

## *Original Paper*

# Implication of an Objectivist-Constructivist Blended Approach on Students' Achievement and Satisfaction in University-Level Beginner String Technique Classes

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### ***Abstract***

*Teaching music generally implicates multidimensional process whereby an assortment of approaches should be incorporated in order to provide the right and proper ambience for teaching and learning process. The need to explore and further understand the complexity in teaching beginner string technique class instigates the study which explore the implication of an objectivist-constructivist blended approach for teaching beginners string technique class. This paper explores the impact of blended-approach teaching on students' achievement and satisfaction in Malaysian university-level beginner string technique classes. Using a quasi-experimental non-equivalent control group post-test only design, students (N = 40) from two local public universities were assigned to one of two treatment condition: experimental group, where students were presented with blended approach instructional material, and control group, where students were presented with conventional instructional material. Students completed the course of 14 weeks. The implementation results revealed that the proposed blended approach contributes to meaningful and efficient learning.*

### ***Keywords***

*Beginner string technique, constructivism, instructional design, objectivism, teaching strategies*

## **1. Introduction**

In the sphere of today's education system, many educators sought to build an efficient and practical instructional material for conveying information to students. Educators, with the intention of enhancing students' learning of music particularly beginning string technique class, must grasp deeper

understanding and decide on the preeminent instructional strategy that influence students' achievement level. Through implementation of different instructional strategy, educators are able to choose the best methods that suite their students' need.

In the context of Malaysian education system, classroom music teaching practice in primary and secondary schools depend for the most part on conventional method where printed method books were used as the core instructional material for conveying information to the students. The use of alternative methods, which bloomed from researches conducted in string education, is still scarce in music education. This scenario imparts indication that music education in Malaysia is in need of enhancement and revolution in music teaching practice whereby educators have their own share in this revolutionizing process. On top of that, Mishra (2000) suggests that constant supplementary research is needed to explore the newly developed strategies and innovations in teaching and learning music.

Playing a string instrument requires the musician to have a combination of physical, intellectual, and expressive qualities. At beginner level, teaching these skills takes significant amount of time in order for students to develop good fundamental playing skills in both the individual and the ensemble setting. Thus, it is challenging for instructors to organize instructional materials within the limited time frame of 14 weeks to teach beginner string technique classes, which consist of violin, viola, cello, and double bass students. Developing these players in 14 weeks is definitely is not an easy task. Hence, instructional materials that are comprehensive and suitable for a 14 weeks course are highly necessary. Chen (2007) recommends that when dealing with a time-constrained instructional-materials design project, a blended approach comprising both constructivist and objectivist techniques is the most appropriate approach. For this reason, a blended approach was employed in the context of this quantitative study in order to overcome the time-constraint problems faced in teaching university-level beginner technique string classes. Chen (2007) suggests that constructivist instructional design promotes meaningful learning, while objectivist instructional design contributes to promoting efficient learning. Although studies have explored the effectiveness of this blended approach, limited empirical evidence is available on the outcome of this approach in music education, and most importantly in the local Malaysian setting.

In music education, different types of learning are involved such as playing an instrument, listening, and memorization. Hence, teachers in a music classroom need to be proactive in organizing daily teaching routines, since one teaching method might not work for all students and under all circumstances. Responding to this matter, Isbell (2012) promotes that music educators should be smart through grasping learning theories in music, savvy by dwelling on their personal teaching style and how they influence teaching effectiveness, responsive towards the diversity associated with music learning environment and skilled by being competent enough to teach in a variety of teaching approaches. The following section describes the underlying principles of learning theory as they provide the theoretical background for the instructional design process.

## 2. Theoretical Framework

### 2.1 Objectivist and Constructivist: Application of Learning Theory Epistemology in Instructional Design Practice

The concept of instructional design originates from behaviorist psychology. The general idea promoted by behaviorism is that complex tasks are broken down into smaller and simpler manageable tasks where students learn new behavioral pattern repeatedly until they become routine (Mergel, 1998). Instructional design evolves further into a more cognitivist domineering practice whereby instructional designers emphasized more on learner's cognitive and affective learning aspects (Chen, 2007). Cognitivist practice reckons that learners walk into a classroom with divergent point of view and it is the teacher's responsibility to assists students in digesting the every bits and pieces (Isbell, 2012).

Mergel (1998) clarifies that "...behaviorism and cognitivism are both objective in nature" (p. 15). Over the past two decades, instructional design practice has transformed from this objectivism (behaviorism and cognitivism) to constructivism approach (Bonk & Cunningham, 1998; Jonassen, 1992; Mergel, 1998; and Vrasidas, 2000). Mergel (1998) explicates that in the practice of instructional design, objectivist "support the practice of analyzing a task and breaking it down into manageable chunks, establishing objectives, and measuring performance based on those objectives" (p. 15). On the contrary, Mergel (1998) asserts that constructivism approach give emphasis to flexible learning approach.

Each of this learning theory has their own importance in the process of instructional design depending on the situation and setting they are applied in. Ertmer and Newby (1993) recommend that designers use continuum of learning as a reference point for synchronizing the learner, content and strategies. Based on the position of the learners in the continuum, designers are capable of designing the most appropriate instructional approach.

In deciding the most appropriate theory to be applied in the design process, Ertmer and Newby (1993) insinuate that designers should make decision based on learner's current capability and the learning tasks that are being taught. Vrasidas (2000) on the other hand personally suggests that designers stay away from the two outermost ends. Alternatively, Vrasidas (2000) emphasizes that objectivist and constructivist approach may perhaps be applied appropriately depending on the context, content, resources and learners.

### 2.2 Application of Instructional Design Principles in Teaching Beginning String Technique Lesson

Today's education system necessitates educators to develop an efficient and practical instructional material to facilitate students' learning process. For this reason, educators must decide on the most appropriate instructional strategy to optimistically influence students' achievement. One way of doing this is by means of educator's own initiative to implement different instructional strategy. Subsequently, educators or the teacher can choose the best instructional strategy that suite their students' need.

In a constructivist learning environment, the teachers are obligated to spend quite a lot of time and effort to construct a learning environment which is student centered and flexible in nature. In the meantime, the learning process which is deep rooted in real-life problem solving tasks also requires the

students to spend more time and effort in managing the given tasks. Conclusively, constructivist based teaching and learning process call for more time and effort from both the teacher and the students. In contrast, objectivist learning approach provides an environment which is not as time consuming as the constructivist learning environment whereby the instructional strategies and learning environment are well defined.

In choosing the best approach, Chen (2007) put forward that in constructing a time constraining project, "...a blended approach combining the strengths of constructivist and objectivist methods of teaching and learning could be used for the design of the course; thus, meaningful learning may still be achieved despite the intensive and abbreviated time frame" (p. 74). For this reason, an objectivist and constructivist blended approach seems to be the most appropriate approach for designing the instructional material for beginning string ensemble alongside the instructional design system of Dick and Carey seeing that the materials was intended for a course that have a limited time frame of 14 weeks lesson. Moreover, Dick, Carey and Carey (2005) did emphasize in their text book that their systematic design were deep-rooted in behaviorist, cognitivist and constructivist learning theories. The following section provides detail elucidation regarding the processes involved in designing objectivist-constructivist blended approach instructional material.

### **3. The Course and Design Specifications**

#### *3.1 Components of Instructional Design System*

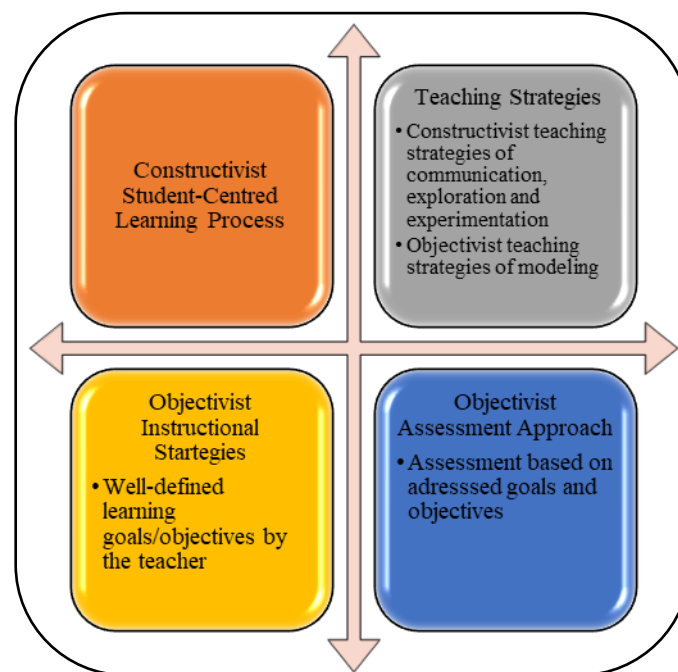
The process of designing a model for beginner string technique lesson involves considerations of essentials components of instructional designs specifically the teacher, learner and the subject matter. The first important component of the instructional system is the overall structure of instrumental lesson. The designing process involves stating the goals and objectives and fabricating a practical instructional material for administering the stated objectives which includes structuring lesson plan, lesson content and choosing the music. Decisions were made accordingly so that the designed instructional materials comply with the predetermined curriculum. Ultimately, assessments were executed to determine the effectiveness of the designed system and most importantly how much skills and knowledge acquired by the students through the designed course.

Beheshti (2009) explicates that learning style "classify how an individual learns best, and can provide insight into how a person process information" (p. 107). By understanding the principles underneath student learning style and identifying student's dominant learning style, an effective pedagogical approach may perhaps be developed to best suite students' eclectic learning style. Apart from learning style, the teachers' teaching style as well contributes to an effective teaching-learning practice. Groulx (2010) delineates that teaching style refers to individual practice whereby the teacher sought to balance his or her priority and the expected teaching tasks. Hence, teaching style is one of the important facets in the process of designing an effective instructional material for teaching beginner string technique class.

### 3.2 Conceptual Framework for Designing Beginner String Technique Lesson

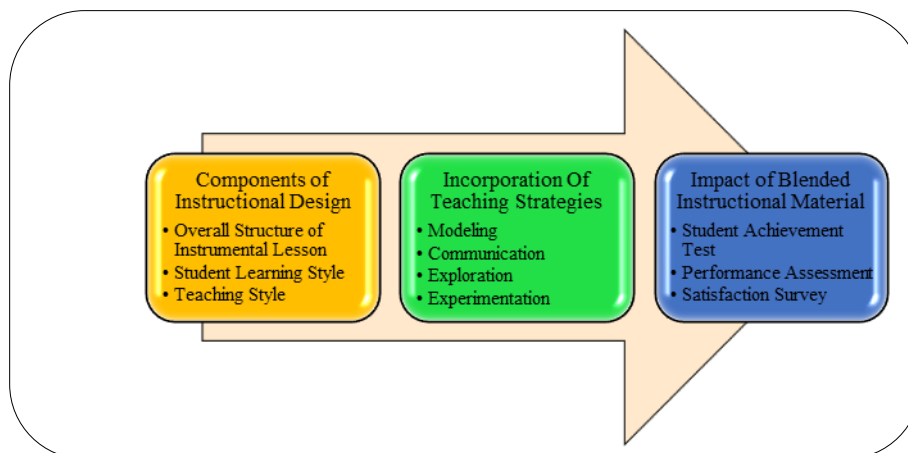
The conceptual framework of this study elucidates the synthesis of teaching and learning instructional material for university-level beginner string technique classes which integrates the instructional design system theorized by Dick and Carey (Dick, Carey, L., & Carey, J. O., 2005), alongside blended objectivist-constructivist epistemological approach.

A combination of objectivist and constructivist instructional design strategies were adopted in designing the instructional materials for teaching university-level beginner string technique classes. Based on Dick and Carey's (Dick, Carey, L., & Carey, J. O., 2005) instructional system design, the fourth stage involved writing performance objectives. This objectivist instructional strategy necessitated the researcher to set well-defined goals and objectives. In what follows, the instructional strategies used in achieving the stated goals and objectives are identified. By examining the literature related to constructivist and objectivist classroom practices, the researcher was able to implement constructivist teaching strategies of communication, exploration, and experimentation in the present study. In addition, the objectivist teaching strategy of modeling was integrated into the blended approach. This was employed to assist students in achieving the assigned learning goals and objectives.



**Figure 1. Theoretical Background: Blended Objectivist and Constructivist Approach**

In due course, the impact of the blended approach instructional materials on students' achievement and satisfaction were determined through researcher-designed instruments. The objectivist assessment approach used formative evaluation via an achievement test and performance assessments. In addition, a satisfaction survey was conducted as a summative evaluation. Both evaluation procedures were conducted at the end of the instruction period.



**Figure 2. Instructional Material Design Based on Dick and Carey Instructional Design System**

### 3.3 Instructional Material Development

A combination of objectivist and constructivist instructional design strategies were implemented in the process of designing the instructional material for beginner string technique class. The designing process takes into account the three important components of instructional design namely the student, teacher and subject matter. The process involves structuring of lesson, providing an environment that suits students' learning style, adjusting teaching style that agree with students' learning style and incorporation of effective teaching strategies such as modeling, communication, exploration and experimentation.

#### 3.3.1 Structuring of Lesson

##### i. Duration of Lesson

Each class per week lasts for 120 minutes following the usual university 120 minutes slot for class timetable.

##### ii. Lesson Structure

In this beginner string technique class, the lesson begins with an introductory section, which involves the process of tuning of instruments and a concise warming up sessions. Following this is the central section of the lesson where lesson content was delivered. In the closing section of the lesson, discussion for future lesson was made as well as taking attendances.

##### iii. Lesson Content

Hamann and Gillespie (2008) suggest that beginner string technique class should focus more on fundamental skills of good posture, instrument and left-hand positions, bowing skill habits and intonation. They further emphasized that these skills need to be taught with great care considering that the beginner class is the base for upcoming playing endeavor.

##### iv. Lesson Planning

The instructional material for beginner string technique class was design with the basis of framework

by Dick and Carey (Dick, Carey, L., & Carey, J. O., 2005) model. Ten stages were involved in designing the model.

### 3.3.2 Providing an Environment that Suits Students' Learning Style

In order to choose the best possible approach in teaching and learning process, the principle of students' learning style should first be well understood. In what follows, educators will be able to model an effective teaching learning approach to best suit their students eclectic learning style. Beheshti (2009) further emphasizes the importance of comprehending students learning style as follows:

Playing a musical instrument requires three primary sensory skills. Regardless of the instrument and genre, there is the physical aspect of holding and working with the instrument, the auditory sensitivity of listening to the sounds that are being created and the visual ability to read music and relay the message that the composer is asking the performer to express (p. 112).

In the context of the instructional material for teaching beginner string technique class, the lesson structure was design with the emphasis on providing an environment that suits auditory, visual and kinesthetic learners.

### 3.3.3 Adjusting Teaching Style that Agree with Students' Learning Style

In addition to students' learning style, another essential element that should be considered in constructing an effective teaching-learning practice is teaching style. Gumm (2003) elucidates that music teaching style is "the focus, intention, orientation, or priority underlying the entire pattern of interaction between the teacher, students, and subject matter" (*italics original*) (Gumm, 2003, p. 14).

In this blended approach, a student-oriented constructivist teaching strategy was implemented. This student-oriented approach, as suggested by Gumm (2003) put the accent on group dynamics, positive learning environment and a minor use of assertive teaching. The blended approach instructional material was intended as an alternative approach to conventional teaching method which focused more on teacher-controlled oriented teaching. Excessive use or assertive teaching and less student independence were the main approach in this teacher-controlled approach (Gumm, 2003).

### 3.3.4 Incorporation of Constructivist Teaching Strategies such as Modeling, Communication, Exploration and Experimentation

Studies conducted concerning learning theories epistemology have bring to light that constructivist teaching strategies is the most appropriate learning theory to be employed in the context of teaching beginner string technique class by means of instructional method. Constructivist teaching strategies was chosen seeing that the principles of constructivism nurture students' potentials when provided with the right and proper atmosphere (Scott, 2010). In terms of classroom application, constructivist learning environment is practical in the music classroom by utilizing strategies such as communication (Isbell, 2012), improvisation and experimentation (Holsberg, 2009), exploration (Scott, 2010) and modeling (Scruggs, 2008).

Modeling in music education is what Greer (1980) defines as "the process whereby learning takes place through imitation" (p. 137). He also stressed that the process of developing musical performance

“involves providing the students with a model or example of the music or the technique (visual and/or aural and/or kinesthetic). The importance of a model to musical learning must not be overlooked” (p. 66). Haston (2007) on the other hand clarifies that:

The best use of modelling is to introduce new musical concepts and performance skills before students see the printed music (I use modelling to demonstrate concepts like articulation. Students’ performance demonstrates their understanding of the idea). Students learn the application before the theory. The new musical concept or performance skill is then practiced in various contexts and with specific printed music (p. 26).

In teaching and learning process, the teachers’ capability to communicate effectively is a vital element in constructing a promising teaching process (Vandivere, 2008). In addition, Smyth (2000) emphasized that communication provides teachers ample information regarding their students. Vandivere (2008) states that music teachers communicate with their students through facial expressions, gestures, and body language. Casey (1991) in his chapter of communication clarifies that communication on a regular basis can be categorized into two basic categories of verbal and non-verbal communication.

Scott (2010), in a paper entitled *A Minds-On Approach to Active Learning in General Music* recommends exploration as the appropriate teaching strategy for application in a constructivist classroom. Holmqvist (2004) clarifies that “exploration is concerned with creating variety in experience, and thrives on experimentation and free association” (p. 70). Holmqvist (2004) adds further that “exploration creates variety in experience through search, discovery, novelty, innovation and experimentation” (p. 71). Exploration in music allows student to creatively and imaginatively works through musical score either by seeing or hearing. In the creative thinking process, following exploration, experimentation is another form of teaching strategy in nurturing creative thinking and activity in music education.

### *3.4 Formative Evaluation*

The achievement test was constructed to evaluate the cognitive aspect of the student. The test was developed based on beginner string technique class contents. The test consists of multiple choice and short answer question and was modeled after the Bloom taxonomy.

The individual and ensemble performance assessments were a psychomotor task in focusing what the person is able to do. Students were given two pieces, one in week 7 and another in week 13 to help them prepare for the performance assessments. Assessments were conducted both individually and in ensemble. The final score for performance assessments was derived from adding together the total individual score achieved by a student and their respective group ensemble performance score.

### *3.5 Summative Evaluation*

The satisfaction survey was designed to provide feedback from each student on the effectiveness of both instructional materials. The questionnaire consists of 20 questions with five-point likert rating scale. The score of all questionnaire items were added up to give a total ordinal score.



#### 4. Methodology

A quasi-experimental non-equivalent control group post-test only design was implemented to determine if there is a statistically significant difference in students' achievement between students who were exposed to the blended approach teaching and students who were taught using conventional teaching. Quantitative analysis was executed on data collected from three main sets of instruments: student achievement test, performance assessments and satisfaction survey.

The sample for this study consisted of 40 university students from two public universities in Malaysia. These students were diploma or degree music students who had attained approximately the same level of music theory and aural training skills beforehand, and had no prior string music training.

The experimental group received the blended approach teaching material as instructional material in the beginner string technique class lessons. Meanwhile in the control group, *All for Strings: Comprehensive String Method Book, Volume 1* (Anderson & Frost, 1990) was used as the conventional teaching instructional material. Both groups were assigned for a 14 week classroom sessions imitating the usual academic calendar in Malaysian universities. During the time span of the study, both groups covered the same duration of lessons and lesson content for beginner string technique class. The researcher developed different lesson structure and lesson plan for each group. At the end of the 14 weeks, measurement tools were employed. Following the post-test, statistical analysis were carried out to determine the outcome of the treatment given to students.

##### 4.1 Validity

###### 4.1.1 Validity of Instrument

In this study, the researcher acquired content-related evidence of validity for the instruments used. The researcher sought advice from two experts to verify the validity of the designed instructional material i.e. one music education expert and one instructional expert. These panelists have years of experience in their field. The panelists were asked to review the instructional material and research instruments and complete the content validity form. The content was evaluated using a five point likert scale format (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree). The music education experts were asked to examine the contents of both the blended approach instructional material and the conventional teaching instructional material lesson plans in order to determine its appropriateness as well to validate the three research instruments in measuring the intended measurement. The instructional expert was requested to review the blended approach instructional material which was based on the Dick and Carey (Dick, Carey, L., & Carey, J. O., 2005) model.

###### 4.1.2 Threats to Internal Validity

During the study, possible threats were taken into account in the designing stage of the research. The following table provides ten possible threats to the internal and external validity of this study and actions taken to deal with these threat.

**Table 1. Threats to Internal Validity**

Threats	Intervention
History	This threat was addressed by conducting the research at similar point in academic schedule for both experimental and control group. For this reason, both group experienced equal affect during the course of the study
Regression	To address this possible threat, the research utilized equivalent entry level for both the control and treatment group. Hence, extreme scores will not be the issue since the entry behavior for both experimental and control group were similar.
Diffusion of Treatment	This threat was attended by assigning the control and experimental group at different universities with the intention that both groups do not interact or communicate with each other.
Selection	In dealing with this possible threat, purposive sampling enables researcher to select students with equivalent characteristics who represents the normal comparison group that is university student.
Mortality	This threat was addressed by employing purposive sampling. By applying this type of sampling procedure, the researcher may perhaps substantiate that the lost subjects were similar to those remaining on related characteristics. Hence those subjects who were lost conclusively would respond similarly to those who remained.
Maturation	In dealing with this possible threat, the researcher controls maturation effect by utilizing a perfectly selected comparison group specifically having similar characteristics so that both group mature at the same rate throughout the research.
Compensatory/resentful demoralization	This threat was attended by assigning control and treatment group at different university with the intention that each group did not know what teaching material the other group was receiving. This forms of allocation procedure minimized demoralization in control group which can lead to low level of performance.
Compensatory rivalry (John Henry effect)	To address this possible threat, the researcher assigned the control and treatment groups at different universities with the intention that each group did not know which group they are assigned to as well as what teaching material the other group was receiving. For this reason, this action minimized novelty in treatment group.
Testing	This threat was taken care of by the practice of purposive sampling with both groups having similar entry characteristics enables researcher to conduct posttest only assists in minimizing pretesting effect.
Instrumentation	In this particular study, the threat of instrumentation may perhaps be thrust aside seeing that this study involves only posttest procedure.

**Table 2. Threats to External Validity**

Threats	Intervention
Interaction of Selection	This threat was taken care of by restricting the generalization the finding of the study only to populations who retained similar characteristics to the sample utilized in this study which is university-level (diploma or degree) music students who had attained approximately the same level of music theory and aural training skills beforehand and have no prior string music training
Interaction of setting and treatment	To address this possible threat generalization of the finding of the study were restricted only to populations who retained similar setting characteristics to the setting utilized in this study.
Interaction of history and treatment	The threat of interaction of history and treatment to the external validity emerges as a result of time restriction. Hence generalizations were not possible to previous or upcoming circumstances. The results of the study signified the association between the implication of the blended approach teaching and students' achievement as well as satisfaction at that particular time only.

#### 4.2 Reliability

A pilot study was conducted to determine the reliability and practicality of the blended-approach instructional materials. This pilot study involved 16 students who represented the sample used in the main study. The reliability of the achievement test was determined using the Kuder-Richardson reliability test (Fraenkel & Wallen, 2008). The Kuder-Richardson 20 was used to analyze the internal consistency of section A of the achievement test, which consisted of 15 multiple-choice questions. The results of the reliability analysis revealed that the internal reliability coefficient was reliable, with a Kuder-Richardson 20 value of .70. The reliability for sections B and C, which comprised five and two short-answer items, respectively, were determined using Kuder-Richardson 21. Internal reliability for sections B and C was proven as well, with a Kuder-Richardson 21 value of .703. Additionally, using data obtained from student achievement test presented in the pilot study, item analysis was conducted to examine the quality and reliability of the researcher made test according to the measure of item difficulty, item discrimination and distractor analysis.

The internal reliability for the individual performance assessment was determined through the Cronbach's alpha (Muijs, 2004) statistical test. Statistical analysis produced an encouraging alpha value of .966. For the ensemble performance assessment, inter-rater reliability was determined using Kendall's Coefficient of Concordance. The results from inter-rater reliability test indicated a significant degree of agreement between the two judges ( $p = .121$ ,  $W = 0.912$ ).

Internal reliability of the student questionnaire was again determined using Cronbach's alpha. Analysis conducted on each of the subscales revealed that the internal reliability of the questionnaire ranged

from moderately low (.541) to high (.916). The alpha value for the total questionnaire was found to be very encouraging, with a value of .916. Moreover, the subscales for the four teaching strategies demonstrated moderately high reliability coefficients ranging from .666 to .791. The results of the pilot study indicate that the blended-approach instructional materials were reliable for teaching university-level beginner string technique classes in the actual study.

The pilot study was conducted on the three research instrument to ensure that the designed instruments are capable of measuring what they were supposed to assess. The problematic items revealed in the item analysis were improved. In terms of the designed blended approach instructional material, minor adjustments were made to the power point teaching materials such as adjusting the font for the presentation slide. The results of the pilot study demonstrate a trustworthy end product on the experimental group through the use of the blended approach instructional material. For that reason the actual study was carry on as intended using the designed instruments with minor adjustments.

## 5. Results

When the score of the achievement test score was analyzed it was found that the mean score of the experimental group was higher ( $M = 69.00$ ) compared to the control group ( $M = 62.05$ ). The standard deviation of the achievement test score for the experimental group was 10.96 which is slightly larger compared to 10.62 for the control group. Further statistical tests revealed that the mean rank for the experimental group of 24.28 exceeds the control group of 16.73 in the achievement test. The results of the Mann-Whitney U test found this difference to be statistically significant:  $U = 124.5$ ,  $p = .04$ .

When the score of the individual and ensemble total rubric scores was analyzed it was found that the mean score of the experimental group was higher ( $M = 63.95$ ,  $SD = 7.84$ ) compared to the control group ( $M = 61.81$ ,  $SD = 5.97$ ). In spite of this, results of the t-test revealed this difference to be not statistically significant:  $t = .971$ ,  $p = .338$ .

In terms of satisfaction survey, results of the Mann-Whitney U test revealed that on the whole there was no significant difference between the students' satisfaction in the experimental group and the control [ $U(N = 40) = 153.0$ ,  $p > 0.05$ ]. The mean rank for the control group of 22.85 exceeds the experimental group of 18.15 in the total ordinal score.

## 6. Discussion

Students' achievement was examined by means of a test to measure students' cognitive aspects. The objectives of the test were to measure students' knowledge and understanding, and their ability to analyze and apply the knowledge obtained. Results of the study indicate that the blended approach to teaching was successful in terms of assisting beginner string technique students in acquiring verbal information and intellectual skills. It is possible that the positive outcome was caused by the hybrid learning nature of the objectivist and constructivist blended approach. Factors involving the learner and learning process, such as learning styles, motivation, self-regulation, and active learning, may have

encouraged the students in the experimental group to perform better in the achievement test. Students' musical performances were examined by means of individual and ensemble performance assessments. These assessments were designed to measure students' psychomotor learning and measure students' proficiency in performing the acquired playing skills. When analyzed as a whole, results were not significant for students' total individual rubric score. However, the mean rank for the experimental group was higher than that for the control group. In addition, for each of the performance aspects, the experimental group demonstrated higher mean scores in all five performance aspects, but only two of the aspects demonstrated significant findings; these were the left-hand technique and bowing technique. The findings indicate that blended-approach teaching is effective in developing students' left-hand technique, as well as bowing technique. There are several possible explanations for this result. The sample size utilized was small, with only 20 students in each group. A larger sample, on the other hand, might have yielded different findings where a more powerful statistical parametric test could be employed to provide distinct results for the performance assessments. It seems possible that other facets, such as quality of the instruments used and rubric used for the performance assessments may have affected students' achievements in the assessments. Performance assessments rubric with more discrete criteria would have a more positive impact on the results.

Ultimately, students' feelings towards the study were examined using a satisfaction survey. Conventional teaching was found to provide more satisfaction to the control group, compared to the blended approach applied to the experimental group. The reason for this is that the total ordinal satisfaction score demonstrated by the control group was superior to that of the experimental group. However this difference was proven through statistical analysis ( $p = .203$ ) not to be significant.

It is possible that these findings transpired as a result of students' different learning styles. The designed instructional material may have used learning modalities that did not suit the students' preferred learning style. Hence, the control group's feedback on content and teaching strategies was slightly more encouraging than that for the experimental group, even though no significant differences were found.

## **7. Implications**

The main contribution of this research is that it supplements existing knowledge and understanding of the concepts underlying behaviorist, cognitivist, and constructivist approaches to music education. Music educators have long highlighted a need to implement these learning theories in instructional practice, since learning theories facilitate in elucidating how a person learns. Therefore, it is important for music educators to begin to understand these learning theories. This study provides educators and researchers with information that could assist them in the process of improving the teaching and learning process by using learning theories as a theoretical framework.

The findings of the study have contributed to the field of music education by proposing four main teaching strategies for university-level beginner string technique classes. These strategies are

communication, modeling, exploration, and experimentation. The evidence from this study suggests that teaching strategies such as those used in this study play a part in instructional effectiveness. Music educators might consider integrating these teaching strategies into their instructional practices. Additional research that supports the effectiveness of teaching strategies in beginner string ensembles could provide impetus for music educators to include these as teaching strategies as part of their instructional materials.

“These blended approach instructional materials for teaching beginner string technique classes are the first of their kind” (Sabri, 2017, p. 161). Music educators may discover the paper helpful, as it delineate a variety of data with respect to topics from the hypothetical point of view of learning theory, instructional designs, components of instructional design, teaching strategies, and assessment evaluation. Furthermore, it adds to current literature regarding the aspect of instructional design practice in music education; which should instigate further research.

## 8. Conclusion

Based on the results obtained from the data analysis, the following conclusions can be drawn from the present study. Students’ achievement was examined by means of a test to measure students’ cognitive aspects. The achievement test was designed to measure how much students had learned throughout the 14 weeks of treatment. The objectives of the test were to measure students’ knowledge and understanding, and their ability to analyze and apply the knowledge obtained. Based on the results of the study, it can be concluded that the blended-approach instructional materials were beneficial in enhancing students’ achievement based on the significant difference found.

Students’ musical performances were examined by means of individual and ensemble performance assessments. These assessments were designed to measure students’ psychomotor learning. The aim of the performance-based assessments was to measure students’ proficiency in performing the acquired playing skills. Blended-approach teaching was found to be as effective as conventional teaching, since no significant differences were found in students’ performance assessments ( $p = .338$ ). The only significant difference was found in students’ individual performances, in relation to left-hand technique and bowing technique.

Ultimately, students’ feelings towards the study were examined using a satisfaction survey. Conventional teaching was found to provide more satisfaction to the control group, compared to the blended approach applied to the experimental group. The reason for this is that the total ordinal satisfaction score demonstrated by the control group was superior to that of the experimental group. However this difference was proven through statistical analysis ( $p = .203$ ) not to be significant.

The aim of the study was to develop instructional materials incorporating Dick and Carey’s instructional system design with an objectivist-constructivist blended approach for teaching university-level beginner string technique classes. Summative evaluations evidenced the positive results of using a blended approach to overcome the constraints of limited instructional time in

designing beginner string technique instructional materials. Hence, it can be concluded that the designed instructional materials are practical and efficient in teaching this type of class. Empirical studies implementing this approach, with improvements made to the instructional design and further data collection, are needed to validate the effectiveness of the blended approach. Further studies should include improvements in the sample size, increase the number of meeting times per week, and amend the performance assessment rubric.

There is overwhelming evidence corroborating the notion that learning theory approaches have captured the interest of music educators. While the process of turning learning theory theoretical principles into embodied action is highly subjective, the way that individuals take full charge of this process must be clearly understood by music educators. Hence, the purpose of this paper was to provide an array of information regarding this subject matter from the theoretical perspective of learning theory, instructional design, components of instructional design, teaching strategies, and assessment and evaluation. This paper also provides an informative and useful framework for music educators to personalize and adopt this new paradigm in their daily teaching routine towards becoming more efficient and effective educators.

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