Cooperative teaching-learning strategies in group guitar instruction for student teachers

Liesel van der Merwe, North-West University

Abstract

This article examines the impact of cooperative teaching and learning techniques on achievement, anxiety and practise time. The purpose of this article is to improve teaching and learning guitar playing skills in large groups of early childhood education students with no prior music knowledge and skills. Based on qualitative and quantitative data, it was found that, when more time was spent on practising cooperatively, students were less anxious and, as a result, their musical performances were of a higher standard. Therefore, the author argues that teaching guitar in large groups could be made more effective by the incorporation of cooperative learning principles.

Key words: music education, cooperative learning, guitar teaching, teaching-learning strategies, group musical instrumental teaching, performance anxiety, time spent practising, musical performance.

Opsomming

Hierdie artikel ondersoek die impak van koöperatiewe onderrig- en leertegnieke op prestasie, angs en oefentyd. Die doel van hierdie artikel is om koöperatiewe leer te ondersoek as 'n manier om die onderrig en leer van kitaarvaardighede in groot groepe vroeë kindertyd-onderwysstudente, sonder enige voorkennis of vaardighede in musiek, te verbeter. Op grond van kwalitatiewe en kwantitatiewe data is bevind dat wanneer meer tyd spandeer word om koöperatief te oefen, die studente minder angstig was en as gevolg hiervan was hulle musikale uitvoering van 'n hoër standaard. Daarom argumenteer die outeur dat kitaaronderrig in groot groepe meer effektief gemaak kan word wanneer koöperatiewe leerbeginsels geïnkorporeer word.

Sleutelwoorde: musiekopvoeding, koöperatiewe leer, kitaaronderrig, onderrig-en-leerstrategieë, instrumentale groeponderrig, verhoogangs, oefentyd, musikale uitvoering.

Introduction

In changing economic times, music teachers often have to teach more students in less time. I was confronted with teaching 152 Foundation Phase student teachers guitar[2]. At first, I showed them how to play the guitar and expected them to copy my example in class and then practise at home. At the end of 2008, my first-years had not practised enough, they were very anxious and did not perform well in the end of year practical examinations. I realised that I had to change my teaching strategy with this class in their next music module[3], in the hope that it would improve their learning capacity.

During this time, I was challenged by a colleague from Education Sciences, Prof Seugnet Blignaut, to change my teaching strategy from being the "Sage on the Stage" to being a "Guide on the Side". At first I did not think this would be possible with such a large group of first-year education students who had never played the guitar in their lives before.

While I was searching for a way to make this change, I read an article by E Mentz; JL van der Walt and L Goosen (2009:252), entitled "The effect of incorporating cooperative learning principles in pair programming for student teachers", and decided to accept their invitation to replicate their study in my own context. Therefore, I also applied Johnson and Johnson's (2009) five principles of cooperative learning, namely 1) positive interdependence; 2) individual accountability; 3) face-to-face interaction; 4) development of good social skills; and 5) group processing.

Johnson and Johnson's group theory had not yet been applied to teaching guitar in large groups. Given the shortfall in the literature, this intrinsic case study will address the issue of how the application of cooperative learning strategies may contribute to improved music performance, more time spent practising music and the alleviation of performance anxiety in this specific class.

The purpose of this concurrent mixed method case study is to study the effectiveness of applying cooperative learning principles in a specific guitar class. In this study,

surveys will be used to measure the relationship between cooperative learning principles and time spent practising, self-reported levels of anxiety and musical performance. At the same time, cooperative learning will be explored, using open-ended questions directed at Foundation Phase student teachers at the North-West University's Potchefstroom Campus. The reason for combining both quantitative and qualitative data is an attempt to understand the following research question better, namely "How can the teaching of guitar in large groups be more effective by using cooperative teaching and learning strategies?".

Literature study

According to Johnson and Johnson (2002), cooperative learning has its roots in the theories of social interdependence, cognitive development and behavioural learning. All three these theories, each in its own unique way, predict that cooperative learning will promote higher achievement than would competition or individualistic learning (Johnson & Johnson, 2002). "Cooperative learning can be used with some confidence at every grade level, in every subject area, and with any task." (Johnson & Johnson, 2008: A: 11).

According to Johnson and Johnson (2008: A: 10) "the effectiveness of cooperative learning has been confirmed by both theoretical and demonstration research". Furthermore, it is generalisable, since the research into cooperative learning was conducted in diverse settings, countries and cultures (Johnson & Johnson, 2008: A: 11). More than 375 experimental studies were conducted, yielding more than "1 700 findings on social interdependence, productivity and achievement" (Johnson & Johnson, 2008: A: 15). "A meta-analysis of all studies found that the average person cooperating performed at about 2/3 [of] a standard deviation above the person learning within a competitive or individualistic situation" (Johnson & Johnson, 2009: A: 15).

Many studies around the world support these claims by Johnson and Johnson (2002), reporting on the effect of cooperative learning on improvements in:

- student performance/academic achievement, regardless of ability (Barrett, 2005; Bowen, 2000; Chung & Son, 2000; Doymus, 2007; Eun-Kyung & Jung-Ae, 2009; Ghaith, 2003);
- student achievement of higher levels of cognitive domains (Chun-Yen & Song-Ling, 1999);
- understanding of subject content (Acar & Tarhan, 2008);
- conceptual understanding (Bilgin & Geban, 2006);
- student engagement and satisfaction (Eun-Kyung & Jung-Ae, 2009);
- student effort in addressing complex problems (Brahmer & Harmatys, 2009);
- complex thinking and problem-solving skills (Gillies, 2008);
- student attitudes towards various subjects (Chung & Son, 2000);
- academic self-esteem (Ghaith, 2003); and
- the use of effective learning strategies (Güvenç & Űn Açikgöz, 2007).

Cooperative learning in music education

Kassner (2002:17) reports that, at conferences and workshops in America, few teachers reported using cooperative learning techniques in their music classes. Although there had been some studies in music, mentioning cooperation or collaboration in music education, such as Keil (1987); Friedman (1989); Goldberg (1990); Hoffmann (1991); Kaplan and Stauffer (1994); and Di Natale and Russell (1995); these were not studies into the use of cooperative learning techniques in music education.

Di Natale and Russell (1995) agree with Luce (2001) and Kassner (2002) that cooperative learning strategies have often been overlooked as a model for teaching music in music ensemble programmes. Hoffmann (1991) adapted a standard harmony course to a computer-aided collaborative format. The focus was more on the use of the computer as a tool for learning harmony than on collaborative learning during group instrumental teaching. Goldberg (1990) focused more on the collaboration between teacher and learner in a one-on-one situation, rather than on collaboration between peers in group instrumental teaching.

Friedmann (1989) discusses promoting participation in class by using small-group activities. This is not structured cooperative learning as suggested by Johnson and Johnson (2009), because little attention is paid to ensure positive interdependence and individual accountability. Di Natale and Russell (1995) report on cooperative learning within chamber music ensembles. They used Johnson and Johnson's (1994) guidelines and five basic elements of cooperation to structure their discussion about the inherent cooperative nature of making music in ensembles, but they did not use cooperative learning techniques to improve teaching or learning in music. From the above-mentioned examples, it is clear that the application of cooperative learning principles is absent in music education and, therefore, a study on this topic is warranted.

Cooperative learning and time spent practising

Krause and Stark (2010) found in a study conducted among university social studies students, studying statistical concepts and procedures, that cooperative learning prolonged time on task. They also found a significant correlation between time spent on the task and post-test performance. The correlation between cooperative learning and the time spent on practising a musical instrument seems to be absent in existing literature.

Cooperative learning and music performance anxiety

Hong (2010) also applied Johnson and Johnson's (1994) learning theory and pedagogy during his collaborative science intervention to establish the effects of collaborative science intervention on learner anxiety. He found that the learners' performance in learning science increased and their learning anxiety about science was reduced (Hong, 2010).

The positive influence of cooperative learning on musical performance anxiety, however, has not been established as yet. Instead, solutions and treatments, such as beta-blocking drugs, relaxation techniques, psychotherapy and imagery, positive cognitive statements, autogenic therapy, group music therapy and cognitive-behavioural therapy were studied and recommended (Ely, 1991; Taborsky, 2007).

Cooperative learning and increased musical performance

Di Natale and Russell (1995:28) state that musical performance in a chamber group ensemble improves when there is interdependence and cooperation. They present this as motivation as to why cooperative learning principles should be introduced in the music classroom, but they do not report on any studies in which the Johnson and Johnson (2009) principles of cooperation were introduced.

Method

According to Yin (2009:18), a case study: "investigates a contemporary phenomenon in depth and within its real life context". In this case study, the contemporary phenomenon is cooperative learning and the real-life context is the group guitar class. It is especially suitable for case study research, since "the boundaries between phenomenon and context are not clearly evident" (Yin, 2009:18).

Merriam (2009:41) states that it is the "unit of analysis and not the topic of investigation" that characterises a case study. The bounded system in this instance is one particular class of Foundation Phase student teachers doing two consecutive music modules. The bounded system is bound by time, activity and place. The duration of the modules was over two semesters, namely August to November 2008 and February to May in 2009. Each semester comprised 12 teaching weeks and the students had one 50-minute contact session of guitar "teaching" per week. The activity consisted of playing basic chords on the guitar as accompaniment to children's songs, taking place in a music lecture room of the Faculty of Education Sciences at the North-West University's Potchefstroom campus.

The intention of this case study was to determine the effectiveness of applying cooperative learning principles and it could therefore be considered as an intrinsic case study (Creswell, 2013:98). Although there are lessons to be learnt from this case study, no generalisations will be made. Multiple sources of quantitative and qualitative data were collected and analysed to obtain an in-depth understanding of the case study. The case study will be described in accordance with the application of the seven guidelines and the five elements of cooperative learning in the guitar classroom. The themes of the study were time spent practising; levels of self-reported anxiety; and the quality of the musical performance.

Participants

All the active Foundation Phase students in the BEd programme in 2008 (N=152) and in 2009 (N=139) participated in this study. Only 132 answered the questionnaires in 2008 and only 67 in 2009. The low response rate in 2009 was due to the timing of the distribution of the questionnaires. It was distributed at the end of the semester before the examinations and class attendance was poor. This was, however, not the only data collection method and, during the other data collections, more participants could be observed, since the e-journals (weekly posts on how each group is functioning and how it could improve its functioning), as well as the module and lecture evaluations and performance assessments were compulsory. In the 2008 first-year and 2009 second-year groups there were only female students and the average age in 2009 was 20 years.

Instructional procedures during the second year

The seven guidelines, according to Johnson and Johnson (2009), which were used in this study to create effective groups, are the following:

Guideline 1: Goals to establish positive interdependence

In order to establish clear, operational and relevant goals that would create positive interdependence and evoke a high level of commitment in every group member (Johnson & Johnson, 2000:575), they were given group goals for each weekly small-group practice session, such as practice together; use the assessment criteria; ensure that everyone masters all the prescribed and own choice of songs; fulfil your individual assigned roles; play joint tests and examinations; jointly manage your website; attend class as a group; and take responsibility for each other with regard to all these goals.

Guideline 2: Two-way communication

In order to ensure effective, two-way communication, within which members could communicate their ideas and feelings accurately (Johnson & Johnson, 2000:576), the following communication channels were made available to the students: Face-to-face communication during practice sessions and contact sessions; an interactive website with message and schedule functions; two-way communication with the lecturer via the website; e-mail; and visiting hours.

Guideline 3: Equalisation of leadership and participation

Leadership and participation must be made possible among all members (Johnson & Johnson, 2000:576). The author chose a "stratified random assignment" (Johnson & Johnson, 2009: 480) and took their 2008 results into consideration, so as to create homogeneous groups with similar abilities to ensure the equalisation of leadership and participation.

According to Johnson and Johnson (2009:481), teachers could solve and prevent problems in allowing students to work together when they give each group member a specific role to play. The four roles that were assigned were: (1) demonstrator; (2) manager of logistics; (3) grade book manager; and (4) website manager.

It was the demonstrator's responsibility to visit the e-learning platform, the student facilitator and the lecturer, so as to ensure that each student could demonstrate the work covered during the previous contact session to the rest of the group. Such student was also responsible for facilitation of the peer assessment.

The logistics manager had to schedule a time and place for the next week's small-group practice session on the e-learning platform that would suit all the members of the group. The manager also keeps a weekly attendance record on the website and manages absenteeism by sending messages to the relevant students.

The grade book manager managed and posted the peer assessments and self-assessments of the weekly small-group practice sessions on the website. A student who failed to attend the session got zero marks. The groups' marks were compared to the lecturers' marks in the practical test and examination. If there was a discrepancy, the group got penalised. These self-assessment and peer assessment marks counted towards students' module marks.

The website manager established the group's feelings, ideas, successes and problems and posted the e-journal on the website weekly. The website manager also posted the group's motto, symbol and name on the website.

Guideline 4: Shared power

Power should be distributed among all members (Johnson & Johnson, 2000:576). With the assignment of the roles mentioned above, this guideline was adhered to, since each of the students was a manager of a specific aspect of the group's functioning. Furthermore, the power was shared because, after the first term, the roles were switched between members.

Guideline 5: Decision-making procedures

Students were instructed that all decisions, such as whose choice of song would be played, the criteria for the self-assessment, and the consequences of a member not fulfilling his/her responsibilities had to be taken by unanimous agreement – i.e. the students had to reach consensus.

Guideline 6: Engage in controversy

The author explained to the students that differences created opportunities for creative solutions (Johnson & Johnson, 2000:577).

Guideline 7: Resolve conflict with problem-solving negotiations

When the groups were announced, the author first made it clear that group members would not be allowed to move to other groups if there was conflict in a group. The students, therefore, had to face any conflict and preferably solve it via problem-solving negotiations. As a last resort, the lecturer would mediate to assist them in order to resolve any conflict.

Five basic elements[4] of cooperation: Applied in the group guitar class.

Positive interdependence

Via the goals mentioned above, the following types of positive interdependence (Johnson & Johnson, 2000:103) were established:

- **Outcome interdependence:**
  - Positive goal interdependence. (The learners jointly need to master the prescribed, as well as songs of own choice.)
  - Reward interdependence. (The practice sessions, practical semester test and practical examination will take place in these groups.)
- **Means interdependence:**
  - Positive resource, role and task interdependence. (They share a website, have unique individual roles, as well as individual and group tasks.)
  - Positive identity interdependence. (They choose a group name, motto and symbol.)
  - Environmental interdependence. (They sit in the same row in class and have a weekly practice session at the same location.)
  - Positive outside enemy interdependence. (Groups are in competition with each other.)

Individual accountability

Each member is individually accountable for his/her aspect of the website. The individual assessment takes place twice a semester during class time in front of their peers.

The author assesses them, using an analytical performance rubric. (See Table 1.)

Face-to-face interaction

An element of cooperation is when members encourage and facilitate each other's efforts to reach the group's goals (Johnson & Johnson, 2000:117). During their small guitar group practice sessions, they helped, assessed and challenged each other, assigned responsibilities, made performance decisions, created an atmosphere of trust and support, worked towards an improved performance, as well as encouraged and motivated each other.

Development of good social skills

During their guitar group practice sessions, the students get to know each other. They also have to trust each other, accept and support each other, communicate clearly and resolve conflict constructively. They do not have the required skills from the outset, but through trial and error they develop good interpersonal skills. By means of experience and observation the author noticed that the groups with the best interpersonal skills also performed the best.

Group processing

After each session the small guitar group had to reflect on how well they had worked together, what they had done well and what needed improvement, and then make suggestions on how they can improve on these. This reflection had to be posted on their website by the website manager. Via these reflections they can improve the effectiveness of the working of their group.

These seven guidelines and five elements of cooperation were used to create the cooperative environment for the students to develop their guitar skills.

Data collection

True to the requirements for a case study, multiple sources of information were used (Creswell, 2013:97). Data was collected by means of open and close-ended questionnaires, e-journals, module and lecture evaluations, as well as a variety of assessment opportunities, including observation. Data was gathered about the following:

- *Time spent practising,* via the questionnaires in 2008 and 2009 and e-journals in 2009.
- *Levels of anxiety,* by means of the questionnaires in 2008 and 2009, e-journals, institutional lecture evaluation forms in 2008 and 2009, as well as observation during the two practical assessments conducted in both in 2008 and 2009.
- *The quality of musical performances,* via the questionnaires in 2008 and 2009, e-journals, the practical assessment results of 2005 to 2009, as well as observation.

Questionnaires

After reviewing the literature, the author developed the questionnaires, which were designed to evaluate the students' experience in the module. Similar questionnaires were handed out during class time by the lecturer at the end of the semester in 2008, where the teaching strategy was mainly modelling, as well as at the end of the cooperative learning semester in 2009. The questionnaire comprised two five-point Likert Scale questions and one two-point close-ended question. There were also seven open-ended questions to provide more information about the Likert Scale questions (See Addendum A.)

E-journals

Every week the website manager gathered information from the group and posted a diary (e-journal) on the group's website, reporting on their feelings, ideas, successes and problems. After each small-group practice session, the website manager also reported on how well the group was functioning and/or how the group could improve its functioning. These e-journals were only kept during 2009 – ie the second year – as part of cooperative learning and teaching strategies.

Institutional evaluation form

At the end of each semester (2008 and 2009), the faculty's academic support staff member handed out institutional forms to be completed during class time. Student teachers evaluated the lecturer and the module by completing 15 five-point Likert Scale questions and two open-ended questions. The close-ended questions were about the lecturer's teaching skills and skills to actively involve the students. The open-ended questions were the following: "What do you regard as the best aspects of the lecturer's teaching?" and "What do you regard as the worst aspects of the lecturer's teaching?"

Practical assessments

During each module practical assessments took place twice, once as a semester test in the middle of the semester and once as an examination at the end of the semester. Each week three new songs were learnt and studied. Each week's songs were on a more advanced level than those of the week before. From the beginning of the first-year module to the end of the second-year module, students progressed through 16 levels and 48 songs. The semester test took place after four levels/weeks and, after another four levels and 12 new songs, the examination took place.

Students and groups chose their preferred level of difficulty and practised all the songs on that level. The lower the level, the lower the possible marks were that the students could obtain. The lecturer randomly asked any one song on a

particular level to be played in the semester test. A different song was chosen by the lecturer for the examination. For each assessment the repertoire list consisted of 12 new songs.

In 2008, the practical assessments were done individually in front of the entire class and in 2009 the assessments were done as a group, as well as individually, in the lecturer's office. In 2008, each student played one random song chosen by the lecturer from the prepared repertoire. In 2009 each student played three songs, namely one prescribed song as part of the group, one prescribed song individually and one song of own choice as part of the group.

Observation

As the lecturer responsible, the author also made participatory generic observations on the student teachers' musical development during each contact session and each assessment opportunity. These observations can be classified as a non-standardised tool. The author paid attention to musical aspects, such as the tuning of the guitars; the starting of the song; the quality of singing; the correct rhythm and correct melodic contours; the coordination of the left and right hands; the stability of the tempo; as well as the correct execution of the accompaniment patterns.

These observations were done thrice – once while the class was taking place, once when the practical assessments took place and once via the sound recordings. The following analytical rubric (Table 1) was used during the practical assessments, and the same rubric was used as a reference during the contact sessions and when listening to the recordings.

Procedure of consent

These music modules were compulsory for all BEd Foundation Phase students. The author did inform them of her choice of teaching strategy and what the purpose of the change was – i.e. to improve teaching and learning. They gave their consent that information provided during the module could be used for research. They did not have to complete the questionnaires and, if they chose to do so, they did it anonymously. The keeping of the e-journals was compulsory for the website managers. The lecture evaluations were voluntary and done anonymously. Their assessment opportunities were compulsory as part of the summative assessment of the module. The research was carried out on the author's own class on course work and both classes got the benefit of the same teaching strategy.

Validity

Both modules were taught by the same lecturer, in the same lecture room, with the same students, using the same analytical rubric (Table 1) for assessments. During the second year, the work increased in breadth, difficulty, application and proficiency. The student teachers had to play in more complex keys; master more advanced songs; learn new strumming techniques; choose their own songs, which were learnt independently; and create accompaniment patterns independently of the lecturer. Their results were compared to the averages of previous second-year student teachers of 2008, 2007 and 2006 and not only to their own first-year results.

Table 1: Analytical Rubric: Guitar Assessment Criteria for the Practical Assessment and Examination

Name and student number of the student:	**Level 1:**	**Level 2:**	**Level 3:**	**Level 4:**
Posture: Thumb flat at the back, not looking at hands, right leg crossed over left leg, head of guitar lifted and student pointing forward.	/7	/8	/9	/10
Singing: Starts singing on the right note, plays the initial note (a string on the guitar) before playing the introduction, sings the melody correctly and sings enthusiastically.	/7	/8	/9	/10
Chord LH: Presses the chords down with the correct LH fingers so that the strings all sound clear, chord changes on the correct beat and maintaining the tempo.	/7	/8	/9	/10
***Strumming* RH**: Constant right hand throughout, the correct *strumming* or *pick pattern*, plays the correct strings, e g only bottom four strings for D major.	/7	/8	/9	/10
Musicality: End of phrases softer, breathes at the right places, sings with emotion, guitar must be properly tuned.	/7	/8	/9	/10
Total				

Data analysis

Summary data from the close-ended questions in the teacher-designed questionnaire are presented below in the form of pie charts. An inductive data analysis strategy was used with the open-ended questions, in order to uncover themes. Since similar questionnaires were used at the end of the 2008 and 2009 modules, comparisons were possible. These differences are reported on in a descriptive manner.

By means of qualitative content analysis (Henning, Van Rensburg & Smit, 2004:104-106), the e-journals, open-ended questions in the questionnaires and the lecture and module evaluations were analysed by the author. Via this process of coding and categorisation, several main themes were extracted and constructed (Henning, Van Rensburg & Smit, 2004), which related to the research questions. During the practical assessments, an analytical rubric (Table 1) was used throughout. This rubric made provision for differentiation and a success experience at each level.

Results

More time spent practising

Data has indicated that the tendency existed among previous second-year groups in 2008, 2007 and 2006, where students practised even less in their second year as a result of a heavier workload in all their other subjects, as well as their lack of time management (see Figure 7). However, an analysis of the close-ended questions in the questionnaires revealed that students practised substantially more per week during 2009 than had been the case in 2008.

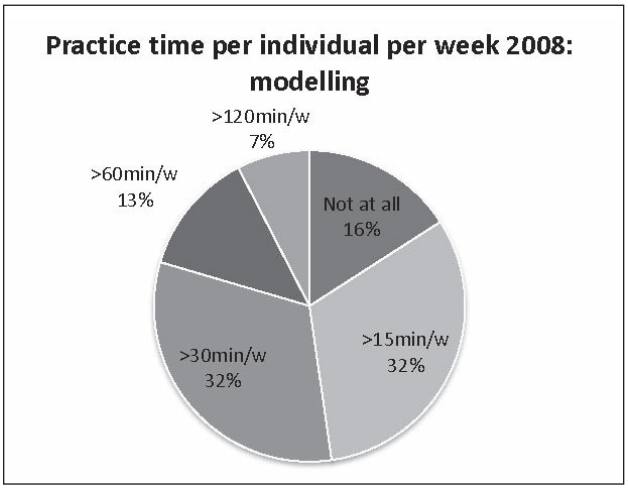

Figure 1: Practising per week in 2008: Modelling

In 2009, all students practised weekly, in contrast with the 16% of students who did not practise at all during the previous semester. The number of students practising more than an hour per week increased from 13% in 2008 to 31% in 2009. In 2008, only 7% of individuals practised more than two hours per week, while in 2009, some 11% practised more than two hours per week.

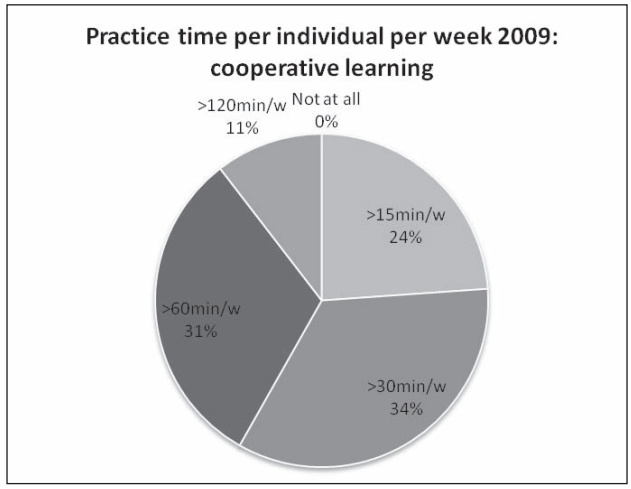

Figure 2: Practising per week in 2009: Cooperative learning

In 2008 the group spent little time practising and when they had to motivate why in answering the open-ended question, the following codes were constructed from their answers: Lack of proper time management, low motivation, little interest and low perceived aptitude.

Most explanations for not practising enough pertained to *time management*. For example: One female student commented that she "did not have time to practise". Another stated: "I did not manage my time well". Hostel activities, other assignments and not having a place to practise were also given as excuses for not practising.

Since not all education students are necessarily interested in music, they initially often *lacked motivation and interest* – as one female student explained: "I did not enjoy practising". Another said: "I did not feel like it". Students also admitted to being lazy, procrastinating, forgetting to practise and not being motivated. Another student said that she "did not like playing [the] guitar".

The *difficulty level* was also cited as an explanation as to why they did not practise enough. Some comments related to this theme are as follows: *"I did not know how to practise". "I found playing [the] guitar difficult." "Mastering the technique was difficult." "I cannot play [the] guitar." "I could not get the chords right."* Some students did not practise because they felt *alone*: *"I got confused practising alone". "It was difficult on my own."*

A category that could be identified from these units of meaning and codes is that the group spent little time practising in 2008 because they did not enjoy practising the guitar and therefore did not have the intrinsic motivation required to practise.

The codes that could be identified from the open-ended question regarding time spent practising in 2009, are as follows: The scheduled group practise sessions; an improvement in skills; an improvement in their marks; and enjoyment. From the following units of meaning, organised in accordance with the above-mentioned codes, it became

clear that, as a result of the interaction in the small groups and their shared goals, they developed the ambition to improve their guitar skills and marks, and they started to enjoy making music together.

When students had to motivate why they spent more time practising in 2009, most comments were related to the *scheduled group practice sessions*. Students enjoyed the social aspect and were committed to their group, as one student explained: "I practised because my group wanted to practise". Another student said: "I loved playing with friends". They added practise time to their busy schedules and practised, "because we had specific times to practise." Some students practised additionally on their own "to keep up with the group". Each group practised until the required outcomes were mastered.

Students wanted to *improve their skills:* "I want to improve my skills to enable me to play for my children one day". They practised to master the "chords", "songs", "music" and the "guitar". One student also wanted to improve herself. Some found it difficult "and had to put in extra time to master [the] guitar". Not only did they want to *improve their* skills, but also their *marks*. "I practised hard because I wanted to improve my marks in [the] guitar"; "I was scared I would fail"; and "I wanted to pass music".

Enjoyment was an intrinsic motivation to practise. One student said: "I enjoyed practising [the] guitar and wanted to master the guitar". Another student said: "Once I started I could not stop". For some it became a good and enjoyable habit: "The more I practised, the more I wanted to practise".

The category identified from these units of meaning and codes is that cooperative learning gave students the intrinsic motivation to practise more. The theme identified here is that cooperative learning increased the time that was spent practising, because of the intrinsic motivation that cooperative learning fosters.

This identified theme was supported by the weekly e-journals kept by the website managers in 2009. Diary entries, supporting this theme, included the following examples: *"We will practise before we have our small-group practise session". "I hope our practising shows during the lecture on Monday. We work together well."* This theme was also evident in the institutional lecture evaluation forms, with statements such as: *"I enjoy practising and I am gaining self-confidence." "We are practising."*

Lower levels of anxiety

In the e-journals of 2009, positive affirmations and encouragements were found on almost all the groups' websites, which bear testimony to the low levels of anxiety: *"We are a nice group and we will make a difference to each other's guitar skills". "We are positive." "What a wonderful week of making music together!"* In the institutional lecture evaluation form, similar positive statements, indicating low levels of anxiety, were found. For example: "*The lessons are exciting and involve everybody".*

It also became clear with the answers given to the close-ended question on anxiety in the questionnaire that the group was substantially less anxious during the guitar assessments in 2009 than had been the case in 2008. The cooperative learning and teaching strategy had a positive effect on lowering levels of anxiety during practical guitar assessments of student teachers.

From Figures 3 and 4, it is clear that 55% of the group was very anxious during assessments in 2008. This figure dropped substantially to only 15% of the student teachers who remained very anxious in 2009. Only 1% of student teachers felt very relaxed during the assessment in 2008, in contrast to 9% of students who felt very relaxed in the 2009 assessments.

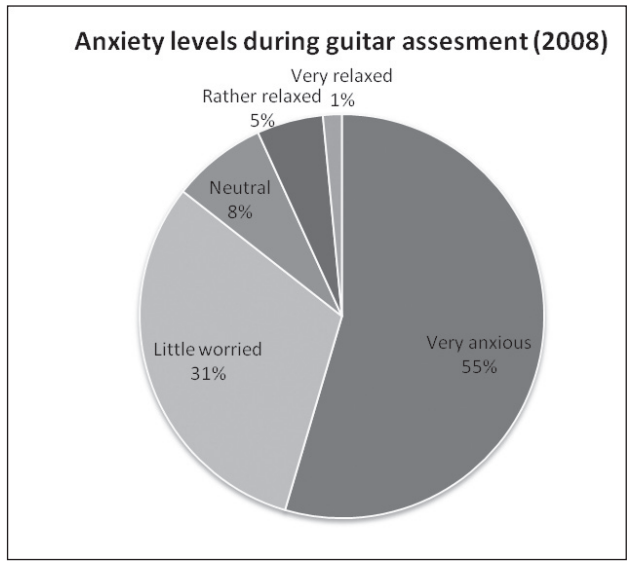

Figure 3: Anxiety during assessment in 2008

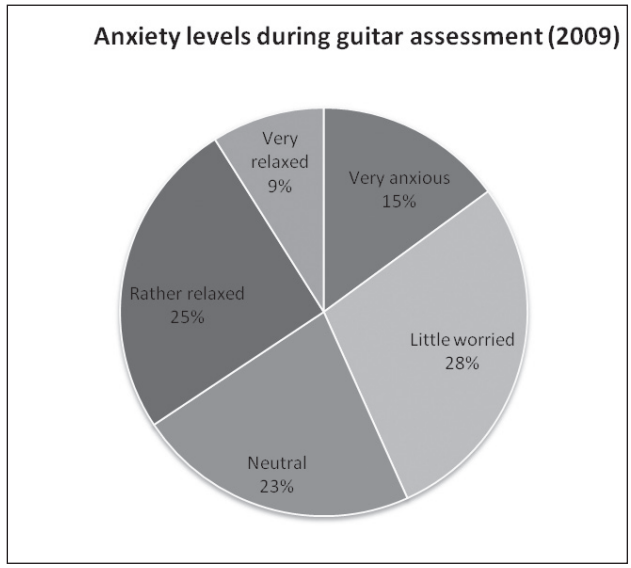

Figure 4: Anxiety during assessment in 2009

In the open-ended question, where the 2008 group had to motivate their levels of anxiety, they gave the following reasons for their high levels of anxiety:

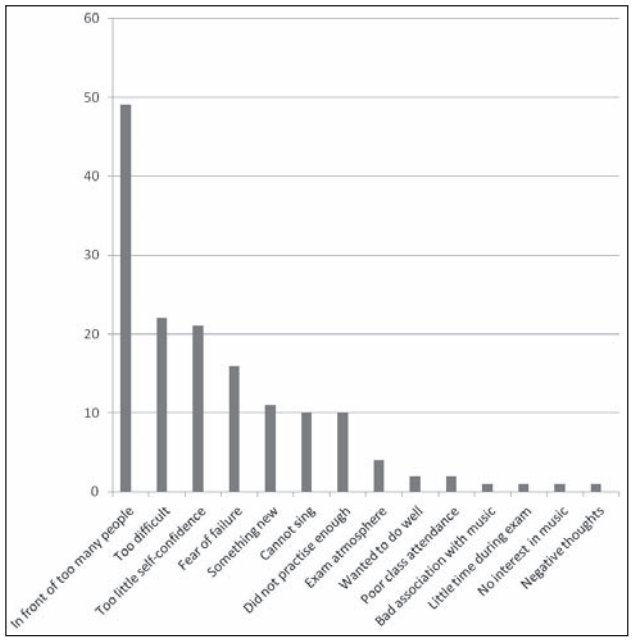

Figure 5: Motivation for levels of anxiety in 2008

A total of 132 students out of a class of approximately 152 completed the questionnaires. It is clear that, in 2008, a total of 49 students did not like to perform in front of their peers. They found the examination too difficult and did not have sufficient self-confidence to play.

In the open-ended question, in 2009, the same group had to motivate their levels of anxiety and gave the following reasons for their low levels of anxiety:

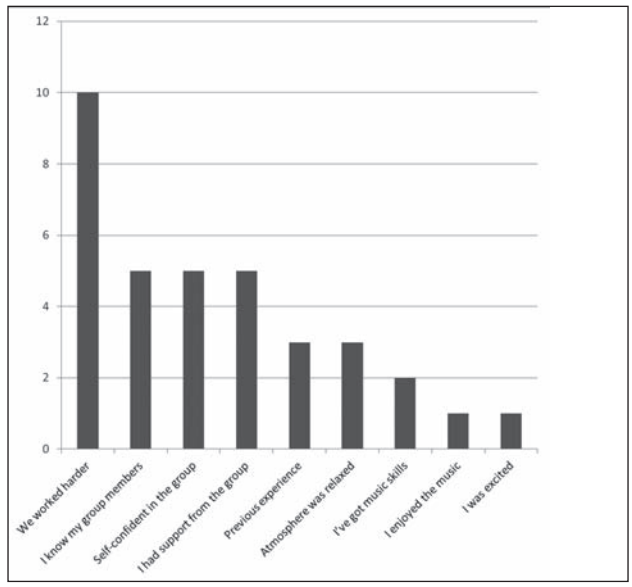

Figure 6: Motivation for levels of anxiety in 2009

A total of 67 students out of a class of approximately 150 answered the questionnaires. Only five students gave the change in assessment venue as a reason for the lower levels of anxiety. As a result of the cooperative teaching-learning strategy, the students were better prepared and they had gained in self-confidence in the group because they felt supported. Excitement shared by the group replaced individual anxiety.

Higher standard of musical performance

Table 2: Improved musicianship

First years in 2008 The group was exposed to modelling as a teaching strategy.	**Second years in 2009** The same group was exposed to cooperative learning as a teaching strategy.
The guitars of the individuals were mostly very out of tune. Strings were tuned to the wrong notes.	In most groups, all the members tuned their guitars together and, as a result, the tuning of the guitars was good. They took responsibility for the tuning of each other's guitars.
The out-of-tune guitars made it very difficult for the individuals to start on the correct note, even though they were taught to play and sing the starting note before they started the song.	The group started to sing on the same note. One person sang the starting note and they corrected each other until everyone sang the correct starting note.
Because of the out-of-tune guitars and starting on the wrong note, they sang and played in different keys.	The members of the small group sang and played in the same key; often because one member dominated and the others followed by singing in the dominating key.
The individuals showed bad coordination between the left-hand chords and the right-hand strumming.	In the group the visual signal for chord changes and the general beat in the strumming helped them to coordinate their left and right hands.
When the individuals reached difficult areas in the song, they slowed down. This interrupted the musical performance.	In the group they could not slow down and even if one member missed a chord change, the song continued and the musical flow was therefore uninterrupted. They therefore kept the tempo, because they had to listen to each other.
The individuals did not always play with their thumb on the down beat. They did not match the strumming and the metre of the song.	In the small group, the down beats were emphasised and the strumming pattern matched the metre, because they could see and hear one another and thus they found the mutual beat.

The individuals were scared to sing.	They sang with more confidence in the small group than they did singing alone. The individuals could still be heard, however, because there were only four members in a group.
Very few individuals could sing the melody of the song correctly. In most cases the melody was unrecognisable.	They sang the melody of the song correctly or, at least musically, in unison. In most cases the altered melody fitted the chord progression.
Only the top 2% of the student teachers sang enthusiastically on their own. These students had had previous musical exposure.	In the group they sang enthusiastically with a sense of group pride and group identity.
Out of the entire group only three students took the initiative in their interpretation of the song and strumming.	A number of groups took the initiative in original interpretations of the songs and they used their own strumming patterns. There were even two original compositions.

In comparing the recordings of the group when cooperative learning (2009) and modelling (2008) took place, it was clear that they played and sang much better in 2009 than in 2008. Analytical rubrics (Table 1) were used to assess the quality of the performances of these two groups.

The author observed the following musical milestones during class, practical assessments and recordings of most of the student teachers of 2009. Analytical rubrics (Table 1) for each individual and each group in 2008 and 2009, and completed by the author, were used for these observations.

7. Second semester of the first year: 2008 — 66%
8. First semester of the second year: 2009 — 72% – **for the first time higher than in their first year**

The guitar module ran over two semesters, namely the second semester of the first year and the first semester of the second year. Each bracket indicates a new group of students. Data was collected from four groups over a period of five years.

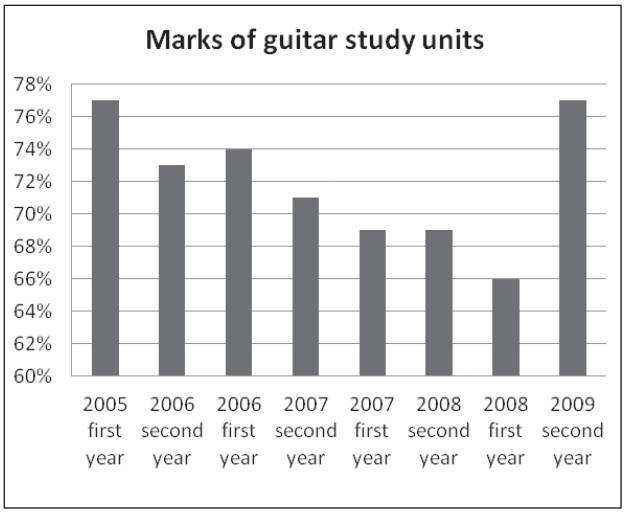

Figure 7: Practical guitar assessment marks from 2005-2009

These averages indicate that, in 2009, the cooperative learning group performed better in their practical guitar semester test and examination than:

- In the same group's previous performance in 2008;
- previous second-year students in 2008, and
- than the established norm of the second-year students from 2005 to 2007.

This improvement in their marks was also reflected in the weekly e-journals, with comments such as: "*We are making good progress". "Our hard work makes a difference in our guitar abilities." "We mastered level 2!" "Our own-choice song is sounding fantastic." "This week we managed a new rhythm well." "YES! I got it right!" "The exam went really well and I am proud of my group!"* The same type of comments, reflecting the quality of musical performance was also found in the institutional lecture evaluation form: *"My guitar progresses well and my group is great!"*

1. Second semester of the first year: 2005 — 77%
2. First semester of the second year: 2006 — 73% – 74% lower than in their first year
3. Second semester of the first year: 2006 — 74%
4. First semester of the second year: 2007 — 71% – 73% lower than in their first year
5. Second semester of the first year: 2007 — 69%
6. First semester of the second year: 2008 — 69% – the same as in their first year

Discussion and conclusion

The three main results of the study may be summarised as follows:

Firstly, students in the cooperative learning group spent more time per week practising. The findings of this study confirm the results of several previous studies on the positive influence that the type of instructional method has on the time spent on task. Klein and Pridemore (1992) reported that student teachers, who worked cooperatively, spent more time working on the practise exercises. According to Slavin (1990), most cooperative learning studies that measured time spent on task found higher proportions of engaged time for cooperative learning students than for the control groups.

Punch and Moriarty (1997) stated that cooperative learning ensures that student interactions are on task. As Caldwell *et al* (1982) point out, it is not only the time spent on academic learning that is important, but more so the active participation in learning. Cooperative learning ensures that student interactions are on task (Punch & Moriarty, 1997) and we know that cooperative learning requires students to be actively involved. These two factors could explain the higher quality of musical performance because engagement rates are significantly related to student achievement (Anderson, 1975).

Mentz, Van der Walt and Goosen (2008) concluded that all participants enjoyed cooperative learning in small groups (pairs in their case). When students enjoy making music, they spend more time practising. This, in turn, also has a positive effect on their levels of anxiety and their quality of performance.

Secondly, students in the cooperative learning group experienced reduced anxiety and some were even relaxed during guitar assessments. The results of this research generally support existing research, indicating that an instructional strategy that fosters self-regulation and peer support reduces anxiety and increases motivation (McInerney & McInerney & Lawson & Jacka, 1996).

The respondents' three main explanations for reduced anxiety were the following: 1) They were better prepared. The lowered levels of anxiety can therefore also be as a result of more time spent practising. 2) They did not have to play in front of the entire group. This also made them feel more comfortable and less anxious. The room where they did their practical assessments was also smaller. The assessments took place in an office instead of a formal lecture room. This also contributed to a more relaxed atmosphere. Therefore, lower levels of anxiety cannot be ascribed to cooperative learning alone. However, to assess work that has been done cooperatively, the pressure is taken off the individual and students are not in competition with one another, but the emphasis is rather on mutual support for the benefit of each individual, as well as for the group as a whole. This caring learning environment creates a safe space for students.

A third reason given for reduced anxiety was improved self-esteem. These findings were consistent with 27 studies that focused on self-esteem at university level, and which found that cooperative learning promoted self-esteem more than did competitive or individualistic efforts (Johnson & Johnson, 2002). According to Riggs and Han (2009), low self-esteem is associated with symptoms of anxiety. It can therefore be argued that cooperative learning promoted the student teachers' self-esteem and, as a result, lowered their levels of anxiety.

Thirdly, the average mark increased from 66% during the modelling semester to 72% during the cooperative learning semester. This was the first time in five years that there was an increase in marks, from the first to the second semester, of the same group. This was the first study of its kind to report on the positive effect of cooperative learning on the quality of musical performance of guitar student teachers. The findings of this study support results from studies in other study fields about the positive effect of cooperative learning on academic performance and achievements (Barrett, 2005; Bowen, 2000; Chung & Son, 2000; Doymus, 2007; Eun-Kyung & Jung-Ae, 2009; Ghaith, 2003).

The reasons given by the students in this study for the improved levels of musical performance were increased motivation, ambition to improve their skills and marks, better time management, shared goals and enjoyment of music. These were the results of the applied elements of cooperative learning, namely positive interdependence, individual accountability, face-to-face interaction, the appropriate use of social skills and group processing during class times, as well as during small-group practise sessions.

The Foundation Phase student teachers, surprisingly enough, disliked the e-learning environment and preferred to choose their own group members rather than being assigned to specific groups. The following semester (first-year, second semester 2009), the author reduced the amount of work that they had to report on the website and also allowed them to choose their own group members. The administration was significantly easier and there was less social conflict within the small groups, but the quality of musical performance was again perceived to be lower than it had been with the previous group where more control was exercised.

This study differed from previous cooperative learning studies, which had dealt with science, social science, computer science, English, reading, mathematics, psychology, health and physical education (Johnson & Johnson, 2002), as it was in the subject area of music and, more specifically, large instrumental guitar teaching and not merely ensemble playing. Cooperative learning had also not been associated with more time spent on practising the guitar, reduced music performance anxiety and improved individual musical performance. Further research on

the effect of cooperative learning on group instrumental teaching, in other contexts and on other instruments than the guitar, would contribute to this discourse.

Although using the Johnson and Johnson (2009) techniques proved to be successful in increasing the quality of musical performance, Slavin (1980) had reported that the Jigsaw and the Johnson techniques had been less successful than the Teams-Games-Tournament (TGT) and the Student Teams-Achievement Divisions (STAD) in increasing academic achievement. It is therefore recommended that the TGT, which proved to be the most successful cooperative learning strategy for increasing academic achievement, be used in studies similar to this one, in order to determine whether it might be even more useful than Johnson and Johnson's group theory for increasing quality of musical performance in large instrumental groups.

This research had produced a diverse set of findings, which led the author to conclude that guitar teaching in large groups, into which specific principles and elements of cooperation have been incorporated, could serve as an effective teaching-learning strategy. In this study, cooperative teaching and learning contributed, among other factors, to increased time spent on practising, lowered levels of self-reported anxiety during assessment, while it also played a positive role in the raised standard of musical performance.

The implications for practise are that it is possible to give quality musical instruction to large groups of musical instrumentalists, using cooperative learning as a teaching-learning strategy. This strategy is especially suited to instrumental instruction, since music-making is often cooperative in nature.

Often music lessons are given individually and are very costly. With the difficult economic circumstances and the increasing pressure on teaching smarter and not harder, cooperative learning, with the support of an e-learning environment and the application of internal dynamics that result in cooperation being successful, could be a solution that might save on time and money.

Endnotes

1 I wish to thank Prof Bertha Spies, Research Fellow at the School of Music, North West University(NWU); Prof Elsa Mentz, Professor at the School of Curriculum-based Studies in the Faculty of Education Sciences at the NWU, Potchefstroom campus; Prof Hetta Potgieter, Research Leader in the Niche Area: Musical Arts in South Africa: Resources and Applications (MASARA) at the NWU, Potchefstroom campus; and Prof Karendra Devroop, Director of the School of Music, NWU, Potchefstroom campus, for their valuable guidance and comments. A short practice piece with teaching tips, based on my experience, without reporting any data or reference to the method, was published in *The Talking Drum* No 34, December 2010, as "Cooperative learning in large instrumental groups".

2 In 2008/09, the author taught basic guitar accompaniment skills as part of two consecutive music modules, lasting six months each (August-November 2008 and February-May 2009), to 152 non-music major students who had just completed high school/Grade 12, and who were enrolled in a four-year initial teacher training course (BEd degree) to become professional pre-primary and primary school teachers.

3 In the second year (2009), the music theory was extended to include the didactics of teaching music to the young child. The practical section of the work was also extended and included more advanced guitar accompaniment, playing children's songs on recorder and playing in an Orff ensemble. The cooperative learning principles were implemented in 2009, in the group's second music module during the weekly guitar period. The principles were not implemented in the recorder, Orff, music theory or music didactics sections of the module content.

4 Johnson & Johnson, 2000:114–120.

Bibliography

Acar B & Tarhan L, 2008. Effects of cooperative learning on students' understanding of metallic bonding. *Research in Science Education, 38*(4), 401-420.

Anderson L, 1975. Student involvement in learning and school achievement. *California Journal of Educational Research, 26*(2), 53-62.

Barrett T, 2005. Effects of cooperative learning on the performance of sixth-grade physical education students. *Journal of Teaching in Physical Education, 24*(1), 88-102.

Bilgin I & Geban Ö, 2006. The effect of the cooperative learning approach based on conceptual change conditions on students' understanding of chemical equilibrium concepts. *Journal of Science Education and Technology, 15*(1), 31-46.

Bowen CW, 2000. A quantitative literature review of cooperative learning effects on high school and college. *Journal of Chemical Education, 77*(1), 116-119.

Brahmer K & Harmatys J, 2009. *Increasing student effort in complex problem solving through cooperative learning and self-recording techniques*. Chicago, IL: School of Education, Saint Xavier University. Retrieved from the ERIC database. (ED504865)

Caldwell JH, Huitt WG & Graeber AO, 1982. Time spent in learning: Implications from research. *The Elementary School Journal, 82*(5), 470-480.

Chung Y & Son D, 2000. Effects of cooperative learning strategy on achievement and science learning attitudes in middle school biology. *Journal of the Korean Association for Research in Science Education, 20*(4), 611-23.

Chun-Yen C & Song-Ling M, 1999. The effects on students' cognitive achievement when using the cooperative learning method in earth science classrooms. *School Science & Mathematics, 99*(7), 374-380.

Creswell JW, 2013. *Qualitative inquiry and research design. Choosing among the five approaches.* Los Angeles: Sage.

Di Natale JJ & Russell GS, 1995. Cooperative learning for better performance. *Music Educators Journal, 82*(2), 26.

Doymus K, 2007. Effects of a cooperative learning strategy on teaching and learning phases of matter and one-component phase diagrams. *Journal of Chemical Education, 84*(11), 1857-1860.

Ely MC, 1991. Stop performance anxiety! *Music Educators Journal, 78*(2), 35.

Eun-Kyung C & Jung-Ae R & Young-Hong B & Oh-Sun A, 2009. The effect of team-based learning in medical ethics education. *Medical Teacher, 31*(11), 1013-1017.

Friedmann M, 1989. Stimulating classroom learning with small groups. *Music Educators Journal, 76*(2), 53-56.

Ghaith G, 2003. Effects of the learning together model of cooperative learning on English as a foreign language, reading achievement, academic self-esteem, and feelings of school alienation. *Bilingual Research Journal, 27*(3), 451-474.

Gillies RM, 2008. The effects of cooperative learning on junior high school students' behaviour, discourse and learning during a science-based learning activity. *School Psychology International, 29*(3), 328-347.

Goldberg MR, 1990. Teaching and learning: A collaborative process. *Music Educators Journal, 76*(5), 38-41.

Güvenç H & Ün Açikgöz K, 2007. The effects of cooperative learning and concept mapping on learning strategy use. *Educational Sciences: Theory & Practice, 7*(1), 117-127.

Henning E, Van Rensburg W & Smit B, 2004. *Finding your way in qualitative research*. Pretoria: Van Schaik.

Hong Z, 2010. Effects of a collaborative science intervention on high achieving students' learning anxiety and attitudes towards science. *International Journal of Science Education, 32*(15), 1971-1988.

Johnson DW & Johnson FP, 1994. *Joining together: Group theory and group skills (5th Ed)*. Needham Heights, MA US: Allyn & Bacon.

Johnson DW & Johnson FP, 2000. *Joining together: Group theory and group skills (7th Ed)*. Boston: Allyn & Bacon.

Johnson DW & Johnson RT, 2002. Social interdependence theory and university instruction: Theory into practice. *Swiss Journal of Psychology/Schweizerische Zeitschrift Für Psychologie/Revue Suisse De Psychologie, 61*(3), 119-129.

Johnson DW & Johnson RT, 2008. *Cooperation in the classroom*. Minnesota: Interaction Book Company.

Johnson DW & Johnson RT, 2009. *Joining together: Group theory and group skills (10th Ed)*. Upper Saddle River, NJ: Pearson.

Jolliffe W, 2007. *Cooperative learning in the classroom: putting it into practice*. London: Thousand Oaks.

Henrico A, 2010. *'n Onderrigmodel vir die ontwikkeling van onderwysstudente in besigheidstudies se hoërorde kognitiewe vaardighede.* PhD. Proefskrif: NWU Potchefstroomkampus.

Hoffmann JA, 1991. Computer-aided collaborative music instruction. *Harvard educational review,* 61(3):270.

Kaplan K & Stauffer S, 1994. *Cooperative learning in music.* Reston, VA: Music Educators National Conference.

Kassner K, 2002. Cooperative learning revisited: A way to address the standards. *Music Educators Journal, 88*(4), 17-22.

Keil C, 1987. Culture, music and collaborative learning. *Echology, 22*(7), 7-12.

Killen R, 2000. *Teaching strategies for outcomes-based education*. Lansdowne: Juta.

Klein JD & Pridemore DR, 1992. Effects of cooperative learning and the need for affiliation on performance, time on task, and satisfaction. *Educational Technology Research and Development, 40*(4), 39-47.

Krause U & Stark R, 2010. Reflection in example- and problem-based learning: Effects of reflection prompts, feedback and cooperative learning. *Evaluation & research in education, 23*(4), 255-272.

Luce DW, 2001. Collaborative learning in music education: A review of the literature. *Update: Applications of Research in Music Education, 19*(2), 20-25.

McInerney V & McInerney DM & Lawson R & Jacka C, 1996. *Students' attitudes towards cooperative, self-regulated learning versus teacher directed instruction in a computer training course: A qualitative study.* New York, American Educational Research Association Annual Meeting. Retrieved from the ERIC database. (ED394499)

Mentz E & Van der Walt JL & Goosen L, 2008. The effect of incorporating cooperative learning principles in pair programming for student teachers. *Computer Science Education, 18*(4), 247-260.

Merriam SB, 2009. *Qualitative research. A guide to design and implementation*. San Francisco: Jossey-Bass.

Olivares OJ, 2007. Collaborative vs. Cooperative learning: The instructor's role in computer supported collaborative learning. In KL Orvis & LR Lassiter, 2007 (eds), *Computer-supported collaborative learning. Best practices and principles for instructors*. London: Information Science Publishing.

Punch KF & Moriarty B, 1997. Cooperative and competitive learning environments and their effects on behavior, self-efficacy, and achievement. *Alberta Journal of Educational Research, 43*(2-3), 158-60.

Riggs SA & Han G, 2009. Predictors of anxiety and depression in emerging adulthood. *Journal of Adult Development, 16*(1), 39-52.

Slavin RE, 1980. Cooperative learning. *Review of Educational Research, 50*(2), pp. 315-342.

Taborsky C, 2007. Musical performance anxiety: A review of literature. *UPDATE: Applications of Research in Music Education, 26*(1), 15-25.

Yin RK, 2009. *Case study research. Design and methods.* Los Angeles: Sage.