Conceptions of woodwind students regarding the process of learning a piece of music

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The way in which students and teachers conceive the nature of knowledge and its acquisition have been deeply investigated in recent decades, since these conceptions underlie teaching and learning processes themselves. In this study we analysed how woodwind students from different levels of expertise conceive the process of learning a musical piece. As in previous studies about learning processes in music, we divide it into three stages: the beginning (first sessions of study of the new piece), the middle of the process (the student continues practising) and the end (the sessions before the performance). Sixty-eight Spanish woodwind students from three different levels of instruction completed an open-ended questionnaire. A statistical analysis of textual data was applied to the responses, in order to identify lexical differences among groups of participants about their learning conceptions. Statistical significant lexical differences were found for the variable 'Level', and three lexical groups were identified for each stage of learning, corresponding to the three levels. Elementary students held a conception of learning in which there is a linear relationship between conditions (amount of practice time, repetition) and outcomes (mainly related to notational elements), giving a small presence to the learner's agency. Intermediate students began to consider the internal structure of the piece and its expressive function, and they particularly emphasized mental processes involved in learning. Advanced students suggested activities requiring a greater degree of autonomy and reflection, considering the piece as an element for the performer's expression. Changes in goals and activities mentioned for the different stages of learning were also identified for each level. Results suggest that as level of instruction progress, it becomes more probable to find more sophisticated conceptions, which is consistent with previous research in several knowledge domains. Implications for education are discussed.

Keywords: conceptions; musical learning; musical expertise; music students; learning strategies;

Introduction

The process of learning new pieces of music by students at different levels has been the

object of much research in recent decades (Chaffin and Imreh 2001; Chaffin et al. 2003; Gruson 1988; Hallam 1997, McPherson 2005; Nielsen 1999). This paper also explores that process, but from an internalist or first person perspective (Olson and Bruner 1996), using the analysis of such process as a means to understand students' mental representations of learning music. In the field of psychology, these representations are known as *conceptions of learning* and given their educational and psychological significance, have been the object of research in various domains of knowledge (Hofer and Pintrich 1997, 2002; Pozo et al. 2006; Scheuer, de la Cruz, and Iparraguirre 2010; Scheuer, de la Cruz, and Pozo, 2002; Scheuer et al. 2009; Scheuer et al. 2006). These conceptions influence the goals and strategies that students use for learning, which in turn affect the learning outcomes (Marton and Säljö, 1976a, 1976b; Pozo et al. 2006; Säljö 1981). In the field of music, student conceptions have been studied from various theoretical standpoints, as we shall see below (Bautista et al. 2009, 2012; Cantwell and Millard 1994; Hallam 1995a; Torrado and Pozo 2008; Reid 2001; Zhukov 2007).

The aim of this study was to analyze the goals and strategies suggested by students at different levels of musical training for learning new pieces, and to interpret this information in terms of conceptions of learning. In other words, we considered the students' statements as the object of the research itself, because they reveal students` approach to learning. Following Bruner (1990), the study of what people say that they or other people do, as well as how they say it, is key to understand the meanings they generate and use in their interactions with the world. Hence, achieving a better understanding of students` ideas about what to study and how to do it may contribute to a more comprehensive understanding of the process of learning itself.

Learning a musical piece at different levels of expertise: What and how to learn

Much research has analyzed how students and professional musicians approach their

daily practice, and concretely, how they approach learning new pieces of music, by

focusing on the analysis of the activities and strategies suggested and performed

(Nielsen 1999; Chaffin et al. 2003; Jørgensen and Hallam 2009; Hallam et al. 2012).

These activities and strategies vary according to the musician's level of skill

(Gruson 1988; Hallam 1997) as well as his/her ultimate goals and stage of progress in

learning the piece (Chaffin et al. 2003; Williamon, Valentine, and Valentine 2002).

Several authors have broken down the process of learning new pieces in order to

analyze it (Chaffin et al. 2010; Nielsen 1999; Williamon and Valentine 2000). Although

these studies break the process down into different numbers of segments, all of them

agree in distinguishing an initial stage which includes the first moments of work on the

piece, a final stage which precedes the public performance or exam, and intermediate

stages. Some authors distinguish three stages of practice plus a stage of maintenance for

the piece (see Lehmann, Sloboda, and Woody 2007). In this study we will consider the

following three stages in studying a piece of music: first contact with the piece,

evolution of study and days prior to public performance.

In general, professional musicians and advanced students spend the first part of

their study time on reading the entire piece in order to acquire an overview (Hallam,

1995b), returning to this type of reading during the final study stages (Chaffin et al.

2003). This overview, called by some the 'big picture' or 'artistic image' (Chaffin et al.,

2003; Chaffin et al. 2010; Lehmann and Gruber 2006), enables the musician to gain

musical understanding and detect technical and expressive difficulties which will

subsequently require specific work (Hallam 2001; Chaffin et al. 2003; Lehmann and

Gruber 2006). The results of all these studies are consistent with the results obtained in

other domains of knowledge, where physicists and other experts spend initial problem-

solving time on acquiring an overview in order to identify the type of problem and classify it for subsequent resolution (Chi 2006; Chi, Feltovich, and Glaser 1981).

During the intermediate stage, musicians with advanced levels of knowledge usually work on specific issues, which will depend on the musical piece, the instrument and the musician (Hallam 1995b, 1997, 2001). They focus on the detailed study of the difficult segments detected in the first stage, beginning with relatively small segments, which are lengthened as the study progresses.

During the final stage, studying fragments is substituted by playing the whole piece, recovering the overall perspective of it and paying attention to matters of sound and interpretation (Chaffin et al. 2010; Miklaszewski 1989).

This approach to the musical piece, used by advanced students and professionals, differs from the learning strategies common among students in the first levels of musical education (Gruson 1988; Hallam 1997; McPherson and Renwick 2001), who rarely identify and plan the study of difficult sections, and therefore play the entire piece instead of working on individual complicated parts, as well as immediately repeating a single note when they identify an error in playing it. They tend to focus on notes and rhythm first, moving on to technical aspects later. Beyond this, it may be said that not only students at early levels, but also intermediate students, focus more on those elements, with very few of them taking into account dynamics and other expressive matters (Bautista et al. 2009; Marín, Pérez-Echeverría, and Hallam, 2012). As musicians progress in their musical studies, they begin to identify difficult passages and work on them separately, in addition to paying attention to expressive and interpretative matters.

Various authors have studied the relationships between the strategies used by music students and professionals and their approach to learning (Cantwell and Millard

1994; Hallam 1995a, 1995b; Zhukov 2007), starting from prior studies of subjects other

than music (Biggs 1987; Entwistle 1985; Marton and Säljö 1984). The different

approaches seem to be related to different learning outcomes, as we shall see below.

    In several of the abovementioned studies (Cantwell and Millard 1994; Marton

and Säljö 1976a, 1984) the term 'conceptions of learning' is used to signify the ways in

which students of different domains and levels of knowledge understand what is learned

and how it is learned.

Students' conceptions of learning

As mentioned above, conceptions of learning have been studied for decades from

various theoretical approaches and in different fields of knowledge (e.g. conceptions

and approaches to learning, Entwistle 1985; Marton and Säljö 1976a, 1984;

epistemological beliefs and theories, Hofer and Pintrich 1997; Schommer 1993; implicit

theories, Pozo et al. 2006; Scheuer et al. 2009), including the field of music (Bautista et

al. 2009; López, Pozo, and Bautista 2009; Marín, Scheuer, and Pérez-Echeverría, in

press; Nielsen 2012; Reid 2001; Torrado and Pozo 2008; Zhukov 2007). These

conceptions are mental representations of what learning is and how learning is acquired,

which underpin and influence any learning process (Pramling 1996).

    On the whole, it has been found that many preschoolers and children at early

levels of Elementary Education conceive learning as a state which is reached in absolute

terms, without any intermediate steps: either you know or you don't know. Learning is

regulated externally by other agents such as teacher or family (Scheuer et al. 2009). The

same is true of the first levels of musical instruction (Marín, Scheuer, and Pérez-

Echeverría, in press): students believe that there is a single, fixed way to play each

piece. They prefer direct transmission of information from the teacher, which they

consider to be the best help for learning, and understand the work as a sequence of symbols that they must learn to decode and play on the instrument.

As learners progress in their educational-developmental level, their conceptions become increasingly complex (Bautista et al. 2009, 2012; Scheuer et al. 2009; Schommer 1993). They begin to consider learning as a process with intermediate stages, such that knowledge can be partially attained. Students also begin to consider the learner's agency in the learning process (internal agency), taking into account the intervention of different self-regulating processes in learning. The acquisition of knowledge is no longer conceived as the mere reproduction of a model, but understood as the selection, organization and integration of information from different sources (Pozo et al. 2006, Scheuer et al. 2006; Scheuer et al. 2009). This way of conceiving the learning process seems to be fairly usual in persons with school culture, while a conception even more sophisticated, that considers learning as a process of construction and development of mental representations, is only found among some advanced students or teachers (Olafson and Schraw 2006; Pozo et al. 2006).

In the field of music, the most sophisticated standpoints have been observed occasionally in university students, who consider the score as a base upon which to construct their own interpretation, giving prevalence to the expression of ideas and feelings through music. They prioritize the development of personal autonomy when learning new pieces, and consider that the teacher's role is to guide the learning process (Bautista et al. 2009; Marín, Scheuer, and Pérez-Echeverría, in press). However, not all advanced students or professional musicians hold this conception, and many seem to maintain the less complex views described above (Cantwell and Millard 1994; Reid 2001).

Together, these results suggest that conceptions of learning depend on the

degree of learning or training in the specific area of knowledge, although this

knowledge does not suffice to generate the more sophisticated conceptions, like those

close to constructivism. Studies on conceptions of learning both in the field of music

and other fields seem to indicate that changes in them occur as a result of participation

in increasingly complex learning situations, whether formal or informal. Nevertheless,

these studies suggest that there are limits to this progress. Achieving standpoints that

approach constructive conceptions requires, among other socio-cognitive factors,

specific spaces in which to reflect upon teaching and learning in which learners are

involved (Martín and Cervi 2006; Schön 1987).

As mentioned above, conceptions of and approaches to learning have been

found to be related to the strategies that students say they use and to their learning

outcomes. Within the theoretical framework of epistemological beliefs, Schommer

(1993) identified relationships between the beliefs held by high school students

regarding knowledge and their actual outcomes, whereby the students who had more

sophisticated conceptions achieved better results than those who held more naïve

conceptions. From the same standpoint, Nielsen (2012) found that it was less likely that

students who conceived musical knowledge as organized in isolated bits would use

strategies for development, organization and self-regulation than those who understood

it as complex and sought to 'get the big picture'. Moreover, it was less likely that those

who believed that the ability to learn to play an instrument was innate would start to use

metacognitive strategies and strategies for regulating effort than those who believed that

the skill to learn can be modified.

Studies by Marton and Säljö (1976a, 1976b) showed how the type of processing

(deep or surface) that the student uses when acquiring knowledge is related to the type

of outcome he/she will achieve. Thus, students who use surface processing focus on the

'sign', i.e., the notation itself, leading to rote-learning and reproductive strategies. In

contrast, students who use deep processing focus on significance, seeking to understand

the composer's intention and communicative goals. Similar results were found by

research on music students (Bautista et al. 2009, 2012; Chaffin et al. 2003; Gruson

1988; McPherson 2005).

Aims

The papers we have described so far studied either conceptions of and approaches to

learning music or the learning process itself, sometimes broken down into various study

sessions. However, we have not found any research work making a detailed analysis of

conceptions at different stages while learning a piece of music. Our main aim was in

fact to analyze how music students conceive the learning process of a piece throughout

the three stages mentioned above, from the first contact with the piece up to the days

before its public performance. In line with Pramling (1996), we focus on the study of

what and *how* learning takes place through:

   (a) The main outcomes to be achieved in the process and the difficulties that may be

encountered (*what*), and

   (b) The means for achieving the outcomes and the solutions provided for resolving

difficulties (*how*).

         We are interested in studying whether students believe that these results, means,

difficulties and solutions remain the same or vary throughout the different learning

stages and, in the latter case, what this variation consists of. Moreover, considering the

differences between professional and trainee musicians regarding their approaches to

studying music and the different conceptions of learning held by musicians at different

educational levels, we are interested in ascertaining whether and how their level of

instruction influences these conceptions. With this aim, this study analyzes conceptions

of students at three levels of musical instruction.

Method

Participants

Sixty-eight students from 14 conservatories in Spain, specializing in a woodwind

instrument usually present in the symphonic orchestra formation (flute, oboe, clarinet

and bassoon), took part voluntarily in the study. They were in one of the levels we

intended to study: 4th Elementary Degree (4th ED), 3rd Professional Degree (3rd PD) and

6th Professional Degree (6th PD). Since students of different ages may be at the same

level of musical studies, we have reported their distribution in age ranges. Participant

gender was almost evenly distributed within each level. Table 1 shows the distribution

of the participants (i.e., students who volunteered) according to the academic level, age

range and gender.

Musical studies in Spain are organized into three degrees (L.O.E. 2006):

Elementary Degree (ED, four levels), Professional Degree (PD, six levels) and Tertiary

Degree (TD, four levels). Music students usually start Elementary Degree at the age of

eight or nine, attending lessons at the conservatory after school. Throughout the

Elementary and Professional Degree courses, in addition to individual instrument

lessons, students have other classes such as analysis, music history, chamber music,

orchestra and fundamental principles of composition. The Tertiary Degree corresponds

to a Bachelor of Music Degree. Students start this Degree after finishing high school,

usually at the age of 18.

(Table 1)

Materials and tasks

Participants responded individually in writing to an open-ended questionnaire. First, each student was asked to select a baroque or classical work that he/she knew well, and imagine that a classmate ('Juan') was preparing to learn it. The task consists of advising him on how to learn the piece, through a guide (the questionnaire) conceived as a set of questions for participants to respond to. The questionnaire divided the learning process into three stages: the day that 'Juan' would begin to study the piece; the intermediate days of study; and the final days before the concert. Participants were asked to write down the learning outcomes that they believed the imaginary classmate should achieve in each stage. Then they were asked to select, for each stage, what they considered most important to learn from among all their suggestions. This learning priority, along with the questions probing deeper into *how* and *what*, were the focus of the research study we present here. After selecting the learning priority, participants were asked to explain why they considered it the most important (Question 1). Then they were asked to describe the activities that would enable the imaginary classmate to achieve that learning (Question 2), difficulties he might encounter while attempting to learn it (Question 3) and lastly, the solutions that the participant would suggest (Question 4).

The questionnaire thus includes four groups of questions for each stage, as shown in Table 2. Questions 1 and 3 refer to *what* to learn, while questions 2 and 4 refer to *how* to learn.

(Table 2)

Procedure

The questionnaires were delivered to instrument teachers at the different conservatories, who in turn gave them to all the students in the target levels (4th ED, 3rd PD and 6th PD) which wanted to take part voluntarily in the study, and collected them when they had

been completed. All minor students provided a signed parental consent in order to take

part. Teachers returned all completed questionnaires to the researchers within three

months.

Analysis

We applied lexicometry (Bécue-Bertaut 1991; Lebart, Salem, and Bécue-Bertaut 2000)

to the corpus generated by literal digital transcription of the handwritten answers

provided by the 68 participants to questions 1, 2, 3 and 4 for each learning stage. The

answers were transcribed according to 'dictionary words', based on the conventional

grammar and orthography rules established by the Real Academia Española for Spanish

language. Lexicometry was applied to this corpus with two purposes:

(a) In order to establish whether there were statistically significant differences among

the vocabulary used by the participants in their responses for each learning stage

according to their educational level.

(b) If differences were found according to educational level, to identify lexical groups

associated to the level in order to describe the different ways in which the participants

from those different educational levels would guide their imaginary classmate's learning

(according to the outcomes, means, difficulties and solutions they provided) in each

stage.

The SPAD Recherche software (Système Portable d'Analyse des Données

Textuelles, version 5.6) was used. An explanation of how the lexicometric method was

applied is provided below.

(a) Evaluation of lexical differences according to participant educational level

In order to distinguish whether participants answers showed statistically significant

lexical variability according to educational level, Correspondence Analysis (Greenacre

1984) was applied to three lexical tables. A lexical table is a contingency table where

rows correspond to all participants (hence we have 68 rows) and columns correspond to

all the different words appearing more than a given number of times in the corpus (i.e.,

a frequency threshold is established for the part of the corpus corresponding to each set

of questions). Each cell in the lexical table reports the frequency with which each of

these words appears in the full response given by each participant. Correspondence

Analysis (CA) was applied to each of the three lexical tables (one per stage), with

frequency threshold = 3 and considering words and participants as active variables.

Participants' educational level was included as an illustrative or complementary

variable. In CA, active variables define dimensions (also called components, factorial

axes or factors). Illustrative variables do not contribute to defining such dimensions, but

allow the structure of the information provided by active variables to be illustrated

(Crivisqui 1993). The null hypothesis—that there are no lexical differences between the

modalities of each illustrative variable, in our case, the variable 'Level'—is rejected if

they obtain a test value ±1.96 (p <.05) on one or more dimensions. Test value is a

statistic that allows this null hypothesis to be tested and is equal to the distance—in

terms of number of standard deviations—of each modality to the centre of gravity on

dimension α (Bécue-Bertaut 1991). This test value allows assessment of whether or not

a given modality is statistically important to characterize a dimension. In the context of

the SPAD software, test value is expressed in terms of a normal centered and reduced

distribution. According to customary criteria (Crivisqui 1993), the number of

dimensions we took into account to measure test value was that preceding an abrupt

decrease in the percentage of inertia or variability explained by their eigenvalues. In the

three CAs, that abrupt decrease occurred after the second dimension, so that two

dimensions were retained in each CA.

(b) Identification of lexical groups and description of different ways of guiding learning

Once the statistical importance of the variable 'Level' was found for each stage of

learning, we grouped answers according to participant 'Level' and performed a new CA

on each aggregate lexical table (one per stage). On these tables, the columns are the

three levels (4th ED, 3rd PD and 6th PD) and the rows are all the words remaining after

applying the threshold. Each cell reports the frequency with which each word appears in

the set of answers provided by the participants in a given level. The results of the CA

are projected on factorial planes, whose dimensions provide information on the

principal variabilities of the types of answer. The analysis of the planes allows the

identification of lexical groups or associations between words and levels. In order to

form the lexical groups, we considered those words and levels whose contribution to

one or both factorial axes was higher than the average contribution.

The Automatic Selection of Modal Responses procedure (Modal Responses

procedure for short) was subsequently applied in order to obtain the most typical

responses provided by the participants at each level associated to the different lexical

groups. Note that this procedure does not operate with the results provided by CA. The

Modal Responses procedure arranges the original complete responses typical of the

participants in each modality (e.g. all participants in 4th ED) in decreasing order, by

calculating the $\chi 2$ distance between the lexical profile of each participant and the lexical

profile of the part of the corpus formed by the responses provided by all the participants

in the corresponding modality (Lebart, Salem, and Bécue-Bertaut 2000). The first

modal response (for, say, 4th ED) is the closest to the lexical profile of the responses

provided by 4th ED students, and so on. As is customary in this kind of analysis, several

modal responses were taken into account for the qualitative analysis of each level. Thus,

modal responses are not artificial summaries of the responses given by a group, but real

responses that have been automatically selected due to their representative character for

a given modality of participants. The Modal Responses procedure allows words to be

situated in their immediate context of production, thus remediating the fragmentary

nature of any study restricted to isolated words.

Results

Lexical differences according to level in each study stage

In the two dimensions retained in each CA, we analyzed the test values obtained by

each modality of 'Level', with the purpose of determining whether the vocabulary used

by the 68 students in their answers to the three stages of learning varied according to it.

In Table 3 we report the test values for the three stages.

(Table 3)

       Table 3 shows that the highest and lowest levels both show statistically

significant differences for all stages, in one or both dimensions. Based on this result, we

grouped individuals according to the level for the next step of analysis.

Identification of lexical groups and description of different ways of guiding learning

Following are the results of the CAs performed on the aggregate lexical table 'Words' x

'Level' for each stage. We shall see that for the three stages, the results allow three main

lexical groups to be identified, each of which is associated to a level. For each stage, we

present the factorial plane, report the composition of the lexical groups and then enrich

their description based on the analysis of the most typical responses for the associated

level, according to the results of the Modal Responses Procedure. Lastly, Table 4

summarizes the behaviour of the three levels through the four questions for the three

stages.

Stage 1

Based on the factorial plane of the CA performed on the aggregate lexical table

according to 'Level', we identified three groups of associations among levels and words

having above average contribution to one or both dimensions.

(Figure 1)

The groups were the following:

Group 1. Located in the lower left quadrant, formed mainly by the words *accidentals,*

*key signature, flats, song, as, time signature, slow [*in Spanish, *'despacio'*]*, that*

(adjective masc.)*, how, that* (pronoun)*, doing it, 'lo'*(him/it - accusative sing. of m. and

neut. pers. pron)*, badly, many, much, very, no, or, other, score, because, you can, beat,*

what, rhythm, to know, you know, will come out, come out, would know, to sol-fa it,

sharps, only, 'te' (you - personal pronoun object case)*, would have, playing, to play, to*

play it, tonalities, to work on it, bit [piece or fragment] and associated to level 4th ED.

The words *more, measure, to sol-fa, rising, well, that* (adverb)*, metronome, 'le'* (as

indirect object – him, to him, her, to her, it, to it, you, to you)*, if,* are shared by Groups 1

and 2. The words *could, 'sus'* (possessive adjective plural of 'su' – his, her, their, your)*,*

still, zones, tuner, tuning, are shared by groups 3 and 1.

The words that form this group in this first study stage refer mainly to notational

features of the score (*flats, sharps, rhythm, time signature*). The actions or verbs they

mentioned to achieve the proposed learning are either manifest actions (*sol-fa it, play it*)

or states referring to the learning already achieved (*doing it, come out, know*). Breaking

the musical piece down (*bit*) was also mentioned. Typical responses of students at this

level alluded mainly to the learning **outcomes** with relation to the notational elements in

the score: *'study the key signature, the beat, the rhythm, the time signature, tonality*

change. Because this way, the rhythm of the song is easier to do because you know how

fast the beat is, the time signature and the flats, sharps or naturals in the song'. As

means for the imaginary classmate to be able to play the score on his instrument,

participants considered the amount of time spent, repetition of fragments and constant

work: *'try playing the bits that don't come out and if they don't come out, don't despair*

because you can achieve anything through hard work'. They were of the opinion that

learning to play the piece at the speed indicated is acquired gradually, by playing it

more slowly at first and gradually working up to the right speed. To do so, they

suggested using an external tool, the metronome: *'set the metronome at half the speed*

indicated, and clap the rhythm'; 'Sol-fa very slowly, with a metronome'.

The main **difficulties** mentioned in this first stage are related to rhythm: 'he may

find the rhythm difficult'; 'he may not know what a fragment is like (its rhythm)', or to

overall difficulty: 'the difficult bits may not come out well'. **Solutions** to these

problems were sought through quantity and constancy of work and repetition of difficult

fragments.

Group 2. Located in the upper right quadrant, near dimension 2, formed mainly by the

words *any* (masc.), *any* (fem.), *articulations, each, something, to focus on, to correct,*

day, and, that (adjective fem.), *exercises, performance, to perform, reading, to take,*

better, movement, parts, piano, little (adverb), *first, firstly, breaths, breathing, 'se'*

(third person form of reflexive pronoun), *will be, over, are, tempo, play, goes, to go* and

associated to level 3rd PD. The words *passages, to be, difficulty, rest, slow ['lento'], to*

begin, musical piece, are shared by groups 2 and 3.

This group was characterized by words that implied a global approach to the

score (*performance, movement, reading*) and words referring to the instrument or

instrumental technique (*breathing, breaths, articulations*). They included verbs

expressing learner's mental processes regarding attention (*focus*) and managing

information (*interpret, correct, exercises*). The main learning **outcomes** proposed by

students at this level refer to notational matters and elements related to the instrument

itself (*sound, breathing, articulation*). The same matters were present in the potential

difficulties in this first learning stage: *'keep good time'*; *'some rhythmic pattern difficult*

to sol-fa'; '*some note or trill that's difficult to play'*; *'reading and correcting errors,*

breathing,… is basic to be able to construct the rest'. In order to achieve this learning

and resolve the difficulties (**means and solutions**) they suggested using the metronome

(as in group 1) and graduating the speed, beginning slowly and increasing it gradually:

'by working on it with the metronome at a moderate tempo. Increasing the tempo to the

tempo required for the piece'. They spoke of breaking the piece down (*parts, passages,*

movement) more articulately than the previous group did, taking into account segments

with musical sense and higher level of complexity: *'divide into parts, first each*

movement, and then each one into bits. Set the metronome at a lower speed. Study the

more complicated passages (even by heart)'; *'the points that need working on in each*

stage should be within each movement. Because that way, you understand the piece

better and fix concepts'. They also suggested specific exercises for the technical

difficulties: *'articulation exercises. Sound exercises using some part of the piece itself*

or another work suggested to him or that he thinks of'.

This group, as well as group 1, referred several times to play the piece 'well':

'play until it comes out well' (4th ED); 'if you work hard on the piece it will comes out

well' (4th ED); 'if he does not learn the piece well, the mistakes will be more difficult to

correct' (3rd PD).

Group 3. Located in the lower right quadrant, formed mainly by the words *learning,*

aspects, to the, base, the (masc.), *composer, correctly, gives, of, fingers, of the,*

fingering, a (masc.), *listen, this, these, to study, to study it, study* (noun), *etc., phrase,*

hour, instrument, to measure, for, memory, same, nothing, problems, to do, would be, always, without, sound, to have, all, work, technique, technical, a (fem.), *[historical] period, to work, working,* and associated to level 6ᵗʰ PD.

In this group, as in the previous one, there were instrumental technical elements (*fingering, fingers, sound, instrument, technical*), but also terms referring to the stylistic and historic dimension of the musical piece (*composer, period*). Among the characteristic verbs in this group, there were some manifest actions for accessing information were outstanding (*study, do, measure, work*) and others involving mental processes (*listens, learning, memory*).

For students at this level, the initial stage was the right time to pay attention to notational features in the score (rhythmic matters or notes). Sometimes they suggested knowing the aesthetic context of the piece (**outcomes**). Both for this type of learning and in cases when the suggested outcome is to be able to play the piece 'without errors', they suggested listening to different versions of it (**means**): *'firstly, listen to different versions to become familiar with the piece'; 'listen to the piece many times with the score and his instrument'; 'by listening to different interpretations of the piece'.* This listening would help the imaginary classmate to *'become familiar with the piece'*, to *'notice more and more details, and gradually perfect it'*, which was not proposed explicitly as an outcome, but rather as the purpose of listening. The main **difficulties** expressed by these students were technical, mainly related to sound, its quality and production. As a **means** to learn rhythmic and notational matters and as a **solution** to the difficulties they mentioned, like the students at lower levels, changing the speed (starting more slowly and increasing little by little) with the help of a metronome. They also suggested as solutions doing technical exercises (though they did not specify them), and isolating difficult passages to study separately. This delimitation was done

considering the internal structure of the piece: '*study by delimiting the phrases, phrase by phrase*'.

Some typical responses from these students included the mention of expressiveness as a learning outcome: 'seeking expressiveness in this technical work'; 'putting the piece on, listening to it and then approaching the way it should sound, not by imitating and doing exactly the same, but by giving it a rather personal character without deforming the original'.

Stage 2

Three groups of associations between levels and words were found from the factorial plane of the CA performed on the aggregate lexical table according to 'Level'. (Figure 2)

The groups were the following:

Group 1. Located on the left hemi-plane, mainly in the lower quadrant, formed mainly by the words *accompaniment, previous, concert, increasing, well, that* (fem.), *forms, forte, easy, there is/are, instrument, 'le', 'lo', badly, melody, less, very, more, no, or, parts, perfect, because, you can, rhythm, fast, to know, you know, comes out, if, next, solve it, sound* (noun), *sounds* (verb), *'te', to play it* (fem.), *to play it* (masc.), *already,* and associated to level 4th ED. The words *to, is ['está'], all, none, that* (pronoun), *speed, could, breaths* are shared by groups 1 and 2. The words *as, fingers, first, takes, that* (masc.), *stage, with,* are shared by groups 1 and 3.

In this second stage, Group 1 was characterized by verbs such as *know, play* or *come out,* which underscore the result of learning, together with verbs such as *solve* and *increase*, which can be understood as linked to a process. It is true that students were explicitly asked about how to solve difficulties, so that this action was proposed in the

formulation of the question. In this second stage, words related to the quality of learning

also appeared (*well, badly, perfect*). The **outcomes** suggested by this group were mixed

with the **means** and referred to playing the piece 'well': *'by stage two you have to play*

it well. In the first stage you already start to work on it, but when you reach the second

stage, you start to perfect it'; 'learn the piece more or less without problems. Because if

you don't know how to play it well, it won't sound well at the concert'. In addition, they

included playing dynamics and attaining the speed indicated. The latter was also

mentioned as a **difficulty**, along with playing the whole piece without errors (technical

and reading).

As **means** they suggested dividing the piece into bits or phrases and changing

some parameter of the passage to study it: 'Playing the bits slowly at first and then

increasing the speed a little. When you can play it fairly well, you can go working up to

the speed indicated. And you move onto the next stage'; 'learn the dynamics. And the

things that do not come out, he should practise them many times in different ways, for

example: with different rhythms, different order of notes…' Other means were the

amount of time spent and the figure of the teacher. The teacher can fulfill different

roles, perceived sometimes as the main source of **solutions** to a difficulty ('ask the

teacher to see whether you're doing it well, because otherwise you can't know if it's

done well and you could play it badly at the concert'; 'following all the teacher's

indications'), but other times as a source of **difficulties** ('he can't play at the right speed

and doesn't feel comfortable, and the teacher tries to make him hurry up').

Group 2. Located in the upper right quadrant, formed mainly by the words *tuning, to*

reach, before, to seek, movements, composer, they give, should, and, to be, style, to do,

dynamics ['matices'], metrics, for, piano, to be able to, is able to, they know, would

have, all (fem.), *all* (masc.), *speeds, [historical] period,* and associated to level 3rd PD. The words *help, the* (masc. pl.), *it* (neut. pers. pron.) are shared by groups 2 and 3.

Suggested **outcomes** were related to tempo and dynamics, i.e. to attaining the right speed for the piece and including the dynamics when playing, but also in articulation to stylistic and aesthetic elements (*composer, period, style*): *'the metrics and the dynamics. The metrics are essential for coordinating the whole piece. The dynamics lend 'grace', character to the piece. Once you know the style, the character will help you perfect and distinguish the piece'; 'to attain the adequate tempo for the movement. Because tempo is an important factor so that the piece will have the composer's intended character'; 'by trying to interpret the dynamics that the composer intended by maintaining a balance between low and high notes'.* In order to attain the speed indicated for the piece, they suggested some of the **means** already mentioned above: graduating the speed and using a metronome. To attain understanding of the piece at stylistic level, they relied on working with the pianist.

The **difficulties** expressed were rhythmical, technical and related to attaining the right speed. As **solutions** they suggested graduating speed, and modifying some parameter in the complicated passage (changes in rhythm, breaking down the passage, etc.).

Group 3. Located in the lower right quadrant, formed mainly by the words *aspects, each, knows, to give, of, difficulties, fingering, dynamics ['dinámicas'], different, day, difficulty, then, is ['es'], this* (adj.), *listening, this* (pronoun), *these, form, studying, study* (noun), *phrasing, important, metronome, musical, music, musical piece, part, passage, passages, pianist, problems, points, sense, to be, over, to solve, 'su'* (possessive adjective – his, her, its, their), *to transmit, technically, techniques, technical, a* (fem.), *versions, time*, and associated to level 6th PD.

Outstanding in this group were verbs related to the learning process and metacognition (*know, listen, solve*), and a communicative dimension was introduced (*transmit*), appearing for the first time. Work focused on both technical matters (*technical, techniques, passage, metronome*) and elements related to the musical sense of the piece (*versions, dynamics, phrasing, musical, sense*).

Resolution of technical problems and difficult passages was one of the main learning **outcomes**, since not being able to manage technical matters reduced confidence and therefore also performance quality: *'resolve the technical difficulties in the piece, and study the difficult passages. Because the absence of major technical problems will provide great confidence when playing, and knowing there are no problems in the difficult passages.'; 'in order to perform a piece it is essential to overcome the technical difficulties. I believe that lack of confidence technically speaking reduces interpretative capacity'.* In some cases, they spoke of the importance of finding and endowing the piece with musical sense, rather than perceiving it as a succession of technical problems. As a **means** to achieve that expressive performance, they once again proposed listening to different versions and analyzing the score, specifically studying the complicated passages and the scores for piano or the rest of the instruments: *'studying these difficult passages separately and memorizing the notes, as well as endowing it with a sense of expression'; 'you have to try to endow the technique with a sense of expression, using it to help solve these passages and make complex passages 'pretty''; 'play chamber music with the pianist who accompanies the repertoire. Because it is important to make sense of the work'; 'syntax analysis (phrases). Without it, music is simply a succession of notes. The next step after knowing the notes, rhythm, etc. is to endow them with musical sense'.*

The **difficulties** expressed, like the outcomes, were related to technical errors and to musical understanding and expression. The **solutions** mentioned were constancy, graduating speed, analysis and help from the teacher.

Stage 3

Three groups of associations were identified between levels and words from the factorial plane of the CA performed on the aggregate lexical table according to 'Level'. (Figure 3)

The groups were the following:

Group 1. Located on the right hemi-plane, mainly in the lower quadrant, formed mainly by the words *accompaniment, to the, before, above, thus, although, well, mouth, pretty, song, when, after, speed, day, you know, that (pronoun), is ['esté'], final, does, to do it, to go, 'le', then, dynamics ['matices'], none, no, score, perfect, but, piano, because, comes out, will come out, non-stop, if, always, sound* (noun), *sounds* (verb) *['suena'], 'te', has, you have, playing, you play, your, goes*, and associated to level 4th ED. The words *case, difficult, problem, is ['es'], little* (adverb), *yes* are shared by groups 1 and 2.

This group was formed, as in stages 1 and 2, by some verbs related to learning as a finished state or action, with no mention of the process (*play, do, come out, sound, have*). Although notational elements were not so frequent, this group continued to focus on articulation, sound and dynamics of the score. Words related to the quality of the learning outcome also formed part of this group (*well, perfect, will come out, comes out*).

The **outcomes** suggested by this group were notational matters (mainly dynamics and articulations), improving sound and playing with the accompanying pianist: *'add dynamics and articulate clearly. Because perfect dynamics and perfect*

articulation have to be introduced during the last steps'; 'do the dynamics and musical signs'; 'put the finishing touches on sound. Because to be able to play a piece, the main thing is sound'; 'study it with piano or accompaniment. Because otherwise, when the time comes for the concert, you won't know where the piano or you are'. Although students' responses reveal the idea that learning is not acquired suddenly, they rarely mentioned the **means** by which it is acquired, and limit those to practice and gradual increase of complexity: *'he could read the accompaniment score. Do it slowly and when it's clear, do it as if it were a concert'; 'by playing the song many times'; 'articulation might not come out at first, but he shouldn't worry because it will come out with a little practice.*

The **difficulties** expressed were of technical/instrumental nature (articulation, dynamics and sound). The **solution** suggested was repetition, although no solution was specified for dynamics, it was simply understood that they would be acquired gradually: '*he can't do the dynamics and he could solve it by first pretending there are no nuances, and then gradually start doing them*'. Specific exercises were suggested for sound.

Group 2. Located in the upper hemi-plane, mainly in the left quadrant, formed mainly by the words *any* (masc.), *help, to let, the rest, to find, to listen, 'lo', the* (masc. plural), *to memorize, other, for ['para'], parts, to perfect, to be able to, teacher, they can, resources, to know, sounds* (verb) *['suene'], we have, time, to play, to work on it, things,* and associated to level 3rd PD. The words *lack, stages, etc., exercises, previous, work,* are shared by Groups 2 and 3.

In Group 2 verbs were mainly related to processes by which learning is achieved (*find, perfect, work, memorize*), and the nouns referred to ways to learn or achieve learning (*parts, resources, work, teacher*).

The **outcomes** suggested by this group were related to confidence when playing, character of the work, interpretation and emotion: *'it's the moment when you really start to 'make music''; 'integrate all you learned and enjoy the piece (and make others enjoy it)'; 'find the character of the piece, because that is what will give it life and feeling when you play it. […] It's recommendable to be very confident about the whole piece to be able to improvise, […] highlighting some things but not others, etc., until Juan finds the exact way that suits him and he likes'.* In some cases, working with the pianist was mentioned as an outcome: *'perfect it with the piano. Because on the day of the concert you'll have to play it with the piano'.*

The main **difficulty** mentioned is related to not achieving enough technical skill to be able to play the piece as desired: 'he might find he lacks techniques for some resources such as vibrato or lack of air in phrases, etc.'; 'not being able to produce the ideas he has due to lack of technique or resources'. The **means** and **solutions** for difficulties were varied: harmonic analysis, listening to different versions to learn various interpretation perspectives, memorizing the difficult parts, doing exercises for sound.

Group 3. Located in the lower left quadrant, formed mainly by the words *performance, tuning, something, analysis, aspects, to change, as, complete, composer, knowledge, manages to, of, should, different, it, is ['está'], in, style, to study, study* (noun), *form, phrase, has, until, interpretation, 'la'* (it - accusative sing. of f. pers. pron/ the- f. form), *slow ['lento'], way, moment, level, small, pianist, putting, for ['por'], audience, 'se', sense, to be, solves, 'su' , to play it, worked, to work, to transmit, techniques, all, one, times, musical piece, several* and associated to level 6th PD.

In this group, verbs referred to the learning process (*study, solve, change, manage to*), and also to communication (*transmit*). The nouns most often used by these

students indicated greater attention to the artistic, musical and communicative

dimension of music (*performance, audience, composer, sense, analysis, knowledge*).

In the **outcomes** suggested by this group, the aesthetic and communicative

dimensions of the interpretation were frequently present: *'manages to play and present*

the musical piece as something beautiful, expressive and pretty, endowing it with

complete sense and connecting with the audience'. They conceived the piece as a

whole, which needs to be understood globally and requires profound knowledge of the

language, style and composer in order to be able to endow it with full musical sense.

Importance was also attributed to the resolution of technical matters previous to that

global approach: *'to understand the piece as a whole. Even if pieces are divided into*

phrases for their understanding, they must be a whole, so we need to understand it

globally'; 'I think it is important to manage to make a piece of music something that

transmits a feeling, and something with authentic expression, and that can only be done

after gaining in-depth knowledge of the piece and not having technical problems'. The

means for interpreting the piece were based on analysis and the job of *mis-en-scène*, as

well as the rehearsals with the pianist and the exercises to overcome stage fright: *'by*

conducting a formal analysis that will help us interpret it, being consistent with the

musical style, and knowing the musical-historical context where it was composed';

'with an in-depth analysis and sufficient technical knowledge, any musical piece can be

tackled globally'; 'working with the pianist or orchestra (on each parameter). Because

the musician is not aware of the piece until it has been interpreted as a whole'.

The main **difficulties** referred to the lack of technical mastery in previous stages

and lack of aesthetic, historical and analytical knowledge which, together, would limit

the quality of the interpretation. The teacher was conceived as the most important help

(**solution**) for interpretative difficulties: '*work with the teacher on techniques for*

relaxation which can be applied without difficulty'; 'interpret the piece in the presence

of the teacher and the pianist as if it were the concert. It is important to be listened to by

professionals and to hear their opinion'; *'not having knowledge of history of music,*

analysis or harmony. Only then can his teacher explain to him and help him, but he

wouldn't have autonomy'. Other suggested solutions included different levels of

analysis of the piece (historic, formal, aesthetic) and exercises to raise bodily awareness.

Table 4 summarizes the outcomes according to each stage, each level and the

content of each question.

(Table 4)

Discussion and conclusions

The results of this study provide information that allows better understanding of how

music students conceive the content (*what*) and the process (*how*) of learning a new

piece of music, beginning with their first contact with it and up to its public

performance, and provide information regarding the relationship between their

conceptions and level of instruction, according to the levels in formal musical

education.

An overview of the results shows that there are a few trends in common to the

three study stages. The three factorial planes show a strict developmental-educational

progression, because the order of the three levels goes from one end to the other of the

first factorial dimension (the horizontal axis of each factorial plane), and each level is

associated to a lexical group: 4th ED to Group 1; 3rd PD to Group 2, and 6th PD to Group

3. In particular, this factorial dimension opposes Group 1 to the other two, suggesting

that 4th ED students tend to talk of outcomes, difficulties, means and solutions in

learning new pieces in a way that is clearly distinct from that of students in 3rd and 6th

PD, between which the differences were subtler. This pattern persisted throughout the

three stages into which we suggested that the participants should divide the study

process. Thus, our first conclusion is that there are differences related to the level of

training and that these differences undergo development, the sense of which we shall

analyze below.

By analyzing participant responses, differences were identified in the content

and process of learning suggested for the different moments of study, i.e. students did

not approach what and how to study the piece of music in the same manner from

beginning to end of the process, but suggested different outcomes, difficulties, means

and solutions as they progressed. These variations were more noticeable among students

in 3rd and 6th PD than among students in 4th ED, perhaps indicating a higher degree of

planning in the approach of the formers to studying a musical piece.

To describe the evolution of student conceptions, we shall take the questions as

a base, considering first those about *what* to learn (outcomes and difficulties) and then

those looking into *how* to learn (means and solutions). In order to facilitate the

descriptions, we shall henceforth refer to elementary (4th ED), intermediate (3rd PD) and

advanced levels (6th PD) when accounting for their conceptions.

What to learn: Outcomes and difficulties

As we have seen in Results (see Table 4), students at the three levels tended to mention

at some point the notational elements of the score, when identifying the main learning

that the imaginary classmate would have to acquire in each stage. However, only the

elementary students selected these elements as learning outcomes for all stages. In

contrast, intermediate students tended to highlight aesthetic and expressive aspects as

from stage 2, while advanced students sought from the beginning to become familiar

with the piece as a whole, which would in turn enable them to identify the difficult

passages.

There is similar trend regarding the mention of technical skill, which was a goal shared by the students at the three levels, though in different ways. Elementary students regarded technique as an aim in itself in all three stages, while intermediate and advanced students regarded it as a tool for musical expression. They considered that the lack of certain technical skills limits the performer's possibilities of communicating. In addition to this view of technique as an obstacle to be overcome while acquiring a musical piece, advanced students added a positive view of technical skill upon saying that it enables expressiveness and is at the service of the performer for transmitting the musical message. To these advanced students, technical mastery together with other knowledge (aesthetic, stylistic, historic) are requirements for achieving personal interpretation.

Students attached greater importance to the expressive and communicative dimension of music as their level of instruction advanced, but also as they progressed in learning the piece. Elementary students did not talk explicitly about expressiveness, although they introduced it by means of related notational and instrumental elements, such as dynamics and sound. Intermediate students often tended to talk of 'character' when referring to the expressive outcome, to which, in their words, notational and technical elements contributed. The most advanced students, as we have just seen, tended to consider musical style and aesthetics right from the beginning of study, and that they were the most essential aspect during the final stage. Only these students paid special attention to the communicative function of music and took account of the multiple elements beyond notational and technical factors, such as the audience, *mis-en-scène*, preparation with pianist and teacher, composer's idea and aesthetic current that the work is included in.

The standpoint of advanced students may be understood as a step prior to that reported in other papers for undergraduate music students and professionals (Bautista et al. 2012; Chaffin et al. 2003; Hallam 1995a), which stands to reason if we consider that advanced students who took part in this study are at the level immediately preceding higher musical studies.

How to learn: Means and solutions

Similarly, upon analyzing the results of studying, the different levels show some similarities as well as clear differences. All three levels mentioned graduating speed and breaking passages down as efficient ways to learn. Even elementary students suggested strategies for classifying and prioritizing information, which is expectable considering their ages. However, intermediate and advanced students widened the scope of activities suggested to the imaginary classmate, to include listening to different versions of the work, and harmonic and formal analysis, in agreement with previous studies (e.g. Hallam et al. 2012). They perceived classifying and prioritizing information as a subset among other activities that would allow the imaginary learner to take stylistic decisions.

Repetition, amount of time spent and constant work were considered necessary learning conditions for students at all levels, but they seemed to be determining, and even sufficient conditions for the elementary students, who believed that the more time and effort invested, the better the outcome would match the goals, and the more the interpretation would approach a perfect execution of the score.

Students' use of verbs provides information regarding the type of processes they consider necessary for learning. Elementary students more often used verbs referring either to observable actions (play, sol-fa, do) or to mental status in which learning is considered to be acquired (come out, know), in agreement with observations on approaches to learning in other domains of knowledge at the same ages (Scheuer et al.

2009). Intermediate students were characterized by the use of verbs referring to

information and attention management (interpret, memorize, focus), and to adapting to

and approaching the object of knowledge (correct, perfect). This shows a higher degree

of internalization of the agency of the learner, who manages his/her mental processes

according to his/her aims. Some verbs typically used by advanced students were those

related to achieving learning (solve, achieve, change) and in stages 2 and 3, the verb

transmit, which suggests the idea that music plays a role of communication and

transmission of ideas among the composer, the performer and the audience, which are

words also associated to this group.

The role of the teacher also varied according to level. Elementary students

tended to assign a determinant role to the teacher, considering that the teacher's actions

could mean help with certain difficulties or, on the contrary, be the cause of those

difficulties when the instructions imparted were inappropriate for the student's skills at

that time. This role assigned to the teacher shows strong external management of the

learning process, which is also reflected by the verbs used. Intermediate students made

few references to the teacher, while advanced students made more frequent references

to the teacher in the final stages of learning, where the teacher means help for solving

difficulties, mainly of expressive and stylistic character.

Final remarks

Conceptions of learning can be seen to develop over the three levels. As we have seen

from the descriptions of the lexical groups, elementary students held a conception of

learning in which there is a linear relationship between conditions and outcomes, such

that if conditions are favorable (time to study, constancy, help from teacher), learning

will take place. Interest centered mainly on reproducing isolated notational elements and

developing the technical skill needed to do so. This position resembles Class 1

identified by Bautista et al. (2009) in pianists at a level similar to the one in our study, in which notational elements and reproduction strategies were assigned the greatest importance.

Intermediate students highlighted notational and technical elements, but began to consider the internal structure of the piece and its expressive function, in agreement with different levels or classes identified by other authors (Bautista et al. 2009; Reid 2001). As we have mentioned, the activities named by these students assigned a high level of agency to the imaginary classmate regarding his own learning, as they particularly emphasized mental processes.

Advanced students had a more sophisticated conception of learning than students at lower levels. They suggested more strategies, adapted to each aim and each learning stage. The level of understanding of the work was more complex, because they sought a global idea of it from the very beginning. They broke the piece down according to its musical structure in order to work on it in detail, and regarded technical skill as a tool for expressiveness. This position resembles Level 4 identified by Reid (2001), in which students sought to communicate the musical sense of the piece, although they did not regard it as an element for personal development and communication of their own ideas about music and the world, which would correspond to the last level (level 5) identified by this author.

We may thus draw several conclusions. Firstly, the data suggest that the higher the level of studies, the greater the development in learning goals leading to, on the one hand, students being more strategic, adjusting aims to the changing demands of the task, and on the other, bringing students progressively closer to the way that expert musicians approach a musical piece (Chaffin et al. 2003; Chaffin et al. 2010; Hallam 2001).

Similarly, there are changes in the activities mentioned by the students.

Elementary students focused on tasks related to the reproduction of knowledge while

advanced students suggested activities requiring the integration of information from

several sources and a greater degree of autonomy and reflection, resembling the

different approaches to learning music (Cantwell and Millard 1994; Hultberg 2002;

Rohwer and Polk 2006). Our results seem to suggest that the probability of approaching

the study of music in a given way is somehow affected by the level of musical training,

among other factors. This conclusion is supported by studies in other fields, which

found similar evolution in the learning of other contents, such as reading and writing

tasks proposed by students at different levels in school assignments (Mateos, Martín,

and Villalón 2006; Solé et al. 2005).

It seems therefore that in the educational context we have researched, a higher

level of instruction helps the more advanced students to pay attention to several

dimensions of music at the same time (technical, notational and aesthetic). The

automation of many skills and knowledge as a result of practice might help this

multiplicity. However, less trained students need to pay attention to each of these

dimensions separately, attaining only superficial understanding of the work, in which

the expressive dimension is limited to learning to play with the appropriate dynamics

and attention to sound. The possibility of paying attention to more elements at the same

time seems to enable the development of a more global musical representation,

resembling the processes of representational re-description and hierarchic integration

(Karmiloff-Smith 1994; Pozo 2008). In this change, the representation of more

advanced students regarding *what* and *how* to learn, still consider the same elements as

students as lower levels did. Nevertheless, these elements take on a different

significance when combined with others. This new significance sometimes depends on

considering as necessary or enabling conditions things which were formerly regarded as the ultimate goal (e.g., technique), or considering as a mediating factor something that was formerly considered a determinant (the role of the teacher).

A certain degree of similarity is perceived between the development in the groups and the changes expressed by the students in the three stages of study. Although the responses given by less trained students differed less among these three stages, we found a general trend towards moving from a more fragmented study of the more notational or technical aspects during the first stages, towards considering the expressive dimension and a more global view in the final stages. Even though the more advanced students spoke of attaining a global view right from the start, its purpose was, among others, to detect difficulties and plan studies. In other words, it would appear that these students considered that musical learning requires the simpler elements to be acquired first, in order to use them as a base upon which to acquire a more complex view of the piece.

This conclusion leads us to reflect upon the educational contexts in which students learn and, in particular, on the goals and strategies that music teachers believe are suitable to each level of instruction, or, in other words, on the conceptions of the teachers themselves. It is easy to imagine that music teachers, as well as teachers of other subjects, may conceive learning as moving from the simpler to the more complex. However, although this conception may be suitable for teaching certain procedures, particularly techniques, it is not so clear that it is equally appropriate for other outcomes, such as the sense and significance of the musical piece. It is therefore essential to know what conceptions teachers hold in order to gain in-depth understanding of the process of learning and teaching, and to suggest new teaching designs. These conceptions have been researched recently in various domains, including

the domain of music (Bautista and Pérez-Echeverría 2008; Bautista, Pérez-Echeverría, and Pozo 2010; López-Íñiguez, Pozo, and de Dios, in press).

Upon interpreting and appraising the scope of the results of this study, it is important to consider the distance between strategies that students may talk about and those they are actually capable of implementing in a learning situation, which are usually more basic than the ones they mention (Flavell 1976, as quoted in Hallam 2012). Since learning strategies and approaches affect the final outcomes of the learning processes (Marton and Säljö 1976a, 1976b; Schommer 1993), it would be of interest to analyze the relationship among the suggestions gathered in a study of this kind, the learning process that students undergo and its outcomes.

A variety of study methods and approaches are needed in order to gain fuller understanding of students' representations of learning. It is therefore relevant to analyse what students say as well as the activities they actually put into practice when learning.

(Word count: 10233 words)

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Tables and figures captions

Table 1. Frequency distribution of participants according to academic level, age and
gender.

Table 2. Questions and their aims for each study stage

Table 3. Test values according to level modality on the selected dimensions of the CA for each stage.

Table 4. Outcome, means, difficulties and solutions suggested by participants in each learning stage.

Figure 1. CA on stage 1 aggregate lexical table. Projection of words with above average contribution and modalities of the variable 'Level'.

Figure 2. CA on aggregate lexical table in Stage 2. Projection of words with above average contributions and of the modalities of the variable 'Level'.

Figure 3. CA on the Stage 3 aggregate lexical table. Projection of words with above average contribution and of the modalities of the variable 'Level'.

Conceptions of woodwind students regarding the process of learning a piece of music. TABLES.

Table 1.

LEVEL		4th ED	3rd PD	6th PD	Total
N		25	22	21	68
AGE RANGE (years old)	**10-11**	13 (52%)	---	---	13 (19.1%)
	12-13	8 (32%)	1 (4.5%)	---	9 (13.2%)
	14-15	4 (16%)	9 (40.9%)	---	13 (19.1%)
	16-17	---	8 (36.4%)	5 (23.8%)	13 (19.1%)
	18-19	---	1 (4.5%)	7 (33.4%)	8 (11.8%)
	≥20	---	3 (13.6%)	9 (42.8%)	12 (17.6%)
GENDER	**Male**	11 (44%)	8 (36.4%)	12 (57.1%)	31 (45.6%)
	Female	14 (56%)	14 (63.6%)	9 (42.9%)	37 (54.4%)

Table 2.

QUESTION	AIM OF THE QUESTION
1. In my opinion, the most important learning in stage X is… Why is this learning important? Do you think it is important to learn it in this particular stage? Why?	**Outcomes**: selection of the most important learning in this stage, explanation of the selection and of the appropriateness of the learning for the stage.
2. How is this learning achieved? Explain what you think Juan should do to learn it.	**Means**: activities by which learning is achieved and artifacts used.
3. What difficulties might Juan encounter when learning this?	**Difficulties** that may be encountered while learning the piece proposed.
4. How could he solve them?	**Solutions** implemented to overcome difficulties.

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Table 3.

Level		STAGE 1		STAGE 2		STAGE 3	
		Dimension 1	Dimension 2	Dimension 1	Dimension 2	Dimension 1	Dimension 2
Level	4th ED	**5.44****	-0.91	**-3.32****	**5.56****	**-5.47****	-1.79
	3rd PD	-0.34	1.67	0.92	-1.76	0.68	0.01
	6th PD	**-4.46****	-0.79	**2.05***	**-3.24****	**4.10****	1.51

Test value: distance, in terms of number of standard deviations, from each modality of Level to the centre of gravity on the dimension α.
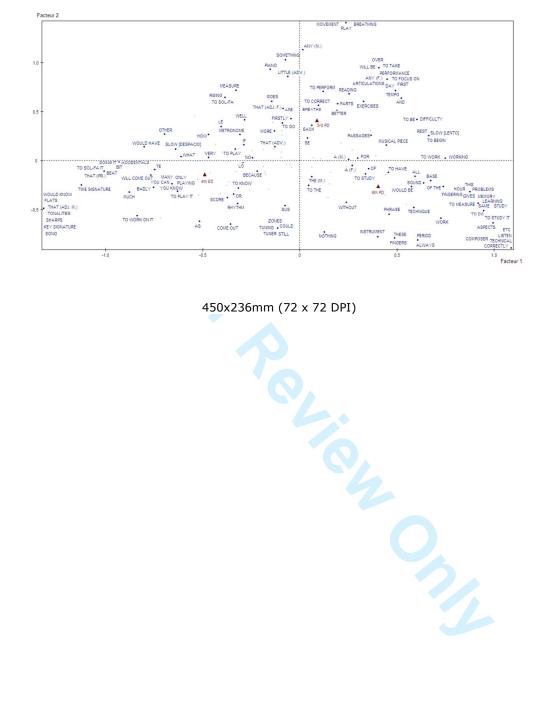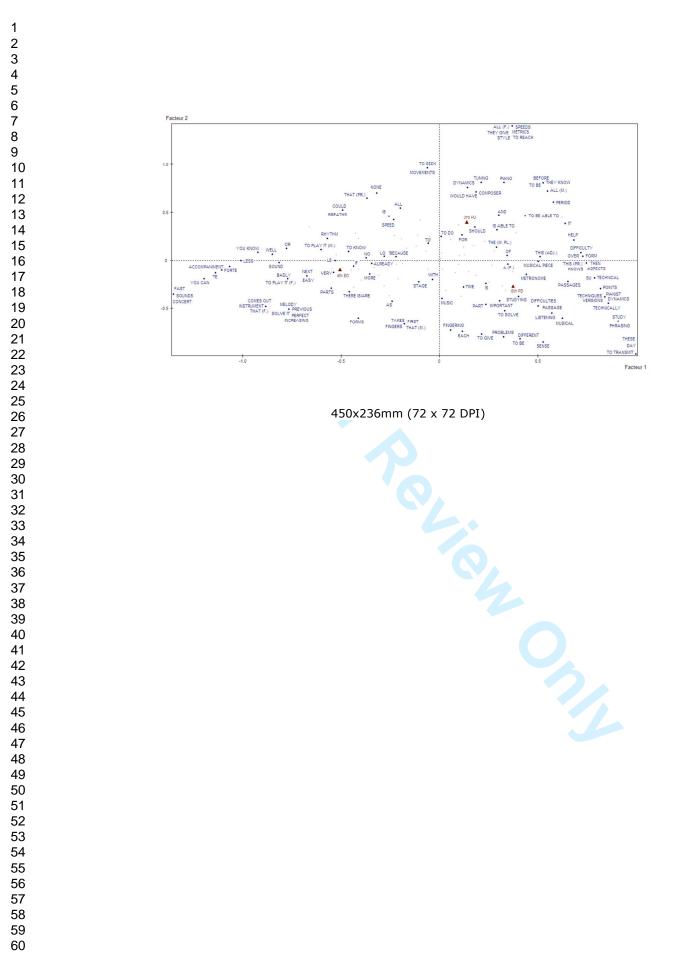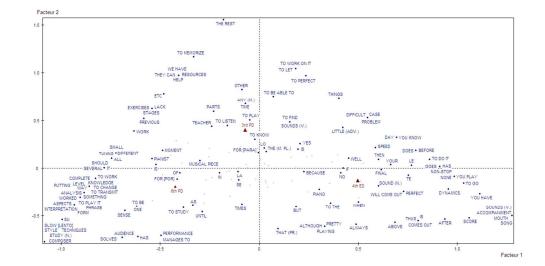
* p < .05, ** p < .001.

Table 4.

STAGE	QUESTION	Level 4th ED, associated to Group 1	Level 3rd PD, associated to Group 2	Level 6th PD, associated to Group 3
Stage 1	**Outcomes**	Notational elements	Notational elements Instrumental technique	Notational elements Knowing the aesthetic context of the piece
	Means	Graduating speed Using a metronome Repeating fragments Constant work Amount of study time	Graduating speed Using a metronome Breaking the piece down according to formal criteria	Graduating speed Using a metronome Listening to different versions of the piece
	Difficulties	Rhythm Difficulty expressed globally	Rhythm Technical difficulties	Rhythm Technical difficulties Difficulty with specific passages Sound
	Solutions	Amount of study time Constancy Repeating fragments	Graduating speed Using a metronome Breaking the piece down according to formal criteria and studying the fragments Specific technical exercises	Graduating speed Using a metronome Breaking the piece down according to formal criteria and studying the fragments Specific technical exercises
Stage 2	**Outcomes**	Attaining the indicated speed Dynamics Playing the piece well	Attaining the indicated speed Dynamics Character of the piece with relation to style and composer	Resolving technical problems Gaining confidence for interpretation Musical expressiveness
	Means	Graduation speed Dividing the piece into phrases Changing parameters Amount of time Help from teacher	Graduating speed Using a metronome Rehearsal with pianist	Listening to different versions Studying the piano score Studying specific passages Analyzing the piece
	Difficulties	Attaining the indicated speed	Attaining the indicated speed	Musical comprehension and expression

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		Technical difficulties Teacher	Technical difficulties Rhythm	Technical difficulties
	Solutions	Graduating speed Help from teacher	Graduating speed Changing parameters	Constancy Amount of study time Endowing technical study with sense of expression Analyzing the piece Teacher
Stage 3	**Outcomes**	Sound Dynamics Articulation Practicing with pianist	Musical expression Give character to the piece Confidence while playing Practicing with pianist	Give full sense to the work with regard to style and composer Communicate and transmit feeling to the audience Rehearse *mis-en-scène* with the teacher and pianist
	Means	Practice	Listening to different versions Analyzing the piece Memorizing passages	Holistic analysis of the piece Relaxation and bodily awareness Help from and work with teacher and pianist
	Difficulties	Dynamics Articulation Sound	Musical expression (due to technical difficulties) Technical difficulties	Musical understanding and expression (due to technical difficulties and lack of knowledge) Stage fright
	Solutions	Specific sound exercises Practice	Specific technical exercises Becoming aware of the problem and available resources	Analyzing the piece Teacher Relaxation techniques

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Facteur 2

MOVEMENT   BREATHING
PLAY

ANY (M.)

OVER
WILL BE   TO TAKE
PERFORMANCE
SOMETHING   ANY (F.)   TO FOCUS ON
PIANO   ARTICULATIONS   DAY   FIRST
LITTLE (ADV.)   TO PERFORM   READING   TEMPO
MEASURE   AND
RISING   GOES   TO CORRECT   PARTS   EXERCISES
TO SOL-FA   THAT (ADJ. F.)   ARE   BREATHS   BETTER   TO BE   DIFFICULTY
FIRSTLY   REST   SLOW [LENTO]
WELL   EACH   3rd PD   TO BEGIN
OTHER   LE   MORE   TO GO   SE   PASSAGES
HOW   METRONOME   MUSICAL PIECE
WOULD HAVE   SLOW [DESPACIO]   IF   THAT (ADV.)
WHAT   VERY   TO PLAY   A (M.)   FOR   TO WORK   WORKING
NO
DOING IT   ACCIDENTALS   LO
TO SOL-FA IT   TE   BECAUSE   A (F.)   OF   TO HAVE   ALL   BASE
THAT (PR.)   BIT   BEAT   MANY ONLY   4th ED   TO STUDY   SOUND   THIS
WILL COME OUT   YOU CAN   PLAYING   TO KNOW   THE (M.)   OF THE   HOUR   PROBLEMS
TIME SIGNATURE   YOU KNOW   6th PD   FINGERING GIVES MEMORY
MUCH   TO PLAY IT   TO THE   WOULD BE   TO MEASURE   SAME STUDY
WOULD KNOW   BADLY   SCORE   OR   LEARNING
FLATS   TO DO   TO STUDY IT
THAT (ADJ. M.)   RHYTHM   WITHOUT   PHRASE   TECHNIQUE   ASPECTS   ETC
TONALITES   WORK   LISTEN
SHARPS   TO WORK ON IT   AS   COME OUT   ZONES COULD   COMPOSER TECHNICAL
KEY SIGNATURE   TUNING   INSTRUMENT   THESE   PERIOD   CORRECTLY
SONG   TUNER STILL   NOTHING   FINGERS   ALWAYS

Facteur 1

450x236mm (72 x 72 DPI)

450x236mm (72 x 72 DPI)

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