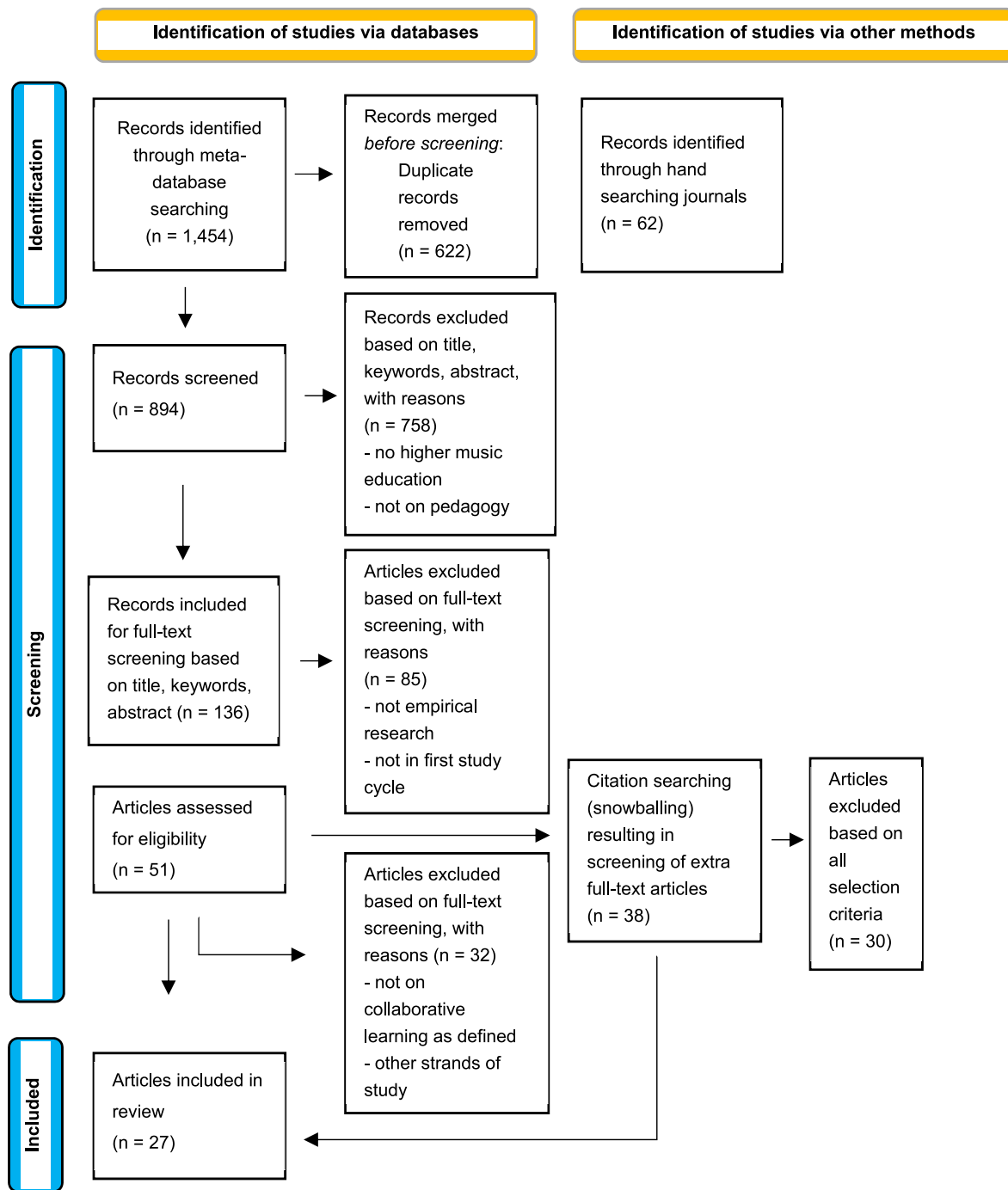


Fig. 1. Fig. 1 PRISMA flow chart of study selection procedure.

review of 2001 (Luce, 2001) since studies therein dated from before the year 2000. Between Barrett et al. (Barrett et al., 2021) and underlying review, we found a minor overlap of three studies (Blom, 2012; De Bruin et al., 2020; Virkkula, 2016a). The focus, analysis and synthesis of these two reviews was entirely different since Barrett et al. (Barrett et al., 2021) focused on the combination of collaboration and creative aspects such as improvisation and composition. In this section we provide an analysis and synthesis of the collaborative learning context, activities and outcomes of reviewed studies. Results of individual studies can be found in Table A5; results of their categorization are displayed in Table A6.

4.1. Student factors and teaching & learning context in relation to collaborative learning

Answers to our first research question ‘How are student factors and teaching & learning context related to collaborative learning?’ are addressed in this section, based on the tabulated and categorized findings of Tables A5 and A6.

Within selected studies, students had backgrounds in pop music, jazz, jazz/pop, classical music, and music technology. Fig. 2 demonstrates the distribution of genres over the selected studies. Some studies (e.g., A3 (Blom, 2012), A11 (Forbes, 2020), A13 (Hill, 2019), A16 (Latukefu, 2009), A23 (Varvarigou, 2017a), A24 (Varvarigou, 2017b)) mentioned purposeful inclusion of a heterogeneity of students as this

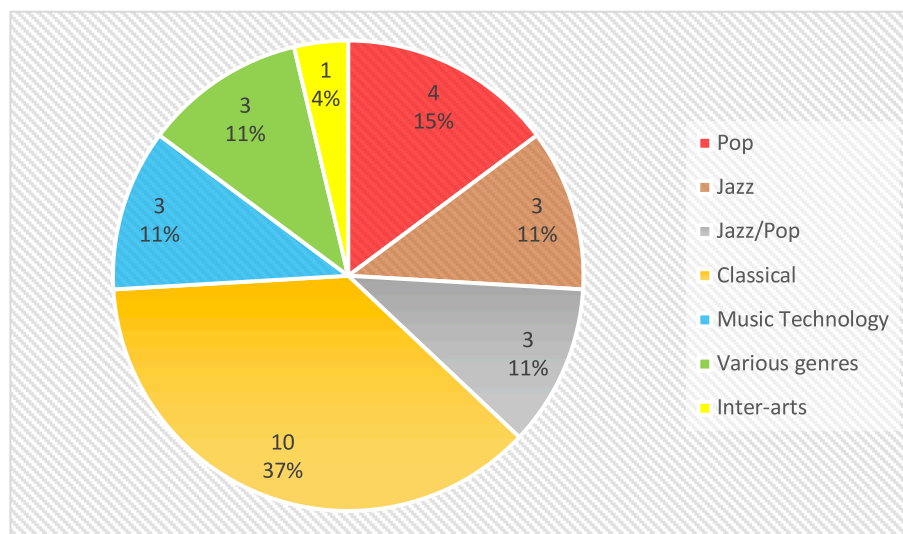


Fig. 2. Selected studies and genre distribution.

was found to optimize learning: students who differed in musical training, level, age, life experience, gender, and personality increased opportunities for interaction and negotiation. In a few studies, student background was specifically taken into consideration as a factor influencing the design of learning context and learning-focused activities (e.g., A11 (Forbes, 2020), A18 (Lebler, 2007), A19 (Lebler, 2008)). Settings varied from discussion groups as in A20 (Reid and Duke, 2015), to recording studios (A9 (Dobson, 2019), A10 (Dobson and Littleton, 2016), A14 (King, 2008)), chamber music groups (A15 (Kokotsaki and Hallam, 2007), A22 (Sætre and Zhukov, 2021), A27 (Zhukov and Sætre, 2021)) and jazz and pop ensembles (A7 (De Bruin, 2022), A8 (De Bruin et al., 2020), A25 (Virkkula, 2016a), A26 (Virkkula, 2016b)). Integration of peer assessment in a setting led in some studies to students assessing their peers in assessment panels (A1 (Barratt and Moore, 2005), A6 (Daniel, 2004b), A18 (Lebler, 2007), A19 (Lebler, 2008)).

Although all studies used peer-to-peer interaction, some differences in approach were discovered. We found four different approaches (i) peer assessment, (ii) teacher-guided group lessons, (iii) participative music making, and (iv) student-guided teamwork. In all studies, the chosen approach was deliberately designed (e.g., A3 (Blom, 2012)), implemented (e.g., A6 (Daniel, 2004b), A25 (Virkkula, 2016a)), or piloted (e.g., A17 (Latukeyu, 2010), A19 (Lebler, 2008)). According to A4 (Blom and Poole, 2004), *peer assessment* may be regarded as an extension of peer-to-peer interaction. Engaging students in the discussion and development of assessment criteria formed a crucial aspect of peer assessment. In *teacher-guided group lessons* one student would perform while others were listening, observing, providing feedback, and sometimes discussing specific topics (A21 (Rumiantsev et al., 2017)). In *teacher-guided group lessons*, the teacher facilitated the feedback process and took a similar position to that of the students according to some set rules (A2 (Bjontegaard, 2015), A5 (Daniel, 2004a), A12 (Hanken, 2016), A16 (Latukeyu, 2009)). The approach of *participative music making* generally took place in a community (of practice, of learning), where students would work together with a professional musician (e.g., A25 (Virkkula, 2016a)). The approach of *student-guided teamwork* included studies where the teacher took on the role of organiser of the course and facilitator of the process, while not being present in the same room as the students (e.g., A23 (Varvarigou, 2017a), A24 (Varvarigou, 2017b)). The facilitating role consisted of design and organisation of the course or project (e.g., A3 (Blom, 2012)), carrying out preparations (prescribing exercises, providing course materials), being available for questions and support, and clarifying and evaluating assignments.

4.2. Collaborative learning activities

Answers to our second research question ‘Which collaborative learning activities can be distinguished?’ are presented in this section. We provide insights into the deep approach to learning, present in all studies, through core factors like active participation and interaction. Regarding these factors we analysed how they differed from the prevalent teacher-student dyad employed also in group contexts across conservatoire education (see e.g., (Gaunt, 2008), (Gaunt, 2010), (Hanken, 2016)). Collaborative learning processes were found to be reinforced by interactive, supportive, progressive, structured, authentic, and in some cases situated environments, and students were actively engaged in the process. The different strategies that stimulated students to learn included scaffolding (Vygotsky et al., 1978), legitimate peripheral participation (Lave & Wenger, 1991), and informal learning (Green, 2001).

4.2.1. Active participation

Active participation as opposed to observational listening for example in masterclasses (Creech et al., 2009; Haddon, 2014), was a feature of all selected studies. Students participated actively in teacher-guided small-group horn, piano, song-writing, violin/viola, and vocal lessons (see Table A5). During group lessons, playing or presenting prepared repertoire was followed by discussion, peer feedback, and reflection on musical matters and on the provided feedback. Reflection covered both asynchronous reflective journal-writing (looking back on actions) and real-time synchronous reflection in the actual context or situation (in action). Active participation in less formally organised activities like group music-making within instrumentally heterogeneous chamber music ensembles, popular music groups, and jazz and pop ensembles, formed a starting point for extra activities such as reflective journaling, managing and organising performances, providing peer support, arranging, experimenting, and recording. Group creativity and improvisation led to better developed creative skills as in A23 (Varvarigou, 2017a) and A24 (Varvarigou, 2017b). In student-guided teamwork, students participated in discussions, reflected on processes, and employed critical listening and critiquing of peers as ways of benchmarking themselves as in A20 (Reid and Duke, 2015). Together with students from dance and theatre departments, students engaged in interdisciplinary collaboration and improvisation (Blom, 2012)(A3).

4.2.2. Interaction

Peer interaction appeared to be another significant factor in the

learning process. A peer is generally considered to be a student in the same learning situation, or, in the conservatoire context, of the same instrument. Peer interaction has been regarded as a process of collaboration needed to reach learning goals (Webb, 1989), including both domain-specific content and social aspects. Next to musical skill development, peer interaction (including working with like-minded people and making friends), social involvement, group success, social skill development, and teamwork skills were amongst the highest rated outcomes related to participation in ensembles (Kokotsaki and Hallam, 2007)(A15). We found in all studies that collaborative learning activities and situations offered ample opportunity for peer-to-peer interaction, resulting in increased talk, discussion and debate, peer feedback, observation, negotiation, and group awareness. Interactions taking place in peer-assessment engaged students in forms of discussion, critique, observation, attentive listening, questioning, peer feedback, and reflection. Questioning, making mistakes, and peer-to-peer explanations have been found to better stimulate learning when learners do engage in such interactions (Webb, 1989).

Negotiation as a form of interaction took place when student assessors negotiated assessment criteria (A4 (Blom and Poole, 2004), A17 (Latukefu, 2010)) when students negotiated their ideas in discussions and peer feedback (A2 (Bjontegaard, 2015), A3 (Blom, 2012)), and when co-constructing knowledge and in reflection on experiences (Virkkula, 2016a)(A25). Another type of interaction we found concerned novice vocal students achieving tasks while scaffolded by a more capable learner or expert (Latukefu, 2009)(A16), with just enough support to reach their zone of proximal development (Vygotsky et al., 1978).

4.3. Learning outcomes from collaborative learning activities

Answers to our third research question 'What are learning outcomes from collaborative learning?' are provided in this section. Nearly half (48%) of selected studies (see Table A6) reported on uni- and multi-structural level quantitative cognitive learning outcomes related to the development of basic musical, technical, analytical, aural, performance, creative, improvisational, inner listening, ear-training, sight-reading skills, musical knowledge, repertoire and style knowledge, remembering music, knowledge of instruments studies, the operation of studio equipment, and identifying, describing, and discussing skills related to listening to their peers' playing, for example in (Bjontegaard, 2015)(A2) and (Daniel, 2004a)(A5).

All studies reported on relational and extended abstract qualitative cognitive learning outcomes, such as the practical application and the integration of thinking and management skills, organisational and problem-solving skills and effective planning (A26 (Virkkula, 2016b)). In other studies, students exhibited a comprehensive understanding of the complexities of the music they were studying (A22 (Sætre and Zhukov, 2021), A27 (Zhukov and Sætre, 2021)), better understanding of the significance of players' mutual interactions (A25 (Virkkula, 2016a)), more risk-taking in thinking, and increased identification of others' creative styles (A3 (Blom, 2012)). Furthering relational aspects and showing the ability to transfer these to other contexts or domains are described in the extended abstract level (Biggs & Collis, 1982). Students showed a sense of ownership through critically evaluating the performances of peers and through self-reflection, revealed other approaches to learning, and were ready to take on more and other roles in the context of performance (A4 (Blom and Poole, 2004)). The transfer of acquired knowledge and skills to other contexts was found in an inter-arts project, where students had transformed existing knowledge through proximity, embedded reflection, and interactional dynamics (A3 (Blom, 2012)). Evidence of metacognitive development and the construction of new knowledge and skills in reviewed studies was traced to sociocultural perceptions of learning by (Barrett et al., 2021). Reduced guidance, with or without the teacher present, resulted in increased teamwork, collaboration, communication, feedback skills, and metacognitive development, including (self)-reflective, critical, and

evaluative skills (A16 (Latukefu, 2009), A17 (Latukefu, 2010), A23 (Varvarigou, 2017a), A24 (Varvarigou, 2017b)).

Affective outcomes in 22 out of 27 studies were related to involvement, level of engagement, and students' attitudes towards their learning. (Varvarigou, 2017a) (A23) described how students gained confidence by playing together, how they complemented and supported each other, developed social skills, taught one another, and developed leadership, social awareness, communication, and teamwork skills in their group classes in playing by ear. Students worked on joint enterprises, created solidarity, and reflected critically on personal and collaborative actions (A25 (Virkkula, 2016a)). Furthermore, students reported having greater self-confidence and self-efficacy beliefs, and increased agency over their learning process (A7 (De Bruin, 2022), A8 (De Bruin et al., 2020)).

Students behaved like responsible group members, were more constructive in their remarks, and showed more interest in each other's playing (A2 (Bjontegaard, 2015)). (Forbes, 2020) (A11) described how students in heterogeneous ensembles experienced influential connections, fun and inspiring challenges followed by changed perspectives, access to new ideas, and engagement in new learning experiences and skills resulting in improved performance standards. Students showed more consciousness of belonging, doing, and experiencing. Students displayed more openness and flexibility towards new musical ideas, and enhanced intrinsic motivation for music through group music-making (A15 (Kokotsaki and Hallam, 2007), A22 (Sætre and Zhukov, 2021), A27 (Zhukov and Sætre, 2021)).

4.4. Synthesis of results

In reviewed studies, a large variety of curricular activities was included, ranging from small-group lessons to participative ensembles with professional musicians collaborating with students, to short-term interdisciplinary projects. Results provided strong evidence of four different approaches, peer assessment, teacher-led group lessons, participative music making, and student-guided teamwork, having positive effects on employed collaborative learning activities, through core factors like active participation of and interaction between students. The inclusion of reflection on content, process, and self, increased self-evaluation and appeared to bring new perspectives and levels of awareness to students, and encouraged self-regulated learning. Teachers engaged as designers of a learning environment and facilitators of a process rather than as transmitters of expertise, which proved to positively impact students' self-regulated learning. Significant outcome of this review is the overall positive effect collaborative learning proved to have on both cognitive and affective learning outcomes.

5. Limitations of review processes

A first important limitation of evidence concerns differences in empirical settings in the reviewed studies, as well as limited comparability of included aspects due to differences in the theories, concepts, and terminology used. While conducting the review, aspects such as methodological quality, methodological relevance, and topic relevance were screened; however, quality appraisal of these aspects was not a component in the selection process. We regarded the peer-review process the articles had been subjected to as an assurance of quality. The selection criterium of including literature in the English language only, forms a limitation and explains the large number of anglophone studies in our sample and the neglect of studies in other languages. Another potential limitation is publication bias (Dickersin, 1990), meaning that generally positive outcomes or positive experiences lead to publishing: i. e., positive results are published more often.

6. Conclusion and future research

In sum, collaborative learning was found to foster and sustain a

positive, safe, student-centred environment, including co-construction of knowledge and understanding, development of social, meta-cognitive, and professional skills, and high feelings of self-efficacy amongst students. Personal, social, and self-regulated learning competences were addressed through collaborative learning, forming building blocks for lifelong learning (European Commission, 2019). Future developments in conservatoire education could include moving to a more multi-faceted curriculum and reconsidering the teacher’s role in developing a more student-centred environment. Reduced hierarchical structures in the organisation of learning would support self-regulated learning, for example in student-guided teamwork. Such a student-centred learning environment could encourage students to take more responsibility for and agency over their own learning, which, with increased self-reflective skills, assists in the shaping of a professional identity and increased feelings of self-efficacy. The knowledge resulting from this review will assist us and we hope may assist others too, in the development of collaborative learning approaches and activities for implementation in music courses. From the results of this review, we propose to undertake future studies into the role, perspectives and

perceptions of teachers in collaborative learning. Finally, the inclusion of alumni studies, providing views of career paths and lifelong learning as perceived by conservatoire alumni, might increase understanding of collaborative learning experiences and longer-term influences.

CRedit authorship contribution statement

Tamara Rumiantsev: Conceptualization, Methodology, Investigation, Visualization, Software, Project administration, Data curation, Formal analysis, Writing – original draft, Writing – review & editing. **Roeland van der Rijst:** Conceptualization, Data curation, Investigation, Methodology, Validation, Writing – review & editing. **Wilfried Admiraal:** Conceptualization, Methodology, Validation, Supervision.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix

Table A1

Educational system factors of the adapted 3p Model (Biggs, 2003, p.22)

Presage		Process	Product
Student factors	Teaching & learning context	Collaborative learning activities	Learning outcomes
Background	<ul style="list-style-type: none"> • Setting • Approach • Teacher role 	<ul style="list-style-type: none"> • Active participation • Interaction 	<ul style="list-style-type: none"> • Quantitative cognitive outcomes • Qualitative cognitive outcomes • Affective outcomes

Table A2

Example verbs of quantitative and qualitative cognitive outcomes (Biggs & Tang, 2007, p. 80)

Quantitative		Qualitative	
Uni-structural	Multi-structural	Relational	Extended abstract
count	classify	analyse	compose
draw	combine	apply	create
identify	describe	argue	hypothesize
memorize	discuss	conclude	invent
name	illustrate	explain	originate
recognize	narrate	review	reflect
recite	outline	summarize	theorize

Table A3

Selected Research Articles

Reference	ID	Title
[1] Barrat and Moore	A1	“Researching group assessment: Jazz in the conservatoire”
[6] Bjøntegaard	A2	“A combination of one-to-one teaching and small group teaching in higher music education in Norway–A good model for teaching?”
[7] Blom	A3	“Inside the collaborative inter-arts improvisatory process: Tertiary music students’ perspectives”
[8] Blom and Poole	A4	“Peer assessment of tertiary music performance: Opportunities for understanding performance assessment and performing through experience and self-reflection”
[15] Daniel	A5	“Innovations in piano teaching: A small-group model for the tertiary level”
[16] Daniel	A6	“Peer assessment in musical performance: The development, trial and evaluation of a methodology for the Australian tertiary environment”
[17] De Bruin	A7	“Collaborative learning experiences in the university jazz/creative music ensemble: Student perspectives on instructional communication”
[18] De Bruin et al.	A8	“Apprenticing the jazz performer through ensemble collaboration: A qualitative enquiry”
[20] Dobson	A9	“Talk for collaborative learning in computer-based music production”
[21] Dobson and Littleton	A10	“Digital technologies and the mediation of undergraduate students’ collaborative music compositional practices”
[24] Forbes	A11	“The value of collaborative learning for music practice in higher education”
[31] Hanken	A12	“Peer learning in specialist higher music education”
[32] Hill	A13	““Give me actual music stuff!”: The nature of feedback in a collegiate songwriting class”
[35] King	A14	“Collaborative learning in the music studio”

(continued on next page)

Table A3 (continued)

Reference	ID	Title
[36] Kokotsaki and Hallam	A15	"Higher education music students' perceptions of the benefits of participative music making"
[37] Latukefu	A16	"Peer learning and reflection: Strategies developed by vocal students in a transforming tertiary setting"
[38] Latukefu	A17	"Peer assessment in tertiary level singing: Changing and shaping culture through social interaction"
[40] Lebler	A18	"Student-as-master? Reflections on a learning innovation in popular music pedagogy"
[41] Lebler	A19	"Popular music pedagogy: Peer learning in practice"
[48] Reid and Duke	A20	"Student for student: Peer learning in music higher education"
[49] Rumiantsev et al.	A21	"Collaborative learning in two vocal conservatoire courses"
[50] Sætre and Zhukov	A22	"Let's play together: Teacher perspectives on collaborative chamber music instruction"
[55] Varvarigou	A23	"Promoting collaborative playful experimentation through group playing by ear in higher education"
[56] Varvarigou	A24	"Group playing by ear in higher education: The processes that support imitation, invention and group improvisation"
[57] Virkkula	A25	"Communities of practice in the conservatory: Learning with a professional musician"
[58] Virkkula	A26	"Informal in formal: The relationship of informal and formal learning in popular and jazz music master workshops in conservatoires"
[62] Zhukov and Sætre	A27	"'Play with me': Student perspectives on collaborative chamber music instruction"

Table A4

Descriptive map of study characteristics, aims, methodology, and results

Study		Aims	Methodology	Results	
ID	Country	Musical genre	Bullet point description (study design; data collection; data analysis)	Bullet point summary	
A1	UK	Jazz	Investigating group assessment practices that reflect a jazz practice	<ul style="list-style-type: none"> • Research paper • Group interviews • Analytical descriptions 	<ul style="list-style-type: none"> • one third of the assessed combos showed interactive skills • group marking more appropriate to interactive combo-playing • less interaction in playing when only the soloist was assessed
A2	Norway	Classical	Investigating the role of a cooperative learning group	<ul style="list-style-type: none"> • Research paper • Observations, interviews (n = 3) • Analytical descriptions 	<ul style="list-style-type: none"> • three-way interaction • teaching and learning as a combination of performing, listening and commenting in different situations • through given responsibility, students developed faith, self-confidence, independence
A3	Australia	Inter-arts	Exploring a collaborative inter-arts improvisation project	<ul style="list-style-type: none"> • Qualitative questionnaire study • Open-ended questionnaire (n = 17) • Constant comparative analysis 	<ul style="list-style-type: none"> • students as equal members of a team • felt they had built confidence, felt valued by peers through acceptance of ideas • environment was perceived as positive • learning of different creative styles and modes of thought
A4	Australia	Various	Examining peer assessment and performing	<ul style="list-style-type: none"> • Qualitative questionnaire study • Open-ended questionnaires (n = 16) • Coding 	<ul style="list-style-type: none"> • students experienced assessing their peers as difficult • peer learning and self-reflection • peer evaluation • sense of ownership and reality check • prepared different roles such as assessor and critic
A5	Australia	Classical	Investigating small group approach	<ul style="list-style-type: none"> • Longitudinal study • Open-ended questionnaires (n = 18) • Thematic analysis 	<ul style="list-style-type: none"> • increased levels of interaction • improved ability to critique and assess • peer influence • less teacher-dependent • more varied activities • variety of feedback • self-critical and peer-critical analysis • developing independent learning • (self-)evaluation skills • increased interaction and problem-solving
A6	Australia	Classical	Investigating peer assessment procedures and practices for implementation within a music performance context	<ul style="list-style-type: none"> • Quantitative questionnaire study • Student evaluation data from questionnaires (n = 36) • Descriptive statistics 	<ul style="list-style-type: none"> • understanding the function and purpose of peer assessment mechanisms • 91% of students perceived improved critical skills
A7	Australia	Jazz	Exploring students' learning experience in participative, authentic, collaborative jazz ensembles with guest performers	<ul style="list-style-type: none"> • Qualitative case study • Semi-structured interviews with students (n = 12) • Inductive content analysis 	<ul style="list-style-type: none"> • increased social interaction developed better understanding of groups' needs • improved cognitive, behavioural, creative development • enhanced persistence, goal striving, self-regulated learning
A8	Australia	Jazz	See de Bruin et al. (2020)	<ul style="list-style-type: none"> • Qualitative case study • Semi-structured interviews with students (n = 12) • Phenomenological analysis 	<ul style="list-style-type: none"> • authentic situated learning environment • clear differences between students in participation and interaction • developed initiative, decision-making, leadership skills

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Table A4 (continued)

Study			Aims	Methodology	Results
A9	UK	Music Technology	Exploring the inter-relationship between talk and learning in collaborative computer-based music production	<ul style="list-style-type: none"> • Case study • Audiovisual recordings • Sociocultural discourse analysis 	<ul style="list-style-type: none"> • increased profiling and positioning • collaborative talk builds local common knowledge, fosters peer confidence and feelings of shared effort • collaborative computer music production practices led to new strategies of meaning making
A10	UK	Music Technology	Exploring students' (re)negotiation of common knowledge, shared meaning, and collective understanding while using digital technologies in their collaborative creating	<ul style="list-style-type: none"> • long-term case study with an ethnographic perspective • 24 h of audiovisual recordings • semi-structured interviews • Sociocultural discourse analysis 	<ul style="list-style-type: none"> • collaborative digital music practices foster exploration of hypothetical future activities • composition as digitally-mediated creative work becomes a complex interactional accomplishment • collaboration promotes reflection on choices regarding digital technologies
A11	Australia	Pop	Exploration of instrumentally heterogeneous small student groups	<ul style="list-style-type: none"> • Qualitative questionnaire study • Open-ended questionnaires (n = 10) • Thematic analysis 	<ul style="list-style-type: none"> • peer learning created value which cultivated new skills and improved performance • students experienced being part of a learning community • changes in perspective • expanded social relationships supported learning, new learning experiences; increased confidence and motivation • students reframed their criteria for musical and personal success
A12	Norway	Classical	Elaborating and documenting three different practices of peer learning	<ul style="list-style-type: none"> • Research paper • 3 Project descriptions (n = 3; n = 9; n = 10) 	<ul style="list-style-type: none"> • students gained more self-esteem and confidence • group was experienced as safe learning environment • students felt free to experiment and share work in progress with each other; perceived being part of a learning community • more open to other musicians' understanding of music; developed greater independence and ownership of learning processes
A13	USA	Pop	Examining factors supportive of peer feedback	<ul style="list-style-type: none"> • Qualitative case study with action research and ethnography elements • Observations, field notes, individual interviews (n = 15), focus group interview • Thematic analysis 	<ul style="list-style-type: none"> • sincerity was considered an important aspect in peer feedback • peer feedback was perceived as having different functions: accountability; rapport building; affirmation and validation • students took different roles within the group • the teacher was an important factor in the experienced safe environment
A14	UK	Music Technology	Investigating effects of learning technology on collaborative task performance in a situated environment	<ul style="list-style-type: none"> • Mixed-methods case study • Between subjects design • Video-recordings (n = 64) • Video data captured, transcribed and analysed with Interactive Process Analysis 	<ul style="list-style-type: none"> • the application of a learning interface encouraged more effective planning • students engaged in better peer collaboration with a learning interface • students had better results in pre-production and quicker completed their tasks
A15	UK	Classical	Investigating perceived effects and impact from participation in group music making	<ul style="list-style-type: none"> • Qualitative questionnaire study • Open-ended questionnaires (n = 78) • Interpretative Phenomenological Analysis 	<ul style="list-style-type: none"> • development and deepening of musical skills and knowledge • development of social involvement and skill • contributing actively, strong sense of belonging, popularity gain, making friends • strong sense of self-esteem and satisfaction • developed leadership skills and increased self-confidence
A16	Australia	various	Development and evaluation of a vocal pedagogy model influenced by sociocultural theories	<ul style="list-style-type: none"> • Design-based research with qualitative approach • Reflective journals (n = 70) • Analysis of journals with Interpretative Phenomenological Analysis 	<ul style="list-style-type: none"> • reflection and social interaction led to identity construction, self-regulated learning; new and deeper understandings regarding vocal development • vicarious reinforcement • peer learning valuable for both classical and non-classical singers at undergraduate level
A17	Australia	various	Exploration of the integration of peer assessment in a singing class	<ul style="list-style-type: none"> • Design-based research • Focus groups (n = 6) • Open-ended questionnaire (n = 30); reflective journals; field notes • Documentation, analysis, and reflection 	<ul style="list-style-type: none"> • quality descriptors were developed in collaboration with students • 83.3% of students strongly agreed on critical thinking being developed through peer assessment • students felt more responsible for their peers • developing quality descriptors led to students' vocal development
A18	Australia	Pop	Exploring a learning community as an alternative approach to master/apprentice model	<ul style="list-style-type: none"> • Practitioner research • Survey (n = 41); formal and informal student feedback; interviews 	<ul style="list-style-type: none"> • students developed as self-regulated learners • valued collaboration and reflective practice and initiating and receiving feedback

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Table A4 (continued)

Study			Aims	Methodology	Results
				<ul style="list-style-type: none"> Analytical descriptions 	<ul style="list-style-type: none"> the learning community enhanced their creative process, the opportunity to collaborate was very important at all stages in the process
A19	Australia	Pop	Exploring how a community-based approach relates to self-directed learning activities of students	<ul style="list-style-type: none"> Practitioner research Survey (n = 98); journal entries Analytical descriptions 	<ul style="list-style-type: none"> students reflected on their learning they increased their awareness of how they learn students reported to have gained critical thinking skills students developed as self-regulated learners students developed peer-learning networks developed shared perspective on learning and working showed a sense of belonging and commitment reflected in action communicated their instrument-related thoughts and activities, opening up to students in similar contexts
A20	Australia	Classical	Exploring instrument-specific peer discussion groups on what learning is to participants	<ul style="list-style-type: none"> Research paper with a phenomenological approach Analysis of student reflections and video-recordings from 2 groups (n = 5; n = 9) 	<ul style="list-style-type: none"> group lessons were valued highly professional competency development rated rather low teacher intentions were not clear to the students students expected and preferred more active participation and interaction a purposeful design aimed at collaborative learning and development of professional competence is needed for group lessons
A21	The Netherlands	Jazz/Pop	Examining developed professional competencies in vocal group lessons	<ul style="list-style-type: none"> Practitioner research Mixed-methods case study design with 2 questionnaires (closed/open questions) (n = 34; n = 21); interviews (n = 9) Descriptive statistics for quantitative data; thematic analysis of qualitative data 	<ul style="list-style-type: none"> teaching-through-playing as a form of apprenticeship chamber music instruction as a community of practice learning through regular interaction and guided participation hierarchical power issues did occur; however, teaching staff was more attentive to student involvement and student voice joint participation requires more active and involved students
A22	Norway/Australia	Classical	Exploring teacher attitudes towards teaching-through-playing in collaborative, participative chamber music instruction	<ul style="list-style-type: none"> Qualitative multiple case study Focus group and 3 individual semi-structured interviews in 2 countries (n = 4; n = 2) Thematic analysis 	<ul style="list-style-type: none"> listening, creativity and improvisation skills were developed through group ear playing peer support students employed different improvisational strategies appeared to be very motivated to improvise together experienced more confidence regarding playing by ear and improvising felt more confident musicians
A23	UK	Classical	Investigating small group ear playing including group creativity and improvisation	<ul style="list-style-type: none"> Practitioner research Qualitative design with individual reflective logs and end-of-programme questionnaires (n = 46) Thematic analysis 	<ul style="list-style-type: none"> self-guided interaction among students group ear playing involved peer learning, development of leadership, social awareness, teamwork, and communication skills collective decision-making, identity and relationship development, valuing participation over competition, celebrating group risk-taking, and valuing musical collaboration and experimentation development of aural skills, repertoire comprehension, harmonisation of melodies imitation, invention and genre-free improvisation developed creativity
A24	UK	Classical	See Varvarigou, 2017a	<ul style="list-style-type: none"> Practitioner research Qualitative design with individual reflective logs (n = 194); end-of-programme feedback forms (n = 36); interviews (n = 4) Thematic analysis 	<ul style="list-style-type: none"> workshops functioned as a community of practice and supported informal learning learning experiences through doing and reflecting negotiations of meaning through sharing knowledge and peer support motivation for joint enterprise through a shared common repertoire, commitment, and reciprocal responsibility community membership supported identity construction
A25	Finland	Jazz/Pop	Examining informal learning in jazz workshops and ensembles	<ul style="list-style-type: none"> Practitioner research Qualitative case study including students' individual workshop plans and reflective logs (n = 62) Content analysis 	

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Table A4 (continued)

Study		Aims		Methodology	Results
A26	Finland	Jazz/Pop	Examining professional competency development in a workshop-based community of practice	See Virkkula, 2016a	<ul style="list-style-type: none"> • collaboration with professional musicians developed students' understanding of the music profession • increased understanding of professional musicianship and work environment • developed initiative, responsibility, and problem-solving skills through interaction, which in turn enhanced identity construction • key competences for lifelong learning and musical skills were developed
A27	Australia/ Norway	Classical	Exploring a teaching-through-playing approach in collaborative, participative chamber music instruction	<ul style="list-style-type: none"> • Qualitative multiple case study • Focus group semi-structured interviews in 2 countries (n = 9; n = 5) • Thematic analysis 	<ul style="list-style-type: none"> • participative chamber music teaching as successful approach for musical and social skills development • engagement in authentic professional experiences • positive impact of group discussions • collaborative atmosphere • developed effective and focused rehearsal techniques, technical skills, and stylistic knowledge • different roles of teachers challenging for students • shift in practice goals due to better musical understanding

Table A5

Analysis of presage, process, and product factors in selected studies

Study ID	Presage				Process		Product		
	Student factors		Teaching & learning context		Collaborative learning activities		Learning outcomes		
	Background	Setting	Approach	Teacher role*	Active participation	Interaction	Quantitative Cognitive	Qualitative Cognitive	Affective
A1	Jazz students (year 1, 2, 3)	Project with 9 participating combos of 4–5 students each; heterogeneous groups based on instruments	Peer assessment	process organisation; developing criteria; reading reports; observing; interviewing	developing assessment criteria; participation in mock assessment panels	musical interaction in combos	repertoire knowledge; playing from memory	analytical, critical, assessment, communicative, & interactive skills	involvement; engagement
A2	Classical horn students (n = 3)	Instrumentally homogeneous small group	Teacher-guided group lesson	concept, design, development and organisation of the learning environment; providing feedback	listening; choosing group's repertoire; performing; developing self-formulated goals; evaluation of own learning process	commenting; peer feedback; negotiating; being responsible group members	describing; discussing; identifying	listening, critiquing, & reflective skills	self-confidence; self-evaluation; independence; responsibility
A3	Music (n = 17); dance (n = 16); theatre (n = 20); no previous interdisciplinary experiences	Short interdisciplinary improvisation project; heterogeneous groups of 7/8 students	Student-guided teamwork	preparatory exercises; supportive environment	engaging in interdisciplinary exercises; improvisation; performance	dialogue in various forms; common knowledge development; discussion; negotiating common vision		improvisation; discussion; negotiation; reflection; transformation of existing knowledge; constructive and communicative skills	involvement; engagement; self-reflection
A4	Vocal performance, piano, clarinet, trumpet, saxophone, guitar, bass guitar (n = 16)	Project including heterogeneous groups	Peer assessment	process organisation, reading reports providing feedback	performing; self-evaluating; assessing; allocating grades; addressing written comments	discussing, commenting, critiquing, & providing peer-evaluation		discussion; evaluating; reflection; evaluative, communicative skills	involvement; engagement; self-evaluation
A5	Classical piano; three different levels (n = 18)	Instrumentally homogeneous small groups of 3–5 students	Teacher-guided group lesson	course structuring commenting, suggesting, discussing repertoire, skill teaching, motivating,	ensemble work; listening; observing; commenting; keeping practice journal including reflection; self-assessment; self-critical analysis of	discussion and analysis; questioning; comparing; peer assessment	technique; repertoire; sight-reading; discussing	analysis, critical, & collaborative skills; feedback	involvement; engagement; self-reflection

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Table A5 (continued)

Study ID	Presage			Process			Product		
	Student factors	Teaching & learning context		Collaborative learning activities			Learning outcomes		
	Background	Setting	Approach	Teacher role*	Active participation	Interaction	Quantitative Cognitive	Qualitative Cognitive	Affective
A6	Classical piano (n = 36)	Project within weekly performance seminar	Peer assessment	encouraging, advising process organisation and facilitation, setting criteria, reading reports developing models of peer assessment with students, observing, assessing, evaluating, feedback on feedback	video-recorded performances performing; involvement in developing models of peer assessment	assessing peers; discussing; debating		assessment; co-construction; discussion; debate; feedback; critical & collaborative skills	
A7	2nd/3rd year jazz performance (n = 12): saxophone, trumpet, trombone, piano, drums, bass	3 diverse collaborative projects across 9 months with 1-week intensive periods including 3 rehearsals of 3–4 h length, workshops, performances, and recordings with visiting guest artists	Participative music making	providing examples; hands-on performative demonstration; discussion; clarification of the creative concept; history; anecdotes	initial preparations; journaling; recording	initial co-planning; communal goal-setting; discussing; communicating; evaluating	identifying musical materials (scales, chords) as technical building blocks	metacognitive skills; reflection in/on action; self-regulation; collaborative, discussion, creative, & feedback skills	self-confidence; self-efficacy beliefs; differences in improvisatory dialogue; increased motivation, curiosity, interest
A8									
A9	Creative music technology (2); film (1); dance (2)	Cross-discipline collaboration module; co-producing a contemporary dance film soundtrack	Student-guided teamwork	design of the module; facilitating learning environment, equipment	idea generation; applying digital technologies	dialogue; negotiation; joint exploration; conversations; feedback; co-creating		developing common knowledge; meaning-making; reflection	greater peer confidence, self-awareness
A10	Creative music technology (n = 2); theatre (n = 2)	Involvement factors: see A9							
A11	1st year; singing (n = 5), piano (n = 2), guitar (n = 1), drums (n = 1), saxophone (n = 1)	Instrumentally heterogeneous small groups of 3–5 students, organised in workshops and ensembles	Participative music making	creating student-directed learning environment; teacher assistance only when needed urgently	self-assessment; arranging; chart writing; problem-solving; presenting work in progress	collaboration on open-ended tasks; peer feedback; negotiating; rehearsing; performing peer feedback; seeking advice; collaborative exploration; peer teaching		collaborative & feedback skills; performance; self-assessment	self-confidence; independence; responsibility
A12	(Under)graduates: violin/viola (n = 9); singing (n = 10); piano (n = 3)	Instrumentally homogeneous small groups (3)	Teacher-guided group lesson	development of learning environment; questioning; encouraging; supporting newcomers (legitimate peripheral participation) facilitating safe learning environment; structured feedback; observing, supporting newcomers set-up pre-test; supplying learning technology & manual; distributing surveys; no teacher interference in collaborative work	reflective journaling; presenting work-in-progress; observing; providing support; articulating opinions			collaborative, feedback, performance, reflective, & teaching skills	involvement; engagement
A13	Music and non-music majors (n = 15)	Heterogeneous group in weekly song writing workshops	Teacher-guided group lesson	facilitating safe learning environment; structured feedback; observing, supporting newcomers	song writing; composing; presenting; listening	discussing, providing, & receiving feedback		presentation, collaborative, feedback, & discussion skills	involvement; engagement
A14	Pop/music technology (n = 64)	Music production project in a recording studio with students working in pairs	Student-guided teamwork	no teacher interference in collaborative work	making a drum kit recording; completing a workbook; producing a CD	working in pairs with interface or manual; collaborating; communicating	technical & production skills	collaborative, discussion, & problem-solving skills; effective planning	
A15	Undergraduates and post-graduates (n = 78)	Instrumentally heterogeneous	Student-guided teamwork	no teacher interference in collaborative work	rehearsing; performing; listening	developing friendships; cooperating;	repertoire knowledge	listening; rehearsing; performing,	self-reflection; peer support; responsibility;

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Table A5 (continued)

Study ID	Presage				Process		Product		
	Student factors	Teaching & learning context			Collaborative learning activities		Learning outcomes		
	Background	Setting	Approach	Teacher role*	Active participation	Interaction	Quantitative Cognitive	Qualitative Cognitive	Affective
		chamber music groups				compromising; being supportive; sharing ideas for common goal; self/peer comparison		communicative, & collaborative skills	self-esteem; self-achievement; self-confidence; intrinsic motivation
A16	Classical/non-classical singing (n = 70)	Instrumentally homogeneous groups	Teacher-guided group lesson	design & setup of learning environment; instruction of vocal techniques; providing feedback and assistance when required	reflective journaling; practicing; performing vocal exercises; listening	critiquing; giving and receiving peer feedback; negotiating		performance, collaborative, discussion, & reflective skills; critiquing; negotiating	
A17	Singing; 2nd (n = 20) and 3rd year (n = 15)	Project within instrumentally homogeneous groups	Peer assessment	introduction; explanation; providing examples encourage discussion; critiquing critique; scaffolding	developing quality descriptors; allocating marks	discussing in assessment-panels; providing written feedback		performance, collaborative, discussion, & reflective skills; critiquing; feedback; assessment	
A18	Popular music production (n = 75)	One semester with 11 panels of each 6-7 students in a recording studio. how often	Peer assessment	process organisation and facilitation; maintenance of equipment provide feedback and guidance where/when necessary; feedback on feedback	presenting work-in-progress; planning; composing; performing; recording; reflective journaling; self-assessment	collaborating; providing feedback; marking and assessing in panels; reflecting on peers	technical skills; recording & production skills	collaborative, discussion, & reflective skills; feedback; assessment	involvement; self-assessment
A19	Popular music production (n = 109)	Panels of each 6-7 students in a recording studio	Peer assessment	course facilitation; participation in assessment panels provide feedback and guidance where/when necessary; feedback on feedback	presenting work-in-progress; creative studio work; reflective journaling; participation in assessment panels	collaborating; providing feedback; marking and assessing in panels; reflecting on peers	technical skills; recording & production skills	collaborative, discussion, & reflective skills; feedback; assessment	self-reflection
A20	Piano (n = 5); saxophone (n = 9)	Project-based instrumentally homogeneous discussion groups	Student-guided teamwork	set up of informal environment to foster peer-learning interactions; student-facilitators organised the sessions and made video-recordings; no faculty interference in discussion groups	developing a DVD for incoming students; summarizing discussions	self-reflecting on learning; discussing means of communication for incoming students		collaborative, discussion, & reflective skills; feedback; assessment	involvement; engagement; self-reflection
A21	Undergraduate jazz/pop vocalists (n = 10)	Weekly homogeneous groups with 6-8 students**	Teacher-guided group lesson	organizing group lessons; preparing content and materials; collaboration with other teachers; explaining; listening; giving feedback	presenting; observing; improvising; song-writing	providing and receiving feedback; critiquing peers		performance, collaborative, discussion, & reflective skills; critiquing; feedback	
A22	Undergraduates (n = 12); graduates (n = 2) (voice, piano, strings, winds); teachers (n = 6)	Four instrumentally heterogeneous chamber music group (of two institutions)	Participative music making	participating in chamber music rehearsals instead of teaching leading rehearsals; playing with students; demonstrations and explanations	providing input for sessions; experimenting with different technical and interpretative approaches	imitating teachers' playing; group discussions	illustrating; narrating; combining; repertoire knowledge	listening; rehearsing; performing, communicative, & collaborative skills	being supportive; self-reflective; responsibility
A23 A24	1st year (n = 46)	Weekly small group ear playing with 8 groups of 5-7 students per group	Student-guided teamwork	set up of course material; organisation of lessons; clarifying assignments;	copying music by ear; keeping reflective log; selecting music; listening; playing;	imitating; playful experimentation	recognizing; identifying; memorizing; combining; discussing;	listening; rehearsing; performing skills; composing; arranging;	being supportive; self-reflective; group responsibility; confidence; joy

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Table A5 (continued)

Study ID	Presage				Process			Product		
	Student factors		Teaching & learning context		Collaborative learning activities			Learning outcomes		
	Background	Setting	Approach	Teacher role*	Active participation	Interaction	Quantitative Cognitive	Qualitative Cognitive	Affective	
A25	Jazz/pop	Heterogeneous	Participative	no tutor present in sessions	inventing; improvising; experimenting; exploring cognitive, auditory, & social strategies	band rehearsals;	ear-training skills	communicative, collaborative, & creative skills		
A26	undergraduates (n = 62)	groups participating in workshops	music making	planning; organisation of workshops; reading student plans and reflections	discussing; planning; listening; performing; reflection on collaborative actions; composing; arranging; instrumental practice; reflection; self-assessment	ensemble playing; feedback; collaborating in the organisation		listening; rehearsing; composing; arranging, performing, collaborative, creative, and problem-solving skills; effective planning	being supportive; self-reflective; responsibility	
A27	see A22			planning; organisation of workshops; reading student plans and reflections	professional musician in workshops; working with students on materials; guiding workshop; playing with students; challenging; encouraging; confronting; linking to music community					

Note.
 Teacher role applies to all teaching staff, tutors, coaches, and instructors.
 **part of this study was on a large group of 30 classical vocalists; this part has been neglected in the current review.

Table A6
 Categorization of presage, process, and product factors in selected studies

Presage	Process			Product					
	Teaching & learning context:			Collaborative learning activities			Learning outcomes		
	Approach	Active participation	Interaction	Quantitative Cognitive	Qualitative Cognitive	Affective			
Peer assessment	Teacher-guided group lessons	Participative music making	Student-guided teamwork						
A1, A4, A6, A17, A18, A19	A2, A5, A12, A13, A16, A21	A7, A8, A11, A22, A25, A26, A27	A3, A9, A10, A14, A15, A20, A23, A24	A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A26, A27	A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A26, A27	A1, A2, A5, A7, A8, A14, A15, A18, A19, A22, A23, A24, A27	A1, A2, A3, A4, A5, A6, A9, A10, A11, A14, A16, A17, A20, A21, A22, A26, A27	A1, A2, A3, A4, A5, A11, A12, A13, A17, A18, A19, A20, A22, A23, A24, A25, A26, A27	

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