


The Impact of Teaching Conceptions and Practices in Elementary Level Musical Instrument Learning



Guadalupe López-Íñiguez and Juan Ignacio Pozo 

1 Introduction

1 Previous chapters have suggested that to change the way in which music is taught,
2 and specifically instrumental music, as prescribed, the students need to be able to
3 learn music in new ways. More student-centred rather than content-centred teaching
4 is required, as demanded by the new musical education approaches in Europe (see
5 chapter “[Learning and Teaching Music in the Twenty-First Century](#)”; also Klemenčič,
6 2017). For example in Spain, for several decades now curricular standpoints (see
7 chapter “[Teaching Music: Old Traditions and New Approaches](#)”; also Pozo et al.,
8 2008), despite the Organic law for the Improvement of Educational Quality (LOMCE,
9 2013) have reduced the importance of musical expressivity in the curriculums,
10 attaching greater weight as a consequence to new technical issues and thereby
11 restricting the personalization of musical education (Bonastre, 2015; Bonastre &
12 Timmers, 2019). The students therefore need to be trained in new competences, to
13 a large extent centred in managing their own goals and learning processes (chapter
14 “[The Psychology of Music Learning](#)”), aimed at the construction of musical knowl-
15 edge rather than the reproduction of established instructional knowledge. We have
16 also seen that for this didactic redirection to take place there needs to be a change
17 in conceptions from the teachers themselves on what learning and teaching music
18 actually means (chapter “[How Teachers and Students Conceive Music Education:
19 Towards Changing Mentalities](#)”).

G. López-Íñiguez (✉)
Sibelius Academy, University of the Arts Helsinki, Helsinki, Finland
e-mail: guadalupe.lopez.iniguez@uniarts.fi

J. I. Pozo
Faculty of Psychology, Universidad Autónoma de Madrid, Madrid, Spain
e-mail: nacho.pozo@uam.es

© The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2022
J. I. Pozo et al. (eds.), *Learning and Teaching in the Music Studio*,
Landscapes: the Arts, Aesthetics, and Education 31,
https://doi.org/10.1007/978-981-19-0634-3_9

213

Will this change in the conceptions of learning and teaching from a more direct content focus to a more constructive, student focus really change the way in which the students learn music? Do students conceive of music and learning in a different way when they experience a constructivist focused teaching? In this chapter we will attempt to highlight with the use of several studies and experiences, what impact the teaching conceptions and practices have on the way girls and boys who are beginning instrumental learning conceive this learning to be, as well as the levels of music comprehension they obtain. Our aim is to show that the change in musical education cultures in our classrooms must begin with a change in teaching mentalities, since this is the only way further changes (curricular, technological, socio-cultural) would become genuine transformations in the practices occurring in our classrooms.

2 How to Teach, Learn and Assess: Teachers' Conceptions on Elementary Level Musical Instrument Teaching

Despite the increasingly pressing winds of change over the last few decades, music teaching (chapters “[Learning and Teaching Music in the Twenty-First Century](#) and [Teaching Music: Old Traditions and New Approaches](#)”), like so many other masteries in these troubled times (Pozo, 2016), has hardly been touched by any new changes in the classrooms. In actual fact they seem impervious to new theoretical and methodological perspectives and even to new curricular requirements. As was seen in chapter “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”, one of the causes of this resistance to change resides in teachers' beliefs about how to teach and how to learn which, according to several research studies, appear to have changed much less than would generally be desirable both in general (Castejón & Martínez, 2001; Martín et al., 2014; Pozo et al., 2016; Tsai, 2002) and specifically in the area of musical education (Bautista & Pérez Echeverría, 2008; Bautista et al., 2010, 2011; Bonastre, 2015; Bonastre & Timmers, 2019; Pozo, 2017; see also chapter “[How to Know and Analyse Conceptions on Learning and Teaching](#)” and several other chapters of Part II of the book). A good example of this is a recent study by Bonastre and Timmers (2019) with music students in higher musical studies in Spain and the United Kingdom (who in many cases would be the future music teachers), who mainly believe that the best way of teaching musical expressiveness is through purely technical training, particularly at higher levels. However, in the case of musical initiation the preferred teaching focus would be imitation/modelling. Both teaching strategies—technical training and imitation/modelling—are characteristic of a direct conception of musical teaching, according to the classification developed in chapter “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”, or a traditional practice, according to the criteria of the system for the analysis of instrumental learning and teaching practice (SAPEA) specified in chapter “[SAPEA: A System for the Analysis of Instrumental Learning and Teaching Practices](#)”.



60 Many other studies attest to this difficulty in changing teaching conceptions and
61 practices beyond the area of musical education (Fives & Gill, 2015; Pozo et al.,
62 2006). If we focus on teachers who work in a musical initiation period, with children
63 normally aged between 7 and 12, a study by López-Íñiguez et al. (2014) showed
64 that string instrument teachers in Spain conceived of their instrumental learning
65 and teaching in very different (and even antagonistic) ways, depending on their
66 teaching experience. In this study three profiles were found to be associated with
67 the conceptions described in chapter “How Teachers and Students Conceive Music
68 Education: Towards Changing Mentalities”—direct, interpretative and construc-
69 tive—which would in turn be associated with different levels of experience. For
70 example, despite us not being able to speak of “pure” profiles in the sense of teachers
71 who were 100% direct or 100% constructive, since their responses varied depending
72 on different variables such as the educational dimension in which they taught (e.g.,
73 teaching, learning or assessment), the new teachers demonstrated significantly more
74 constructive, complex profiles on instrumental instruction than the expert teachers
75 (in contrast to what research studies show on experts and novices in other areas of
76 expertise, e.g., Ericsson et al., 2006).

77 The results of this study may be explained in two possible ways. From an *optimistic*
78 stance based on learning cultures described by Bruner (1996) in which it is understood
79 that “we teach as we were taught”, these variations in teachers’ conceptions could
80 be explained not just from the combination of years of experience and the age of
81 the participants but also from the curricular changes experienced in Spain over the
82 last few decades and the professional development education the teacher received
83 (obviously very different depending on the teachers’ generation: from a traditional
84 education relating to currently nonexistent curricular content, to a reformist education
85 in keeping with contemporary constructivist theoretical principles). A *pessimistic*
86 interpretation would be that all teachers would have innovative and inspirational
87 visions and complex teaching strategies but as the years went by they would end up
88 simplifying their teaching practices and limiting themselves to routine, or maybe the
89 weight of conservative institutions and the conservatories (hence the name) would
90 exert a certain amount of pressure for them to follow these instructional patterns of
91 knowledge transfer.

92 Most teachers participating in this study filled in a questionnaire of open-ended
93 questions on their teaching ideas in contexts of teaching–learning at musical instru-
94 ment elementary levels. Although these data were not previously published, several
95 of their witness accounts are able to help us in this chapter to describe the three
96 teaching profiles found, with representative examples. As was seen in chapter “How
97 Teachers and Students Conceive Music Education: Towards Changing Mentalities”,
98 the *direct* (or *traditional*) conception infers that a causal relationship exists between
99 the teaching conditions and the result of learning pursued, and the role of the teacher
100 is that of exposing the student to clear learning contents through a unidirectional
101 monologue. The teachers therefore describe their practice in terms of “*if I don’t*
102 *show them how to do it, especially the littlest ones, what good are explanations?*
103 *we have always done it like this [...] you have to ensure they don’t get into bad*
104 *habits and that the rhythms and bowings are as they are on the musical score”.*

Continuing with the *interpretative* conception which is considered a more complex version of the previous one (see chapter “[How Teachers and Students Conceive Music Education: Towards Changing Mentalities](#)”), the teacher is responsible for externally regulating the mental and motor processes of the student—whose role is active but reproductive—to achieve the technical mastery of the music to be learned, or in the words of one of the participants: “*for them to learn the pieces they have to repeat certain key movements, I show them how to do that and I explain it in a thousand ways so that they get it and then they understand what they have to do*”. Finally, the *constructive* conception (close to constructivism defended in instructional sciences) contrasts radically with the theoretical suppositions of the previous conceptions, since the student learns through the activation, stimulation and development of their own mental processes, through reflection guided by the teacher since “*You have to make them think, because if they don’t understand it properly themselves it will do no good at all to repeat it like monkeys [...] we prepare pieces of things they like, from a television programme or whatever, because that motivates them to study at home and to search into how things sound*”.

But if different teachers—or even the same teacher at different moments or for different aims adopt different teaching strategies—, from their beliefs, often implicit, how would these different conceptions and practices affect the way in which the girls and boys approach musical learning in their initial stages? Is it true what many teachers think, that the young students are not yet able, due to their cognitive development and/or musical knowledge, to adopt a constructive focus for their own learning? Or, as proposed in chapter “[Early Initiation to Music Learning: Little Children Are Musicians Too](#)”, can the children from day one learn to explain their expressive goals and cognitively manage their knowledge? Below is the presentation of several studies and experiences which we believe conclusively help to respond to these questions.

3 How Teachers’ Conceptions Impact the Way Children Learn¹

Following the description of the teaching profiles of string instrument teachers at elementary level, we may now ask if the way in which those teachers conceive of learning and teaching has any impact on how their students envisage their own learning. Thus, López-Íñiguez and Pozo (2014a) selected 60 students of teachers who were participating in the study described in the previous section to analyse what their conceptions of learning were and whether there was any relationship between them and the profiles displayed by their teachers. Half of these student participants studied

¹ This section is derived in part from an article published in *Cognition and Instruction* on 2014 © Taylor & Francis Ltd available online: <https://doi.org/10.1080/07370008.2014.918132> reprinted by permission of Taylor & Francis Ltd. Paginations for (quoted or paraphrased) block and indented citations correspond to the pages of the original article where the original version of such citations can be found in their original version. Other block/indented citations without pagination in this chapter are original material.

140 with teachers of a direct profile and the other half with teachers of a constructive
141 profile, and they represented the string family: violin, viola, cello and double bass. All
142 the children were shown short videos² which represented three teaching dilemmas
143 (corresponding to the three conceptions described in chapter “[How Teachers and
144 Students Conceive Music Education: Towards Changing Mentalities](#)”) on how to
145 teach a simple musical scale. In the videos they saw a small girl with her teacher,
146 both with their cellos, and a music stand with the score of a scale, in a typical
147 conservatory or music school instrument classroom. Versions were also made on
148 the girl’s learning of the scale and the assessment of this learning process—always
149 presenting the three versions of each educational situation or dimension. The activity
150 consisted of watching the videos and selecting which of them would be a better or
151 worse help for the children in learning or resolving their learning problems. Analysis
152 of how these two groups of students justified their choices and rejections of the
153 videos showed relevant differences in the form of understanding the learning and
154 teaching between these two groups according to the function of the teaching profile
155 of their teachers. Using the children’s own reasoning we will now describe how they
156 conceived of musical learning and teaching and its assessment.

157 One of the most striking traits in the lexicon used by the children who received a
158 traditional teaching method was that instrument learning revolved around the figure of
159 the “maestro” (highly respectful way to refer to any teacher in Spanish). The children
160 used this word to describe their favourite teacher in the videos, thus conferring him
161 or her a higher place in class hierarchy. According to this group, the students’ simple
162 exposure to the teacher’s explanation meant they could learn to play an instrument
163 and automatically understand the complex process underlying this practice because

164 if, for example, a teacher does not explain it to you, you would not do it well and they have
165 to explain it a lot so that you do it well [...] I think it would be better like I said so that,
166 well, so that they do not get so confused alone, first the teacher explains and then the student
167 understands it and plays it. (López-Íñiguez & Pozo, 2014a, p. 238)

168 Furthermore, imitation plays an important role in scale learning, in fact these
169 students rejected the constructive video, because the teacher does not show the
170 students what they have to do “*I think that [the teacher] did not tell her she had
171 to put her hand more like this, nor did she show her how to do it, she only said that
172 she knew how to do it and that was that*” (p. 238).

173 For these children, a good teacher should immediately correct a student’s error so
174 that it does not become a habit and does not interrupt their learning development

175 I like it because she corrects her mistakes and helps her tune up better [...] because she said
176 where she went wrong, what mistakes she had made and she made her correct them, she
177 corrected the wrong position, she told her what the positions were and all of that [...] the
178 girl is not going to know how to do it alone without help and she could get into bad habits,
179 the teacher has to explain things to her, she is the one who knows. (p. 239)

180 With regard to this, it seems that it is in correction of errors when these children
181 showed greater autonomy “*you have to be sure of where the finger goes and you*

² The videos are freely available in the following website: <https://vimeo.com/psycellogy>

182 *must not repeat it, so when you are aware of the error you don't repeat it*" (p. 239).
 183 Although in reality autonomy is not a result in itself and the students are clear that
 184 when they don't know how to do something, it is best to directly ask the teacher,
 185 assuming again a role of non autonomous students in the classes or during study
 186 at home *"if you have a doubt, you have to ask the teacher, she has to clarify your*
 187 *doubts, you can't know it on your own"* (p. 239).

188 Furthermore, these learning problems appear to be generally related to tuning the
 189 scale or a faithful reproduction of the sound (in line with Bautista & Pérez Echeverría,
 190 2008).

191 because it is of great help to the teacher that she is not out of tune, because she puts her
 192 finger where it should be and it sounds right, when she plays the note she hears it and will
 193 try to move the finger when it is out of tune. (p. 239)

194 and they are usually associated with a wrong positioning of the hand/finger/position,
 195 instead of being related to the process of internal listening needed for the child to
 196 understand why the scale was out of tune

197 because she says where the fingers must go and all that, she says where she has to put her
 198 fingers and to do it again, all the time until she does it right [...] because she has positioned
 199 her hand where it has to go [...] instead of telling her just that she is doing it too much, too
 200 high or too low, so he puts the finger as far as it should go, so she knows where, where it is
 201 and then knows and remembers, as if it were a block and so that it does not go too high or
 202 too low. (p. 239)

203 It seems that the students of traditional teachers tended to agree on how to correct
 204 these out of tune notes: As we commented before, this is not associated with what
 205 would be considered the most constructive—this is the internal listening followed
 206 by a process of comprehensive learning related to the positioning and pressure of the
 207 finger on the octave—, but it is determined by the area where the hand or finger has
 208 to be, without measuring the listening or the comprehensive process, only the exact
 209 production of the notes of the scale

210 she has to go up quite a lot, take the note up a lot because if not, it will be out of tune and
 211 she has brought it down [...] when you are playing and you don't look at your hand, you
 212 cannot hear it is out of tune so much, not as much as others do [...] I cannot play a scale of
 213 G major and put A where C should be, I have to know where my hand should go, where the
 214 first position is, where the third finger goes. (p. 240)

215 or repetitive practice, an activity which becomes the teacher's order, without the
 216 necessary processes being determined so that the student understands why

217 because it is demanded, but it is what has to be done because if not the student will not get
 218 it right, and because they are been forced to repeat it and do repeat it and repeat it until they
 219 get it right because they explained, they were stopped at the right moment when they did it
 220 wrong, it was explained, I mean how to do it was explained to them, the teacher corrected
 221 many many times. (p. 240)

222 Finally, and with regard to all of the above, the only and principal aim why the
 223 teacher corrects, explains, selects the contents and is the only mediating agent of
 224 learning according to the students is so that they do the exam well *"the teacher tells*

225 *them to be careful with the tuning, to work well at home, so that the exam which*
 226 *is in two weeks will go well for them”* (p. 240), which appears to generate a desire
 227 in the student to please the teacher and enable them to achieve their aim, with their
 228 motivation therefore being extrinsic

229 so that the teacher sees you are doing it properly [...] because the teacher also tells you what
 230 you are doing wrong and what you are doing right and she has done it right nearly every
 231 time and the teacher is happy. (p. 240)

232 This in turn appeared to generate insecurity in the children in the face of external
 233 assessment “*I am nervous about the grade pass exam*” (p. 240), and rejection of
 234 students who were not corrected, or were out of tune or did not study enough because
 235 “*they do not study the scale for the following week [...] they did not correct, they*
 236 *would not have studied more and been out of tune more*”. (p. 240).

237 In contrast, we may see what choices children whose teachers have constructive
 238 approaches made and how they justified them. For example, they were very clear on
 239 the fact that a good teacher should help and guide their students in the learning and
 240 studying process, offering advice on how they should do things—which is different
 241 to ordering how things should be done, as with the previous group—and asking the
 242 students what is their opinion on how and what to study because

243 there are lots of pieces of advice, they are very important, because of experience and all that
 244 [...] because the girl asks how she should study things, and she needs guidance about where
 245 she should go with each thing in its place. (p. 241)

246 In fact when they rejected the most traditional videos, they argued that if the
 247 teacher just corrects and does not help the child reflect on what has happened or how
 248 to resolve things in a way so that she realises for herself what has happened and what
 249 tools she has of her own to use, it will be impossible for her to learn because

250 she says, listen to me and then you do it’, and because she does not correct much, because
 251 you learn things if you do them badly and then you make a mistake and think, but if you do
 252 it badly and they correct you, in the end you don’t learn anything [...] because she said ‘very
 253 good’ and ‘we’ll see each other next week’, and that wouldn’t work, because Ok, very good,
 254 you study things at home, but she does not give advice and does not ask the girl anything
 255 [...] so the teacher has made the girl think, what you cannot do is not allow her to think and
 256 say everything yourself, I mean, you have to let her think for herself. (p. 241)

257 These children continued arguing the need for the teacher to be a guide in the
 258 learning process, a figure they can ask and who helps them to think for themselves
 259 on their processes, resulting in increasing their capacity to concentrate on the study
 260 and their attention

261 she asks her if she knows what she has to study so that this is attentive [...] I think she should
 262 have said well, no I do not know, something more, something about how she should have
 263 studied it at home, focusing a bit more on how she could have studied [...] she asks the
 264 student if she can see where she has gone wrong, if she could improve at home and could
 265 study it better, she focuses better on what has to be done for the song. (p. 241)

266 These processes have to be achieved autonomously, using as an example the
 267 process of recovery with transference

268 and then she becomes the teacher so that afterwards what she said she also does when she is
 269 playing the cello because she remembers what she said when she was playing [...] she said
 270 ‘imagine such and such’, so then she remembers when she is playing and says ‘imagine A
 271 in your head’, and then she does it well [...] and she also asked how she was going to study
 272 at home so that the girl knows she has to study at home. (p. 241)

273 in the words of Schön (1983), reflecting on the action,

274 *I prefer this form of teaching, because the teacher makes the student reflect on how she has*
 275 *to do it and she repeats it and therefore learns far more, I mean, if they tell you what you*
 276 *have to do, you do it, but if you realise what you have done badly and what you have to do,*
 277 *you do it much better because you learn more that way, because in the other ways you learn*
 278 *too, but you learn to know what your errors are [...] and she thinks in her head and does it*
 279 *slowly”, and not through the simple repetitive practice “because she says to do I don’ know*
 280 *what and that is all, repeating it and repeating it, she reaches a limit and that does not help*
 281 *anymore. (p. 241)*

282 According to these children this type of guided and reflective practices has a direct
 283 impact on their willingness to study because

284 it is as if the teacher tells them how they have to learn and the girl knows more, the student
 285 knows more and then it’s like she can do it, she can develop her mind more for playing the
 286 scale, because, well, her mind is developed it is more prepared for playing that song, because
 287 the teacher has explained more to her, how to rehearse and how to practice and how to study,
 288 she also has realised what they have to study and then it is like a step towards knowing more
 289 things. (p. 242)

290 and in the motivation to learn

291 also the opportunity she was given, and it is as if the girl is the teacher and now the teacher is
 292 the student so the girl corrects her, so maybe this gives her greater strength for playing and
 293 to do it better than saying ‘you do it, you do this’, and maybe she has done it right because
 294 the teacher has been the student and she has now been the teacher. (p. 242)

295 With regard to the class objectives, these children agreed that giving homework
 296 without the person understanding the reason why makes no sense because “*the*
 297 *teacher said nothing except to say what homework has to be brought for the next*
 298 *day, that was it” (p. 242), because when studying at home the child would feel lost*
 299 *and without tools to solve learning problems because*

300 when she comes, what she brings is good, but the thing is that it is wrong, because she
 301 studied badly and the teacher tells her how it has to be done, and the next day it is better, but
 302 it is better because of what the teacher said, although the finger is still not in the right place
 303 (p. 242)

304 As happened previously, they had no doubts about explaining how they should
 305 work on this point in the classes, in a more constructive and positive way for the
 306 student since

307 when she brings it, she has studied less, but when it is wrong, the teacher plays it in the same
 308 way as her and then she corrects her as if she were the teacher, telling the teacher where to
 309 place her fingers because the teacher is playing it as she had played it and she realizes this,
 310 so then she imagines she is the teacher and tells her what she has to do and how to position
 311 her fingers. (p. 242)

312 Lastly, this group demonstrated a great interest in internal listening, something
313 that did not appear in the previous group, as an aid to learning, more focused on the
314 process of listening or singing, rather than the result of tuning

315 she is not really looking at her hand, she is doing it, the teacher is doing it with her, but she is
316 listening to it, but not exactly looking at her hand [...] because the girl is going to sing it in
317 her head, to know the tune, if she sings it well she knows the right pitch for the instrument.
318 (p. 242)

319 Also, and unlike the previous group, these students had a positive predisposition
320 to assessment, as a joint process between teacher and students since *“the girl has*
321 *said how she could study and also the teacher has given her an opportunity to see if*
322 *she has done it properly or if she has done it badly”* (p. 242), rejecting when it is the
323 teacher who does the assessment, without giving explanations because *“the teacher*
324 *says what it is like, but she says nothing more than it is bad, and she does not say*
325 *why she has done it wrong”* (p. 242).

326 To sum up, what teachers do in instrumental music classes has highly powerful
327 effects on what students do (López-Íñiguez & Pozo, 2014b). String instrument
328 students engaged with constructive teaching methods understand that instrument
329 teachers are figures which act as guides to help and support them, and who see errors
330 as tools to encourage learning through reflection. These students are autonomous,
331 active, reflexive, intrinsically motivated, self-regulating and focus on study quality,
332 creativity, learning to learn and understand music practice and its significance as a
333 combination of complex cognitive processes.

334 In contrast, students who were found to be studying in more traditional environ-
335 ments described their teachers as being in a higher hierarchical level to them inside
336 the classroom, the essential role of which was to give orders and correct mistakes
337 immediately (similar to the teacher-student model of the conservatory described in
338 chapter [“Learning and Teaching Music in the Twenty-First Century”](#)). These students
339 were extrinsically motivated and did not demonstrate a great deal of autonomy in
340 their learning, and also depended a great deal on imitation, instructions on contents
341 to learn, and feedback from their teachers. They also viewed learning as some-
342 thing significant only when they passed an exam through repetitive practice, and the
343 learning of which was mostly to perfect mastery of motor skills to reproduce the
344 sheet music perfectly.

345 Table 1 contains a summary of the main issues for the justifications and differences
346 between the children who received one type of instruction or another. As we can see,
347 they are similar to those described in the introduction to this chapter where differ-
348 ences were established between the direct and constructive conceptions of teaching-
349 learning maintained by their teachers, from which both groups of students were
350 selected.

351 However, since the responses given by the children could have simply been that
352 they selected the options according to the teaching model they had been engaged
353 with, it is worth asking whether these children learn differently, or if they all learn
354 the same (see chapter [“Reading Music. The Use of Scores in Music Learning and](#)
355 [Teaching”](#) where the levels of musical score processing are explained). To do so

Table 1 Summary of the differences in verbal explanations of students on selection and rejection of each teaching model (traditional and constructive). Extracted from López-Íñiguez and Pozo (2014a)

| | Traditional | Constructive |
|--------------|---|--|
| Teacher role | <ul style="list-style-type: none"> – Upper hierarchical level of “teacher” – Orders – Explains – Corrects errors | <ul style="list-style-type: none"> – Guide – Helps – Asks what and how to do it – Errors as learning tool |
| Student role | <ul style="list-style-type: none"> – Not autonomous – Asks what to do – Obeys orders | <ul style="list-style-type: none"> – Autonomous – Reflects on how to do things – Thinks |
| Processes | <ul style="list-style-type: none"> – Assessment by the teacher – Repetitive practice – Extrinsic motivation – Imitation | <ul style="list-style-type: none"> – Joint assessment – Reflective practice – Intrinsic motivation – Internal listening – Management of attention/concentration – Recovery with transference |
| Results | <ul style="list-style-type: none"> – Practice quantity – Psychomotor (placing of fingers and hands) to tune up – Perfect exam – Precise production of symbolic material | <ul style="list-style-type: none"> – Practice quality – Internal listening to tune up – Learns to study – Understands the reasons for doing things |

356 López-Íñiguez and Pozo (2014b) undertook another study with the same children to
 357 see how they processed musical scores. These children were presented with a simple
 358 composition adapted to their elementary levels (see Fig. 1) and which included 9
 359 different questions to learn according to the musical score processing levels presented
 360 in chapter “Reading Music. The Use of Scores in Music Learning and Teaching”
 361 (see Table 2). The children were asked to select as many cards as they considered
 362 important to learn the musical score, and that they should be ranked from most to
 363 least important, and also to justify their selection (each card contained a type of
 364 processing).

365 The results of this other study showed not just that the students who studied with
 366 more traditional teachers selected fewer elements to learn than those who studied with
 367 constructive teachers (1–5 compared with 8–9), but that the elements were ranged
 368 completely differently (López-Íñiguez & Pozo, 2014a). The latter selected more
 369 cards at referential and analytical levels, with referential being the most important
 370 in rank, because

371 imagine I’m an adult and I am going to visit Bach in his house and play for him, and suddenly
 372 I play his Concerto and I change a lot of things, I don’t think Bach would be very happy
 373 with me, I think you have to respect the composer and I really like Bach, so you have to
 374 respect him [...] this piece, for example, it is about joy and it is like being in the pool, spring,
 375 summer and things like that, if the composer wanted it to sound happy then you have to play
 376 it as happy, and the notes will be played little by little but the main thing is to give it a good
 377 style.



Fig. 1 Example of the melody of the piece where the 9 cards were represented (“Rain drops on a sunny day”). Taken with permission from López-Íñiguez and Pozo (2014b), ©2013 The British Psychological Society

Table 2 Processing levels presented to the children. Taken with permission from López-Íñiguez and Pozo (2014b), ©2013 The British Psychological Society

| | |
|------------------------|---|
| Symbolic level (SL) | SL.1: Learn to play notes from the score |
| | SL.2: Play the rhythms that appear in the piece |
| | SL.3: Focus on the bows given by the score |
| Analytical level (AL) | AL.1: Know when to play the melody or the accompaniment |
| | AL.2: Notice where the phrasing begins and ends |
| | AL.3: Know how many parts this piece has |
| Referential level (RL) | RL.1: Play the piece as I think the composer would have wanted |
| | RL.2: Choose the sound which best fits in with the style of the piece |
| | RL.3: Let the audience know what to feel when I play this piece |

378 However, the students from the traditional group mostly chose all the symbolic
 379 level cards, and a few from the other levels, but always ranking the symbolic as the
 380 most important, since

381 why would it matter if you were expressing emotions to the audience if the notes and
 382 rhythms are not right and you are changing all the score bowings? [...] these things are not
 383 so important, but if I play it wrong, everyone realises, even my grandmother, you have to
 384 avoid errors.

385 To sum up, the students from the constructive group considered it was more impor-
 386 tant to express their emotions, communicate with the audience or be inspired by the
 387 composer's idea of the composition, whilst the notes or rhythms were simply vehi-
 388 cles for this. In contrast, the students from the traditional group considered that the
 389 symbolic material was essential and that it was not possible (and even unnecessary!)
 390 to work on some of the other aspects without first learning the notes, the bowings,
 391 the correct rhythms.

392 We therefore see that the type of learning received by the students impacts not
 393 just their conceptions but also the way in which they learn music. The students
 394 differ in their conceptions on musical learning and teaching, and on their processing
 395 or comprehension of musical scores. Those who are engaged with a constructive
 396 teaching method achieve better learning, according to that defined in chapter "[The
 397 Psychology of Music Learning](#)", and these children recognize both the teaching
 398 model with which they can learn and also appear to understand the supposed under-
 399 lying theories to these models (López-Íñiguez & Pozo, 2014a). Given the impor-
 400 tance of these results it is therefore pertinent to delve further into what characterises
 401 constructive teaching at these ages.

402 **4 Characteristics of Constructive Practice in Teaching** 403 **Instruments at Elementary Levels**

404 Many studies have analysed the conceptions of teachers and students on how one
 405 teaches an instrument but as indicated in chapter "[SAPEA: A System for the Analysis
 406 of Instrumental Learning and Teaching Practices](#)", the analysis of practices derived
 407 from these conceptions has been scarcer. Although many studies exist describing
 408 specific practices or forwarding new intervention proposals, they usually lack solid
 409 research to back them up in terms of conditions, processes and results involved.
 410 Our reference is a case study of the authors on analysis of dialogic practices in a
 411 musical instrument class. In keeping with the macro and micro visions of the SAPEA
 412 presented in chapter "[SAPEA: A System for the Analysis of Instrumental Learning
 413 and Teaching Practices](#)" video recordings of the practices of a Finnish teacher with
 414 a constructive learning and teaching conception with one of her 7 year old students
 415 (López-Íñiguez & Pozo, 2016; submitted) were analysed. Below is an illustration of
 416 the type of help the teacher gave and the general traits of these classes, again based
 417 on real witness examples.

418 Firstly, the teacher uses several preliminary strategies to help the girl construct
 419 her own meaning about what she is learning and to acquire progressive control over
 420 her learning during the classes. For example, this teacher always lets the student play
 421 until the end of the piece (or until she herself stops) without interrupting her as soon
 422 as she makes mistakes (or plays something that is not written down, or in a different
 423 way to how it has been written down, or when her body pose is not right). "*If I stop her
 424 all the time it will stress her out and she will not come to class*". The intention is that

425 she understands the structure of the piece holistically and less compartmentalized,
426 and always with the intention of activities being adapted to the student's level.

427 I like it that the students feel happy about their skills, I don't want them to be stressed with
428 activities that are too advanced: if I am only concerned about the position of her left hand
429 she will not freely try out different sounds in other parts of the octave and she will fuss
430 about placing her fingers correctly which will block her body and stop her from listening
431 and feeling the music she is playing.

432 The motor development aspects are highly important in these class, as they are in the
433 more traditional class, but there is always a combination with other less mechanical
434 activities "*the motor development with beginners takes a lot of time, so one has to*
435 *offer a great variety of parallel activities to ensure that the student clearly feels they*
436 *are quickly and easily progressing*".

437 Also, the teacher asks much more than she orders or explains, almost always
438 giving clues "*do you see this secret mark here? This little bird? I told you at the*
439 *beginning of the year that this little bird is a harmony you can find here* [pointing to
440 the fingerboard of the instrument]", so that the girl finds out how to face up to the
441 different challenges of the instrument or score and they both talk much more than
442 they play. The fact the teacher constantly asks helps the girl to participate actively
443 and explicitly, which enormously impacts her motivation (along Vygotskian line
444 of Mercer, 2008; Mercer et al., 2009) "*I make them talk the whole time, partly so*
445 *that they feel motivated and appreciated, this makes them become committed to the*
446 *activity of learning*".

447 This type of action always occurs in a relaxed, friendly atmosphere where mate-
448 rials are selected in accordance with the interests of the student (this teacher has a
449 wide range of materials and instrument methods, and adaptations of others, which
450 she is familiar with and has studied in depth)

451 the students usually choose the order of the pieces and the repertoire we are working on in the
452 class, we always do new activities, something that they like. I remember that this particular
453 student showed me a photo of her cat at the beginning of the class and it reminded me of the
454 song 'The G-E of the little cat', which was perfect for this situation.

455 As has been studied previously, (Hallam, 1998, 2011), giving autonomy to the
456 students helps them to become committed to their studies long term and to enjoy
457 their practice, and to establish positive relationships with their teachers, as explained
458 by the student participating in this study

459 My teacher is one of the best teachers, she understands what I am thinking and she helps me
460 if there is something I don't yet know how to do, and during classes I always play better and
461 better because I understand things.

462 Also, regarding the student's learning assessment, it is she herself who starts
463 processes of self-criticism, since she is used to reflecting on her own errors
464 autonomously and through self-regulation "*I don't know this one yet, I have to play*
465 *it more slowly, and concentrate on the other song I already know which has some of*
466 *the same things*". The teacher manages these processes with several resources such
467 as the constant change in activities so that the child is attentive and motivated "*if I*

468 *made her play open strings all the time she would get bored and I would probably*
 469 *get bored too, I have to motivate them all the time with new and fun things”.*

470 This all clearly contrasts with what has been reported from other traditional style
 471 class studies where the teacher constantly stops the students and makes them repeat
 472 because of errors (they don’t ask what has happened, they don’t make them reflect on
 473 why it has happened or how to resolve anything) (Goolsby, 1996, 1997; Henninger,
 474 2002; Karlsson & Juslin, 2008; Siebenaler, 1997). The classes are not usually fun
 475 or relaxed as other studies have shown (McPherson & Davidson, 2002; Renwick &
 476 Reeve, 2012; Schenck, 1989), and the management of errors is not achieved through
 477 reconstruction of practice, but from immediate correction. These studies refer to the
 478 necessary demand for change in conservatory teaching practices, as described in
 479 chapters “[Learning and Teaching Music in the Twenty-First Century](#) and [Teaching](#)
 480 [Music: Old Traditions and New Approaches](#)”.

481 To conclude, it is important to mention that this teacher, in the interviews and
 482 other records, clearly demonstrated a constructive conception about music learning
 483 and teaching. There is therefore a clear relationship between this teacher’s conception
 484 and her instructional practices which appear, in turn, to be influencing her student’s
 485 conceptions and practices (along the lines of the studies such as those of Rodríguez &
 486 Fitzpatrick, 2014; or in music those of Gaunt, 2008; Mills & Smith, 2003; Pratt, 1992;
 487 Rife et al., 2001). This, as we have seen, demonstrated both autonomy in learning and
 488 constructive conceptions in several activities. In consideration of these constructive
 489 practice traits and their impact on students, the last chapter of this book offers several
 490 recommendations as a conclusion for teachers and students of musical instruments,
 491 aimed at the development of a constructivist practice in music classrooms.

492 **5 Summary and conclusion**

493 In this chapter we have described the clear influence that teachers’ conceptions and
 494 teaching practices may have on the actual conceptions and initial learning of musical
 495 instruments. To do so we have analysed the different teaching profiles—from the most
 496 traditional to the most constructive—demonstrated by conservatory string instrument
 497 teachers at elementary levels, in accordance with their beliefs or conceptions on how
 498 music has to be taught, learned and assessed. Following this, we have seen whether
 499 these teaching conceptions impact how students represent their own learning and
 500 what they think about instrumental teaching. Finally, we have described in depth the
 501 practices of a constructive teacher of cello. The chapters were divided into 4 main
 502 sections.

503 In the first section we saw that the most recent curricular approaches and research
 504 propose more student-centred learning than the learning of contents themselves, but
 505 that this teaching does not appear to really hold true in most conservatory instrumental
 506 classes. Our aim has been to show that the change in musical education cultures in
 507 music classrooms has to start with a change in how teachers approach the learning
 508 and teaching of their students.

509 We then described in detail the conceptions which teachers of musical instruments
510 profess to have at elementary levels in the context of Spanish conservatories. We saw
511 how the conceptions of these teachers are antagonistic in three different pedagogic
512 dimensions: teaching, learning and assessment. Furthermore, we were able to observe
513 that novel teachers tend to be more constructive in their conceptions, but that both
514 teachers with less experience and those who are more expert have no “pure” profile
515 in how they conceive of learning and teaching musical instruments.

516 In part three we wished to study where these conceptions affected children and
517 in what way. Through our research studies, we presented highly significant and
518 disturbing results depending on what children aged between 7 and 12 said. Students
519 who were exposed to more traditional teachers had a simple, dependent, reproductive
520 learning viewpoint, which clearly contrasted with the view of the children who were
521 engaged with constructive teaching models, who were highly motivated and learned
522 musical scores in much more complex and holistic manners. We therefore suggested
523 the need to focus teaching on the students and learning processes and not so much
524 on contents.

525 Since the differences found in these two different groups of children were so
526 extensive, in part four we suggested inspired teachers who read this book to reflect
527 on their practices, on where they stand between this instructional dualism. We there-
528 fore demonstrated an example of “good practices”, analysing in depth the type of
529 underlying practices a teacher with constructivist conceptions has on musical educa-
530 tion at elementary levels. We also described the results of a research study carried
531 out in Finland and in which we used the SAPEA (see chapter “[SAPEA: A System
532 for the Analysis of Instrumental Learning and Teaching Practices](#)”) as a system of
533 analysis on instructional practices of this teacher and her young student. This enabled
534 us to see that talking in a friendly atmosphere, intrinsic motivation from students and
535 their self assessment, and the management of focus and use of teaching materials of
536 interest to the students, in addition to constant questions and collaboration form part
537 of what is considered in international discourse to be “student-centred learning”.

538 To conclude, the chapter therefore suggests that student-centred learning based
539 on the psychological processes described in this chapter (see also chapters “[SAPEA:
540 A System for the Analysis of Instrumental Learning and Teaching Practices](#) and
541 18”) should be considered as the essential starting point of the reforms established
542 in recent educational policies and the good quality instructional practices which
543 are derived from them (in line with Klemenčič, 2017; López-Íñiguez, 2017) and in
544 continuous professional development (see chapter “[Instrumentalist Teacher Training:
545 Fostering the Change Towards Student-Centered Practices in the 21st Century](#)”). We
546 hope that this starting point will once and for all lead to a comprehensive education
547 in line with the pursuits set out by, for instance, Bologna (ESU, 2015), and by the
548 European Association of Conservatories (AEC, 2010), which resonate more or less
549 harmoniously throughout the pages of this book.

References

- 551 Association Européenne des Conservatoires, Académies de Musique et Musikhochschulen (AEC).
 552 (2010). *Instrumental and vocal teacher education: European perspectives*. *Polifonia working*
 553 *group for instrumental and vocal music teacher training*. [https://www.aec-music.eu/userfiles/](https://www.aec-music.eu/userfiles/File/aec-handbook-instrumental-vocalteacher-education-european-perspectives-en.pdf)
 554 [File/aec-handbook-instrumental-vocalteacher-education-european-perspectives-en.pdf](https://www.aec-music.eu/userfiles/File/aec-handbook-instrumental-vocalteacher-education-european-perspectives-en.pdf). AEC
- 555 Bautista, A., & Pérez Echeverría, M. P. (2008). ¿Qué consideran los profesores de instrumento
 556 que deben enseñar en sus clases? [What do instrument teachers think they should teach in their
 557 classes?] *Cultura y Educación*, 20(1), 17–34. <https://doi.org/10.1174/113564008783781477>
- 558 Bautista, A., Pérez Echeverría, M. P., & Pozo, J. I. (2010). Music performance conceptions about
 559 learning and instruction: A descriptive study of Spanish piano teachers. *Psychology of Music*,
 560 38(1), 85–106. <https://doi.org/10.1177/0305735609336059>
- 561 Bautista, A., Pérez Echeverría, M. P., & Pozo, J. I. (2011). Concepciones de profesores de piano
 562 sobre la evaluación [Conceptions of piano teachers on assessment]. *Revista De Educación*, 355,
 563 443–466. <https://doi.org/10.4438/1988-592X-RE-2011-355-032>
- 564 Bonastre, C. (2015). *Expresividad y emoción en la interpretación musical* [Expressivity and emotion
 565 in musical interpretation]. Unpublished Doctoral Dissertation. Madrid, Spain: Universidad
 566 Autónoma de Madrid. <https://repositorio.uam.es/bitstream/handle/10486/669686>
- 567 Bonastre, C., & Timmers, R. (2019). Comparison of beliefs about teaching and learning of emotional
 568 expression in music performance between Spanish and English HE students of music. *Psychology*
 569 *of Music*. Advanced Online Publication. <https://doi.org/10.1177/0305735619842366>
- 570 Bruner, J. (1996). *The culture of education*. Harvard University Press.
- 571 Castejón, J. L., & Martínez, M. A. (2001). The personal constructs of expert and novice teachers
 572 concerning the teacher function in Spanish educational reform. *Learning and Instruction*, 11,
 573 113–131. [https://doi.org/10.1016/S0959-4752\(00\)00018-9](https://doi.org/10.1016/S0959-4752(00)00018-9)
- 574 Ericsson, K. A., Charness, N., Feltovich, P. J., & Hoffman, R. R. (Eds.). (2006). *The Cambridge*
 575 *handbook of expertise and expert performance*. Cambridge University Press.
- 576 European Students' Union (ESU). (2015). *Overview on student-centered learning in higher educa-*
 577 *tion in Europe: Research study*. Brussels. Available at: [https://www.esu-online.org/wp-content/](https://www.esu-online.org/wp-content/uploads/2016/07/Overview-on-Student-Centred-Learning-in-Higher-Education-in-Europe.pdf)
 578 [uploads/2016/07/Overview-on-Student-Centred-Learning-in-Higher-Education-in-Europe.pdf](https://www.esu-online.org/wp-content/uploads/2016/07/Overview-on-Student-Centred-Learning-in-Higher-Education-in-Europe.pdf)
- 579 Fives, H., & Gill, M. G. (Eds.). (2015). *The international handbook of research on teachers' beliefs*.
 580 Routledge.
- 581 Gaunt, H. (2008). One-to-one tuition in a conservatoire: The perceptions of instrumental and vocal
 582 teachers. *Psychology of Music*, 36(2), 215–245. <https://doi.org/10.1177/0305735607080827>
- 583 Goolsby, T. W. (1996). Time use in instrumental rehearsals: A comparison of experienced, novice,
 584 and student teachers. *Journal of Research in Music Education*, 44(4), 286–303. [https://doi.org/](https://doi.org/10.2307/3345442)
 585 [10.2307/3345442](https://doi.org/10.2307/3345442)
- 586 Goolsby, T. W. (1997). Verbal instructions in instrumental rehearsals: A comparison of three career
 587 levels and preservice teachers. *Journal of Research in Music Education*, 45(1), 21–40. [https://](https://doi.org/10.2307/3345463)
 588 doi.org/10.2307/3345463
- 589 Hallam, S. (1998). The predictors of achievement and drop out in institutional tuition. *Psychology*
 590 *of Music*, 26, 116–132. <https://doi.org/10.1177/0305735698262002>
- 591 Hallam, S. (2011). What predicts the level of expertise attained, quality of performance, and future
 592 musical aspirations in young instrumental players? *Psychology of Music*, 41(3), 267–291. [https://](https://doi.org/10.1177/0305735611425902)
 593 doi.org/10.1177/0305735611425902
- 594 Henninger, J. C. (2002). The effects of knowledge of instructional goals on observations of teaching
 595 and learning. *Journal of Research in Music Education*, 50(1), 37–50. [https://doi.org/10.2307/334](https://doi.org/10.2307/3345691)
 596 [5691](https://doi.org/10.2307/3345691)
- 597 Karlsson, J., & Juslin, P. N. (2008). Musical expression: An observational study of instrumental
 598 teaching. *Psychology of Music*, 36(3), 309–334. <https://doi.org/10.1177/0305735607086040>
- 599 Klemenčič, M. (2017). From student engagement to student agency: Conceptual considerations of
 600 European policies on student-centered learning in higher education. *Higher Education Policy*,
 601 30, 69–85. <https://doi.org/10.1057/s41307-016-0034>

- 602 LOMCE. (2013). Ley Orgánica para la Mejora de la Calidad Educativa 8/2013, de 9 de diciembre,
603 B.O.E. de 10 de diciembre de 2013 [Organic Law for Improvement in the Quality of Education
604 8/2013, of 9 December, B.O.E. of 10 December 2013].
- 605 López-Íñiguez, G. (2017). *Promoting constructivist instrumental music education as a mechanism*
606 *for pedagogical equality. Toolkit for instrumental music teachers in Finland*. Helsinki, Finland:
607 ArtsEqual Research Initiative, University of the Arts. <https://doi.org/10.13140/RG.2.2.21656.08963>
- 608
- 609 López-Íñiguez, G., & Pozo, J. I. (2014). Like teacher, like student? Conceptions of children from
610 traditional and constructive teachers regarding the teaching and learning of string instruments.
611 *Cognition and Instruction*, 32(3), 219–252. <https://doi.org/10.1080/07370008.2014.918132>
- 612 López-Íñiguez, G., & Pozo, J. I. (2014). The influence of teachers' conceptions on their students'
613 learning: Children's understanding of sheet music. *British Journal of Educational Psychology*,
614 84(2), 311–328. <https://doi.org/10.1111/bjep.12026>
- 615 López-Íñiguez, G., & Pozo, J. I. (2016). Analysis of constructive practice in instrumental music
616 education: Case study with an expert cello teacher. *Teaching and Teacher Education*, 60, 97–107.
617 <https://doi.org/10.1016/j.tate.2016.08.002>
- 618 López-Íñiguez, G., & Pozo, J. I. (submitted). Microanalysis of instructional scaffolding that fosters
619 metacognition in one-to-one instrumental music lessons.
- 620 López-Íñiguez, G., Pozo, J. I., & de Dios, M. J. (2014). The older, the wiser? Profiles of string
621 instrument teachers with different experience according to their conceptions of teaching, learning,
622 and evaluation. *Psychology of Music*, 42(2), 157–176. <https://doi.org/10.1177/0305735612463772>
- 623
- 624 Martín, E., Pozo, J. I., Mateos, M., Martín, A., & Pérez Echeverría, M. P. (2014). Conceptions of
625 learning and teaching in primary and secondary teachers and their relation to educational variables.
626 *Revista Latinoamericana De Psicología*, 46(3), 211–221. [https://doi.org/10.1016/S0120-0534\(14\)70024-X](https://doi.org/10.1016/S0120-0534(14)70024-X)
- 627
- 628 McPherson, G. E., & Davidson, J. W. (2002). Musical Practice: Mother and child interactions during
629 the first year of learning an instrument. *Music Education Research*, 4(1), 141–156. <https://doi.org/10.1080/14613800220119822>
- 630
- 631 Mercer, N. (2008). Talk and the development of reasoning and understanding. *Human Development*,
632 51(1), 90–100. <https://doi.org/10.1159/000113158>
- 633 Mercer, N., Dawes, L., & Staarman, J. K. (2009). Dialogic teaching in the primary science classroom.
634 *Language and Education*, 23(4), 353–369. <https://doi.org/10.1080/09500780902954273>
- 635 Mills, J., & Smith, J. (2003). Teachers' beliefs about effective instrumental teaching in schools and
636 higher education. *British Journal of Music Education*, 20(1), 5–27. <https://doi.org/10.1017/s0265051702005260>
- 637
- 638 Pozo, J. I. (2016). *Aprender en tiempos revueltos. La nueva ciencia del aprendizaje* [Learning in
639 troubled times. The new science of learning]. Alianza.
- 640 Pozo, J. I. (2017). Acquisition of musical knowledge: Moving toward a change in teachers' concep-
641 tions and practices. *The Finnish Journal of Music Education*, 20, 110–113. https://issuu.com/sibelius-akatemia/docs/fjme_vol20_nro1_nettersio
- 642
- 643 Pozo, J. I., Bautista, A., & Torrado, J. A. (2008). El aprendizaje y la enseñanza de la interpretación
644 musical: cambiando las concepciones y las prácticas [Learning and teaching musical interpreta-
645 tion: Changing conceptions and practices]. *Cultura & Educación*, 20(1), 5–15. <https://doi.org/10.1174/113564008783781495>
- 646
- 647 Pozo, J. I., Loo, C., & Martín, E. (2016). El cambio de las concepciones y las prácticas docentes
648 como factor de cambio educativo [The change in teaching conceptions and practices as a factor of
649 educational change]. In Manzi, J. & M.R. García (Eds.), *Abriendo las puertas del aula. Transformación de las prácticas docentes* [Opening the classroom doors. Restructuring teaching practices] (pp. 545–584). Ediciones UC.
- 650
- 651 Pozo, J. I., Scheuer, N., Pérez Echeverría, M. P., Mateos, M., Martín, E., & de la Cruz, M. (Eds.).
652 (2006). *Nuevas formas de pensar la enseñanza y el aprendizaje: Las concepciones de profesores*
653

- 654 y alumnos [New ways of contemplating teaching and learning: teacher and student conceptions].
 655 Graó.
- 656 Pratt, D. D. (1992). Conceptions of teaching. *Adult Education Quarterly*, 42(4), 203–220. <https://doi.org/10.1177/074171369204200401>
- 657 Renwick, J., & Reeve, J. (2012). Supporting motivation in music education. In G. E. McPherson &
 658 G. F. Welch (Eds.), *The Oxford handbook of music education* (Vol. 1, pp. 143–162). Oxford
 659 University Press.
- 660 Rife, N., Schnek, Z., Lauby, J., & Lapidus, L. (2001). Children's satisfaction with private music
 661 lessons. *Journal of Research in Music Education*, 49(1), 21–32. <https://doi.org/10.2307/3345807>
- 662 Rodríguez, V., & Fitzpatrick, M. (2014). *The teaching brain. An evolutionary trait at the heart of*
 663 *education*. The New Press.
- 664 Schenk, R. (1989). Above all, learning an instrument must be fun! *British Journal of Music*
 665 *Education*, 6(1), 3–35. <https://doi.org/10.1017/S0265051700006811>
- 666 Schön, D. (1983). *The reflective practitioner. How professionals think in action*. Maurice Temple
 667 Smith.
- 668 Siebenaler, D. J. (1997). Analysis of teacher-student interactions in the piano lessons of adults and
 669 children. *Journal of Research in Music Education*, 45, 6–20. <https://doi.org/10.2307/3345462>
- 670 Tsai, C. C. (2002). Nested epistemologies: Science teachers' beliefs of teaching, learning and
 671 science. *International Journal of Science Education*, 24(8), 771–783. <https://doi.org/10.1080/09500690110049132>
- 672
 673

674 **Guadalupe López-Íñiguez** has a Doctorate in Psychology from the Universidad Autónoma de
 675 Madrid and is a cellist specialized in historical performance practice. She is Associate Professor
 676 of Music Education at the Sibelius Academy, University of the Arts Helsinki, Finland. Guadalupe
 677 has led or participated in competitive research projects (e.g., I+D+i, Finnish Academy, Erasmus+)
 678 related to the study of psychological processes inherent in music learning and teaching, the optimi-
 679 sation of interpretation, life-long learning and employability, musical identities and learner iden-
 680 tities, giftedness and talent, and the theories of emotion. Guadalupe regularly gives concerts as
 681 a soloist and chamber musician, and has recorded the complete works of Gabrielli, Scarlatti and
 682 Mendelssohn for cello.

683 **Juan Ignacio Pozo** is Professor of Psychology at the Universidad Autónoma de Madrid, where
 684 he teaches subjects relating to the psychology of learning. He has researched learning in very
 685 different areas (geography, history, physics, chemistry, grammar, philosophy, sport, etc.), and
 686 particularly in music, for projects developed over 20 years by the Universidad Autónoma de
 687 Madrid Musical Knowledge Acquisition Group, which he has coordinated by directing research
 688 projects. Among them were several doctoral theses, part of the results of which have served as the
 689 basis for the creation of this book.