Difference in Skill Acquisition Depending on The Type of Contents: In Case of Piano Playing

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Abstract: In this paper, we focus on the skill of "piano playing", which is of course an important component of playing a piano and singing. We discuss the difference in the role played by two types of contents mentioned above -- model performance videos and annotated scores – having trainees trained with the method including only either of two contents, from the viewpoint of students' skill acquisition.

Keywords: Guidelines, formatting instructions, author's kit, conference publications

Introduction

The training of playing a piano and singing, which is a good example for studying skill acquisition, is adopted by many classes for pre-school teacher training. The training methods for playing a piano and singing are required to be improved in many respects because a large number of students are taught by a single trainer. However, the proposed methods so far are superficial in the sense that they are based on heuristic empirical impression or adding new items, such as "Practice Carte"(Imaizumi 2004), "observer"(Nakajima 2001) , or "class with ICT"(by Suzuki 2004).

We tried to propose an improved training method which takes into account the process of skill acquisition and performed many experiments of education (K. T. Nakahira et al., 2007, K. T. Nakahira et al., 2009, K. T. Nakahira et al., 2010, K. T. Nakahira et al., 2011). We make the assumption that the trainees can be regarded as well-motivated.. Under this assumption, we included several trainee activities in our training design of playing a piano and singing as follows: (1) finding the key points from model performance videos, (2) reading carefully annotated scores which include musical symbols and comments generated following the method of instructional design, and (3) making their performance videos after (1) and (2) by the trainees themselves, which produce their inner reflection to their own performance. Nakahira et al. (2010) shows their educational design can improve the skills of trainees' playing a piano and singing. Their design requests to do three things at once, which, however, cannot verify the evidence for the effectiveness of each of two items – namely (1) and (2).

In this paper, we focus on the skill of "piano playing", which is of course an important component of playing a piano and singing. We discuss the difference in the role played by two types of contents mentioned above -- model performance videos and annotated scores – having trainees trained with the method including only either of two contents, from the viewpoint of students' skill acquisition.

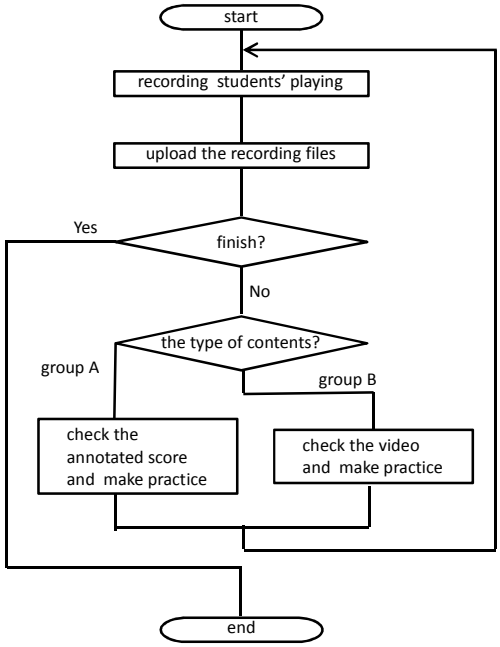


Figure 1. Design of Experiment.

1. The Design of Experiment

The experiment set for 119 students who attended the class of "Child Pedology I", which was done from December 2011 to January 2012 at K Women's University with the design as shown in Figure 1. We prepare the six etudes for beginners which are almost at same level. The trainees make the following training activities for the one designated at random from the six etudes:

1. Making a video recording their performance and upload the file: The trainees use general-purpose products such as digital camera to make video files.
2. The trainees have an opportunity to practice the assigned etude deeply considering how to play it. The way to assist their consideration is chosen from the following two methods at random.
   (a) They train their performance with the annotated scores developed by us (group A) .
   (b) They train their performance with the model performance developed by us, to obtain an image of the etude (group B).
3. Re-recording their performance and upload the file.

The annotated notes and model videos were served to students via web with specific URLs, which defend from other references. The annotated notes were produced by two experienced piano instructors. The notes circulated with PDF files as shown in Figure 2. The trainees checked these notes again and again. The model video player played the etudes in accordance with the annotated notes. The recorded model video has two angles, which are entire body and only hands (fingering). The two angles are connected in the video files. The trainees can watch twice per one operation, and shift their viewpoints.

Each group categorized by the indices assigned to each etude and to the training method is refered to as a bracket such as bracket 1-A, 1-B, … 6-A, 6-B. Each bracket included 10 trainees and there are 12 brackets. The piano trainer evaluated the files reported by trainees in the view point as shown in Table 1. We set four grades as (1) dramatic improvement, (2) improvement, (3)no improvement, (4)degenerating.

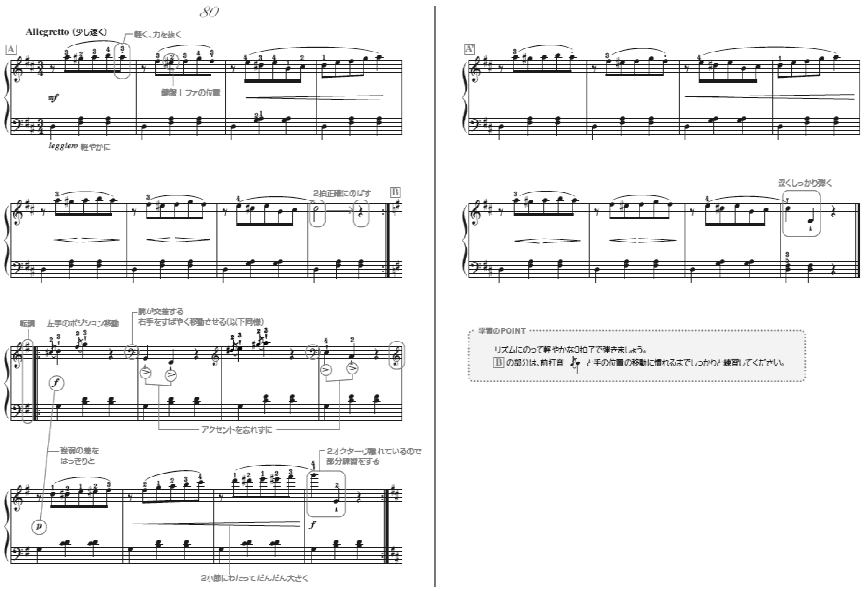


Figure 2 The sample of annotated notes.

2. Results

Figures 3(a) and 3(b) show the results of the analysis of the trainee's improvement/degenerating grades which are judged from the reported videos. The sample data were extracted from trainees' submitted videos by selecting the ones submitted by those who get the highest (high proficiency) and the lowest (low proficiency) average score at the mid- and end- term performance examination in each bracket. We analyzed the relationship between degree of proficiencies and item of improvement/degenerating. If the items of improvement/degenerating are different from the degree of proficiencies, it means the contents type should be selected by trainees' ability. In this study we targeted 10 brackets, namely 5 etudes from 6 etudes since we later noticed that the effect due to slightly different musical symbol used only in one etude may not be neglected. The left side of each figure represents the results of group A, and the right side of group B. From both sides toward the center, the scale of the improvement/degenerating changes from (1) to (4). From the figures, we find some items for which several trainees made improvement.

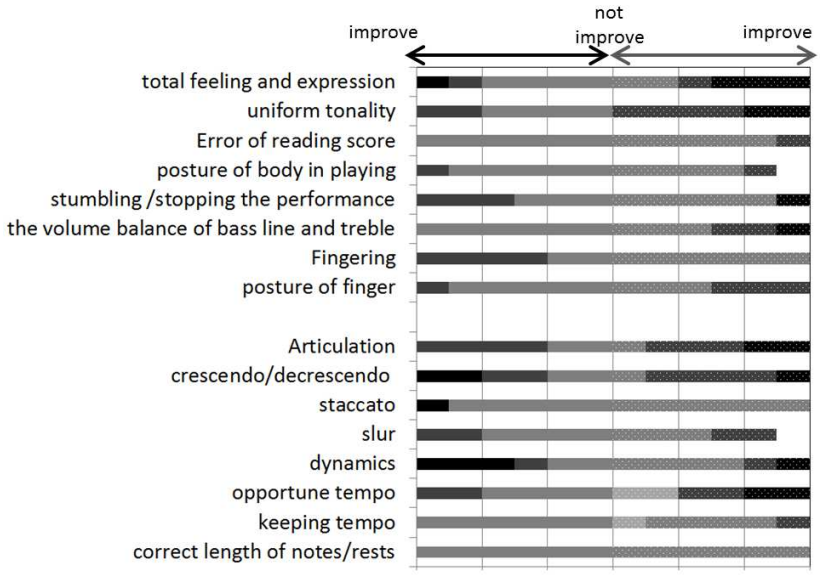
(1) Trainees who are at a high proficiency level
   (a) Improvement of group A only : dynamics, cresciendo/decresciendo
   (b) Improvement of group B only : opportune tempo, total feeling and expression, articulation, uniform tonality
   (c) Improvement of common : nothing
(2) Trainees who are at a low proficiency level
   (a) Improvement of group A only : nothing
   (b) Improvement of group B only : keeping tempo, total feeling and expression
   (c) Improvement of common : stumbling /stopping the performance

In the above, we denote the items related to correct playing by roman type and the items related to rich expression by italic type with underline.

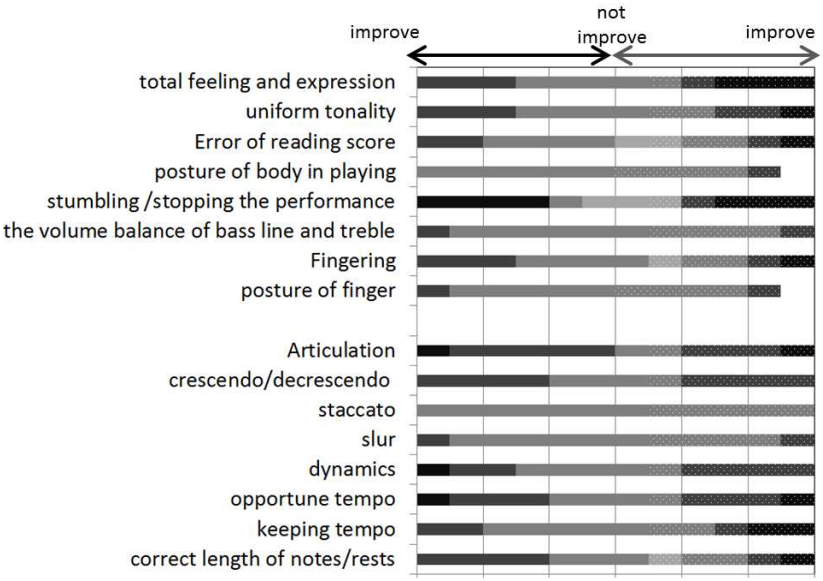
Table 1. The item on the evaluation. The left side is for the correct playing and the right side is for the rich expression.

Item for the correct playing	Item for the rich expression

Error of reading score	uniform tonality
Fingering	the volume balance of bass line and treble
stumbling /stopping the performance	Articulation
correct length of notes/rests	slur
staccato	crescendo/diminuendo (gradual changes)
opportune tempo	dynamics (sudden changes)
keeping tempo	total feeling and expression
	posture of finger
	posture of body in playing



(a) In case of high proficiencies



(b) Same as low proficiency

Figure 3 analysis of the trainee's improvement/degenerating condition which collected them from the reporting videos

3. Discussion

Based on these results, we discuss the difference in the improvement of piano playing skills derived from the available contents. In this research, we set the group A as the training group with the guide by annotated scores, and the group B as the one with the guide of model performance video. It means that

(1) group A : the trainees get the key points of piano playing from coded visible information,
(2) group B : trainees get the image as well as the key points of piano playing from visible and sound information, without any coded information,

and they make their practice with the aid of respective guides: coded information or non-coded information.

From Figure 2, we find the distinctive difference in the degree of improvement about "rich expression" comparing group A and B, for the trainees at a high proficiency level. Trainees in group A with sufficiently high piano skills made drastic improvement. We understand that they could derive the improvement of their skills from the awareness of start/end points encoded by the musical symbols related to expression such as dynamics or crescendo/decrescendo. By contrast, for the trainees at a low proficiency level, the improvement of their skills is observed for group B from the awareness of tone color such as total feeling, expression or articulation, and uniform tonality, which are difficult to read from the scores alone.

The trainees who used the model performance videos as a guide made a significant improvement in their piano skills related to the total feelings without distinction of the level of proficiency. It means the model performance video contents are very useful not only for piano playing and singing but also for piano playing itself. However, in the case of low proficiency trainees, since their piano playing skills are prematured, the salient improvement is the decrease of the number of stumbling /stopping the performance, which is basically derived from a lot of practice.

The reason why the trainees got little improvement on the items like "slur", "posture of body in playing" and "posture of finger" seems different depending on the trainees' skill level. For the trainees at a high proficiency level, have already mastered completely the item "posture of body in playing/finger", for which therefore they do not need to improve further. For the trainees at a low proficiency level, there is not enough physical/mental power to share to improve these items. In case of "slur", the reason why the trainees got little improvement for all proficiency levels will be that there is no idea how to improve their skills.

From the considerations mentioned above, we conclude that there are qualitative differences in the improvement of piano playing skills depending on the adopted methods. First, in the case of trainees at a low proficiency level, since first of all it is essential to trigger them to do a lot of practice, the difference caused by the types of available contents is rather secondary. In this sense, the submission of the trainees' piano performance itself seems effective to motivate them. Watching the model piano performance videos might promote them to make up the image of playing in their mind. Next, in the case of trainees at a high proficiency level, to comprehend the correct tempo and expression, of course, the help of multimedia contents is useful. By contrast, with respect to correct imitation of musical scores including expression, they need to recognize the start/end points of dynamics. In this sense, the annotated scores turned out to be more effective.

4. Conclusion Remarks

In this research, we made a consideration about the qualitative difference in piano playing skills improvement depending on the adopting contents, for effective designing of piano

playing skill education. In future, based on more detailed analyses and considerations on the properties of the respective contents developed for skill improvement, we would like to propose the finely-tuned most efficient educational design to learn piano playing skills. From these considerations we lead the difference of which derive of adopting contents.

Acknowledgements

The study described in this paper has been partially funded by the Scientific Research Expense Foundation C Representative: Muneo Kitajima (24531274).

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