Evaluative Study on the Impact of Synchronous Online Education of Indian Classical Music

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Abstract—*Indian classical music is found to be one of the most ancient forms of music. We may find only some researches relating to the history and evolution of Indian classical music and almost none of them based on the online education of the same. The synchronous online education of the Indian classical music is currently being practiced by many classical music tutors around the globe. This study aims to analyze the on-going practices with reference to online teaching of Indian classical music through synchronous video conferencing, by examining teaching practices, learner response and through the views of the experts. It analyzes the success of integration of ICT enabled classes, specifically the amount of technology used, the ways in which the technology is used, and teacher's and student's expectations about learning. To identify parameters, this study utilizes models such as Badrul H.Khan's dimensions of education and the technological acceptance model. The various parameters includes the learning environment and purposes, student engagement, resource utilization etc., The study goes onto reveal that a lot of qualms surrounding the online learning lies with the digital natives rather than the more technologically challenged generations. As ICT stands as a beacon of hope for diverse fields, this research intends to find that, to what extent the quality of the traditional Indian classical music is being altered while these online teaching modes are utilized by the music industry.*

1. INTRODUCTION

Music is inseparable from humans because it is often connected to them in one way or the other. Realizing that and developing musical knowledge depends upon one's own individual interest and situation. In a public dialogue about music education, everyone seems to have an opinion. Depending on their own experiences in school music lessons, their music self-conception or perhaps of experiences in music as a hobby outside school, some people have a positive point of view and some have a negative point of view. The question here is, if these perceptions should determine the aims of music education. Undoubtedly observing music education at schools of today offers more or less adequate information of what music education is at the present; this information could be used when music education is developed for the future. It is easy to see that music education is closely connected to human life on an individual level, a public cultural life level, but also the professional level of the music teachers and students.

Pt.Dinkar Kaikini the veteran Hindustani classical singer found that his interpretation of certain phraseology did not concur with his teachers. He boldly said so, and the teacher says "I will not sing it any other way, but you may choose to, I am very closely bonded with the way my teacher taught it to me" . There will be no chance for success of any educational innovation if the teachers are not provided with the skillset and knowledge needed to practice them. That revealed a very important aspect of the thinking. Teachers and students would blindly teach and learn the way their teachers had taught them, because not only were they the primary source of information and their only source of information. Swaminathan (Mridangam artist) states that, music education was available in olden days but to reach out to those teachers were a great task. They had to migrate from their own lands and shift themselves in order to pursue this particular art from the one he/she is desperate to learn from. But now due to the advancement in ICT (Information and Communication Technology) the world has shrunk. One can learn from his/her desired teacher from any part of the world. Information and communication technologies have revolutionized our society. Technology has drastically penetrated into various parts of society and in all aspects of social and cultural lives.

Traditional music education, the "gurukulam" systems have declined as the days have passed by. Only a very few institutions or individuals are still following this culture in India. After that the school education system turned into a one-to-one learning system. Now for the past couple of years the online synchronous music learning culture is becoming prevalent among the learners. Presently, one of the major changes in the education scenario is that there has been a general shift from teaching to learning. The teacher's role has considerably changed in a way to assist students to become good learners.

The ultimate aim of online education is to bridge the gap between the education provider and a student by providing a more engaging, interactive and mass reach platform. Important features such as live instructions, video conferencing, remote test administration and peer to peer networking equip online

education to complement the brick-and-mortar classroom training.

Ishan Gupta states that according to the <u>Docebo report of July 2014</u>, the international market for self-paced e-learning is growing very fast in the developing economies of the world – the highest being 17.3% in Asia, followed by Eastern Europe 16.9%, Africa 15.2% and Latin America 14.6%. The UNESCO Information and Communication Technologies in Teacher Education notes that the technology-based global economy also poses challenges to countries as national economies become more internationalized, with the increasing flow of information, technology, products, capital, and people between nations. As it is evident and reported by the technological acceptance and determinism theories, society has by and large embraced the digital age, it was only natural that musical learning would thus move digital as well.

Juvonen et al has summarized that the connection of music learning and enculturation processes, which take place in socialization is where we learn the values and ways of action in the society are obvious. More or less coincidental stimuli from the environment begin to develop a system of auditory schemes, which later leads to development of music taste that is controlled by musical preferences and rejections. This cultural socialization processes should be supplied by music education not only by taking advantage of inductively developing education, but also through offering widening new stimuli and deepening the level of understanding to the conceptual area of knowledge [13].

Technology surpasses the barriers of gender, geography, community, locality and everything. As Swaminathan mentions "music learning just requires interested students who are ready to acquire knowledge available anywhere and everywhere. Everything else will take back seat when compared to the thirst for knowledge".

Online learning has many advantages for the education sector. ICT in education has two major functionalities. It can be used to support the academic learning curriculum of various subjects. It can also be used for the acquisition and development of specific skills in digital technology and information.

Incorporation of online education in the music industry has been a way to break down and simplify the process of music teaching and learning rather than to enhance and enrich the music training in itself. Even though online music education is very helpful in giving importance to innovation and technology based learning, it reduces the salient relationship between the guru and the shishya. There are no researches pertaining to understanding the best possible teaching methods without sacrificing on the sanctity.

This study aims to critically analyze and evaluate the effectiveness of teaching Indian Classical music via synchronous video conferencing over the Internet, understand whether online music learning can supplement the traditional way of music learning and understand the innovative techniques that are adopted by the teachers to teach their students. Since this is going to be the future, this analyzes whether music can be delivered without any dilution of its aesthetic nature and are there any alternative methods which stand feasible enough to be followed.

2. LITERATURE REVIEW

The relevant researches on the usage of ICT in music education [21] focus more on the composition of music rather than the teaching and the learning process of music education. Webster's review of four recent, American-based quasi-experimental and experimental studies were also based on music listening, and/or musical skills development and did not place an emphasis on the acquisition of practical music skills. This review of literature therefore turns its interest towards research related to Information Communication Technology (ICT), its development and related factors that directly or indirectly impact online education in music.

"Developments in Information and Technology are bringing about a second industrial revolution, but the new drivers of information are information, data, computer and connectivity and not iron and coal. The future is undisputedly ''digital'' and concern has been expressed elsewhere on the effects of digital restructuring in deepening economic, political and social inequalities" [10].

The use of information and communication technology (ICT) brings about a powerful learning environment and it transforms the learning and teaching process in which students deal with knowledge in an active, self directed and constructive way [28].

According to Murray [21] music technology refers to "any situation in which electronic technology is used to control, manipulate or communicate musical information". They also suggest that development marks a defining point in music education.

Davies and Hassan, Observed that with the advent of computer mediated interaction, education and technology are the factors that pertain to cultural change. He argues that "Progressing at warp speed, technology has left culture far behind, and culture is chasing technology, struggling to keep the gap from widening even more" [11].

ICT has rendered activities less dependent on venue and time of the day. It is asserted that 'ordinary' people in prosperous societies are increasingly on the move and communicating more in connecting with absent others [17].

According to Albirini, teachers' attitudes toward computer technologies are also related to teachers' level of competence in using the technology. In addition, they have a significant impact on the openness to new experiences, and also reflect and implement the changes [1].

Helen Couclelis claims that ''It is not distance that is dead; it is activity that is disintegrating''. Her point is that the increased use of ICT is leading to a fragmentation of activities and to a greater flexibility that is resulting in more demand for transport. Others, too, have studied the fragmentation hypothesis and identified groups that share a ''fragmented working life'' [18]. The combination of increased mobility of people, increased mobility of media technologies and saturation of public spaces and transport nodes with flexible wireless technologies has facilitated this fragmentation. People on the move are ever more able to connect and reconnect beyond the home. Kwan's interpretation of this development is that "the spatial structure and processes of interaction among individuals have become much more complicated in this age of mobile communications" [16].

Mooij, [20] argued that technology can assist in the gradual transformation of current educational practice, and at the same time can provide ongoing feedback concerning pedagogical or educational processes and effects. ICT can help to order and present curricular themes, concepts and sub concepts; present instructional lines to different learners or groups of learners at different places at different times; and assist in including or evaluating quality or diagnostic indicators in these lines. ICT can also help to assess each learner's initial levels of competence; provide for stimulating individual or shared learning experiences; record and evaluate progress in relation to specified outcomes and group norms; and facilitate timely availability of specific instructional lines and learning appliances for marginal learners or learners at risk. Learners at risk are defined as those learners who deviate significantly from the general or subject mean of competencies of learners in a small group, class, unit, location, school, region, or country.

It is quite evident from this literature that the music industry is complex and continually evolving that has evolved not only musically but also with the technological advancements and innovations. It is clear that technological development has radically affected everything from musical instruments themselves to the fabrication of new musical styles. For this development, technological change has been the key. The new technologies can be divided into two sections: doing old things in new ways; and doing completely new things.

The use of ICT in education is divided into three major objectives [22]

i) The use of ICT as object of study,

ii) The use of ICT as aspect of a discipline or profession, and

iii) The use of ICT as medium for teaching and learning

Loveless [19] put forth the idea that teachers' perceptions of ICT are fashioned by their 'identity and participation in wider cultural and social spheres which influence the professional arenas and settings in which they practice.

Positive attitudes towards ICT or constructivist perspectives on learning will not automatically lead to the uptake of ICT or innovative teaching practice as Judson [12] suggests that there may be little correlation between stated beliefs and actual practice.

Musical instrument instruction is generally based on intuition, common sense and tradition [26]. Teachers practice what they learned from their previous teachers with the traditionalized master-apprentice understanding; and they intuitively guide their students.

Sorienta and Jimoyiannis [25] identify three types of teacher stances: traditional teachers, non-traditional teachers and undecided teachers. They also make note of the role assessment plays in classroom activities chosen and the potential of ICT initiatives to enhance teacher confidence. Their categorization of teachers has similar characteristics to the model proposed in this paper. However, the model in this paper identifies four types of teachers in relation to ICT integration into their practice. These four types are

(i) A Contented Traditionalist,

(ii) A Selective Adopter,

(iii) An Inadvertent User and

(iv) A Creative Adapter.

This literature review shows how much importance is given to the learning environment and how important is the recreation of the traditional environment in an internet mediated music education. The review of literature helped identify theories and models that can function as parameters for evaluation of the research methodologies employed:

1. Badrul.H.Khan's Dimensions of Education Model

2. The Technological Acceptance model of Davis and Venkatesh

3. Technological Determinism Theory of Thorstein Veblen

4. Bozaslan, Durdukoca, Kaya et al's application of Experiential Learning Theory

5. Sorienta and Jimoyiannis identification of teaching styles and attitudes.

6. Shulman's Pedagogical content Knowledge Domains

3. METHODOLOGY AND THEORETIC FRAMEWORK

3.1 Methodology

An entirely qualitative approach was taken for this research paper which utilized three methodologies:

• Expert Interview

• Observation study

3.1.1 Expert interview

Expert Interview is a qualitative method that helps in understanding perspectives about various practices in the teaching of Indian Classical music via synchronous video conferencing over the Internet. The persons who were interviewed consist of both students and teachers dealing with the synchronous online method. Teacher's samples include experts, upcoming and beginners who have started teaching online. Student's samples include advanced level learners, medium level and beginner level learners. Interviewees include stalwarts such as Carnatica brothers (Shashikiran K N and P Ganesh), V Nandhini , Lakshmy Manoj and many others (complete list provided in appendix 1)

3.1.2 Observational study

Over a 3 month period, 96 teaching sessions were observed, covering lessons of 8 learners. These teaching sessions included three one-to-one sessions (keyboard, vocal and mirdhangam) and one group session which had five students and one teacher. These lessons were evaluated under various parameters (posed as questions) selected based on Badrul H.Khan's dimensions of education model.

3.2 Theoretical Framework

3.2.1 Badrul H.Khan's Dimensions of education model

Eight dimensions in the presented model by Badrul, H. Khan

- **Educational dimension:** It involves the process of teaching and learning and the analysis of different items such as as content analysis, idea analysis, program planning, methods adopted, training schedule, strategies and the CMS used as an e-learning platform to communicate.

- **Technical dimension:** Any technical infrastructures used such as hardwares and softwares used to transmit the information from the source.

- **Communicative platform:** The mode of communication involved. The feelings and receipt of e-learning programs. It may consider different problems such as web page planning and internet site, content plan and also further tests as well.

- **Evaluation dimension:** It is also including measurement of learners and also self evaluation of the environment

- **Managerial dimension:** The quick adaptation of new technology and upgradation to suit the current trend in the field and in the manner of disseminating the information.

- **Supporting resources dimension:** The support from the resources used by the users. This involves the server support, internet access, technology support and educational support required to conduct an uninterrupted learning process.

- **Organizational dimension:** This is related to the administrative problems such as IT services, budgeting, media services, communication services, marketing. Scientific problems which includes scientific support, technological support. Student's problems such as enrollment process, consultation, financial assistance, schedules, graduation, regulations and everything related to e-learning.

- **Ethical dimension:** It is related to cultural, social, geographical variety, variety of learners, access to information, customs and ethical problems.

3.2.2 The Technological Acceptance Model

The Technology Acceptance Model (TAM) deals with how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably:

- Perceived usefulness (PU) - This was defined by Fred Davis as "the degree to which a person believes that using a particular system would enhance his or her job performance".

- Perceived ease-of-use (PEOU) - Davis defined this as "the degree to which a person believes that using a particular system would be free from effort".

3.2.3 Technological Determinism Theory

Technological determinism theory presumes that a society's technology drives the development of the social structure and the cultural value of the society. The term is believed to have been coined by Thorstein Veblen (1857–1929), an American sociologist.

Most interpretations of technological determinism share two general ideas:

- That the development of technology itself follows a predictable, traceable path largely beyond cultural or political influence, and

- That technology in turn has "effects" on societies that are inherent, rather than socially conditioned or produced because that society organizes itself to support and further develop a technology once it has been introduced.

4. ANALYSIS AND INTERPRETATION

The analysis and the interpretations are based on the expert interviews and the observational study the research has performed.

4.1 Expert Interview

This includes important points that have emerged from the Expert interviews.

4.1.1 Access and availability of the teacher

Abirami Krishnan says, she can easily get the access to reach her guru anytime she wants via skype or whatsapp by just sending a message. This helps her clarify her doubts then and there without any delay.

4.1.2 The teacher is most important factor

Kumbakkonam Swaminathan- As a child, I was craving to learn from great gurus who lived far away from my village. Henceforth, I had to shift from my place, come to chennai and stay in a house and learn from my desired guru when I was almost 20 years old. It is a very long process and requires great boldness and willpower to stay alone in chennai at that age. Now, due to the advent of these online synchronous methods to learn music, anyone from any part of the world can get access to their desired guru and learn from their respective places itself. If I had this technology, by now I would have reached great heights.

4.1.3 The teacher student relationship or Guru-Shishya Parampara

Kumbakkonam Swaminathan- In traditional way of learning, there will be a strong eye contact level between the teacher and the student. This will help the student learn very quickly and remember well. When I say the notes my student will repeat it instantly without any lag in the thalam. These aspects might sound insignificant, but all these help in constructing a strong fundamental structure for the child.

Chitravina P Ganesh- If some learning is happening, I personally feel there should be a face-to-face eye contact between the two parties. Only then the knowledge will reach in a right manner. Yes, I accept, one can learn from internet, cassettes, cds and many other ways, but directly learning from a guru might take 2 minutes; learning from these might take 5 minutes. This is my personal opinion.

4.1.4 Teaching methods adopted

Chitravina P Ganesh- I generally send the notes in mail or whatsapp, if necessary, to my students prior to my next class so that they can have a basic idea about what it is and later after teaching them the song, it will be useful for them for future reference.

Kumbakkonam Swaminathan- I record and mail them audio clippings of the mirdhangam notes for their reference.

Nandhini V- I write the entire structured notes of the song and mail them and sometimes while I sing, I ask them to record it so that they can practice the same. I also upload video recording of the playing for my students to understand the finger movement on the instrument.

4.1.5 The Quality of music

Shashikiran K N- The quality of the music as such will not get reduced may be the quality of the internet will disturb the class. Otherwise this is found to be very efficient to impart knowledge. When we are into serious learning process, suddenly our internet connection will get reduced. These will really spoil one's determination towards the work.

Nandhini V- Quality as such will not get reduced, but a monotonous way of communication happens. Again this depends on the student's interest. This is because the ambience created is restricted to the screen size of the monitor which is not happening in the traditional mode of music education.

4.2 Remarks on the usability of the commonly used video conferencing software for virtual learning in Indian classical music

The following is the evaluation of the experience of the researcher while using the most common software used for mediated synchronous online learning in Indian classical music. Screenshots of the software usage are attached in appendix.

4.2.1 Streaming Delay

Is there a delay in the video streaming between the two users. This is an important parameter as streaming delay might be a reason for disorienting effect that obstructs proper learning.

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Softwares	Streaming delay
Webex	When the internet connection is good, it works well. Holds an average amount of users in India
Skype	Works average on all networks
Google hangouts	Usage of additional features sometimes creates streaming lag.
WizIQ	Advisable when the internet connection is fast or there might be a streaming delay on usage

4.2.2 Additional features

This looks for the software has the most additional features that facilitate more effective learning in online music education.

Software	Additional features
Webex	Includes additional features like screen sharing, record, etc
Skype	Considerable amount of features available, but difficult to use and mostly not available on free version and is present only in the premium version.
Google hangouts	All features present in Skype and Webex and some more like chat options(sharing pictures/comments)
WizIQ	More like a virtual classroom, class recording and more features are available

4.2.3 Audio Video Sync

This refers to the effectiveness of audio video synchronization, differing from the overall mismatch.

Software	Audio Video sync
Webex	Very good synchronization
Skype	Poor
Google hangouts	Moderate
WizIQ	Excellent

4.2.4 Look and feel

This analyzes the look and feel of the software and the interface, design that helps best in online music education.

Softwares	Look and feel
Webex	Good
Skype	Good
Google hangouts	Simple and efficient
WizIQ	Very Good

4.2.5 Usability and Accessibility

Researchers have proven that web sites having a user friendly design and an easy-to-use interface increase user satisfaction. Accessibility refers to the ease of access in the interface and to what extent the user can access the various features present in the interface.

Software	Usability and Accessibility
Webex	It requires proper training to access and easily navigate around using the software.
Skype	It has features that are usable features but technological knowledge is still required for smooth usage of the software.
Google hangouts	Fully packed with various features that are easier to be accessed by everyone.
WizIQ	Simple and very easy to use.

4.3 Important findings from the Observation study

It has been found through the observation study that teachers in bigger organizations that provide music education have utilized all possible additional resources. A centralized management structure ensures useful pedagogical tools, but individual teachers, even those who function as part of a larger organization are not motivated to use the resources unless instructed to do so.

Mostly teachers were found to be selective adopters or inadvertent users. Those who teach only their pre-existing direct learning students in a structured format were found to be contended traditionalists. The creative adapters were the ones who ran the organized services and had teachers working for them. The sense of ownership only existed with them.

There are 24 parameters that are clubbed together for the purpose of assessment. As indicated before, alphabetized code is provided instead of the identity of the teacher or service.

4.3.1	Student Engagement and Attention span
A	Max 45 minutes will be a fruitful learning process and rest 15 minutes will be a quiz session
B	Full one hour good attention
C	Activity based class and serious learning
D	First 10 minutes revision next 40 minutes new learnings last 10 minutes Q/A session
E	Students are completely engaged to the class and there is 100 percent dedication.

4.3.2.	Class Atmosphere
A	Not many efforts are taken into recreating a traditional environment.

B	Some efforts are taken to recreate a traditional classroom environment.
C	Use a wide shot that makes it easier for the student to observe better in the class.
D	Good, makes it more of a personal session.So the interactivity increases in class and the student doesn't feel pressured.
E	Not much difference from a personal class. They use the same setup they would use for a traditional music class.

4.2.3	**Modifications of pedagogy**
A	Some noticeable changes in the pedagogy are made and this has impacted in the enhanced education process.
B	Training is given to the teachers on how to teach and this has direct impact in student's learning.
C	I follow a pattern to communicate my teachings to my students. I have also shared it with many others to follow this system.
D	Teachers who work under institutions are given a particular method to follow while teaching, which will be devised to communicate lessons in a simple way
E	Slight modifications to the traditional method of learning is adopted and practiced to make the communication process interactive and not monotonous

4.3.4	**Student and teacher management systems**
A	No use of LMS or CMS
B	They use both CMS and LMS but how they use it was not shown.
C	CMS is used and is very efficient in music learning.
D	No use of LMS or CMS
E	No use of LMS or CMS

4.2.5	**Timing and Scheduling of Classes**
A	There are fixed timings (one hour per week) as in a traditional classroom.
B	Initially it was fixed then we altered according to our availability. Class timings are generally 45 minutes to an hour

C	There are fixed weekly one class
D	Depends on our availability we change, sometimes two times per week or no class
E	Mostly fixed but timing is flexible

4.2.6	**Economic Considerations**
A	Charges are based on the teacher's reputation and the how others have fixed
B	Depends on the level they want to learn. The cost changes for each level.
C	I charge according to their affordability and interest. If they are very much interested in learning and cannot afford much, I consider their situation and charge accordingly
D	Nominal fee, affordable by anyone
E	Since my livelihood is based on this I do charge a premium rate and accept only advance level students

4.2.7	**The Student - Teacher relationship**
A	Good , nothing specific
B	Cannot be compared with the traditional way of teacher student relationship
C	Can be better, but not bad
D	The time of the class decides the tone
E	Good

4.2.8	**Diagnostics and Student evaluation**
A	Monthly tests are conducted and reports are shared with their parents
B	Nothing periodic, but tests are conducted before crossing the levels
C	On demand evaluations will be reported
D	Government approved tests will be conducted and certificates will be provided if the student is eligible for attending the test
E	Constant evaluations are done before the start of every class

5. FINDINGS

This research solely aims at providing an analytical form of information about the impact of online synchronous music education of Indian classical music. As far as the data collected, the study has found that, the music as such has no specific impacts with respect to its quality. The quality lies with the teacher and the student who are into the learning and teaching process. But surprisingly it is found that there is a drastic change in the methods adapted by the teachers to educate their online students in various ways and with the use of various additional features that are available to them. The teachers also include a very important point which says, online music education is a very good platform to reach various parts of the world, but it would be ideal if the student occasionally visits his/her teacher and learns in person without any hesitation. Other than this online music education has definitely proved to be a boon to the music lovers' community.

6. ACKNOWLEDGEMENT

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