Chapter – III

Technological Usages in the Development of Music Education

Electronic aids to music education have been a major component of the western pedagogic process for many years. However the application of high technology has only recently begun in India. Today there is an environment which is ripe for the spread of electronics into the field of music and music education. Applications as diverse as desktop publishing, electronically assisted education (audio/video cassettes) radio and TV programmes and a host of electronic gadgets have already entered the educational process. We will see that the music of South India is an ancient system which is quite different from our own. Furthermore the pedagogic process which is essentially an apprenticeship and it is also quite different from ours. The musical tradition of India is one of the oldest in the world.

Previously, the only process for transmission of musical material had been from Guru to disciple. This is a vertical flow of information known as ‘Taleem’. The use of the electronic media creates a horizontal flow of information which cuts across traditional pedagogic lines. Therefore it is sure that the traditional Guru-Shishya system will disappear but still it has continues with the new tools of the 21st century for a good result.

3.1 Ancient teaching methods

Gurukulam is the most ancient teaching method which was widely practiced in India in various teaching fields such as vedic literature. From the name Gurukulam is defined as ‘guru’ which means teacher or master and ‘kul’ or ‘kula’ means home'. During the vedic period there was music education but there is no mention about any
Sangit salas or any such institutions. The available information shows that the teaching of music was completely done by individual gurus and this is known as ‘Guru-sishya parampara’. In the past, ‘literature on music’ did not have any reference to this very important and interesting subject, namely ‘Sangit Shiksha Pranali’. In fact, in some of the old Sanskrit works on music has record of classes of music where a number of boys or a number of girls were given training and practice of music together. Most of the training seems to have been individualistic in the ‘Guru-shishya parampara’ as they call it. It is a method of education where the shishyas reside or stay with the guru, irrespective of their social standings. In this learning procedure, especially in the music field, shishyas learn from the guru, assist them in their day-to-day chores such as washing dhotis, cooking and other chores that are directed and instructed by the guru.

In this teaching method, the guru does not receive any fee from the shishyas during the study periods. At the end of the study term, the shishya will offer ‘Dakshina’ before leaving. The gurudakshina is been given as a sign of acknowledgement, thanks and gratefulness for the knowledge received. Some do give the gurudakshina in monetary terms also. The learning process through gurukulam is entirely different from the other methods of teaching. Listening will be the only mode of teaching of the guru so the shishyas have to be focused and alert in grasping the lessons taught in class. The reason for this is due to the lack of facilities such as books, tapes, cassettes, etc which were also really not invented in the Trinity’s living age. Shishyas observation and methods of memorizing was very important because this determines the progress of them to proceed to the next level in the music field. The word guru is significant he was more than a teacher. He was a preceptor. The shishya was more a disciple than a pupil. The shishya or disciple became an
apprentice, as it were to the teacher, living with him, listening to him continuously over long periods thus slowly imbibing the art.\(^3\)

Gurus during that era were not bothered about the monetary value as their main concern was about the quality of the shishyas and it gained name to the Guru. The guru’s expectation of perfection was approximately 90\% and in order to attain that level of perfection shishyas have to practice each and every lesson before and after the class. Notations did exist during this period and they were all noted on palm leaves and these were only kept by the gurus as a teaching guide. The lack of material facilities for the shishyas was definitely a major plus point. This helped to increase their listening capacity as well as memory power. Each and every sangathis sung by the guru is repeated at least 10-20 times till it is perfectly uttered by the shishyas. The process of repetition brings an alertness to the mind and the sangathis are registered in the sub-conscious mind of the shishyas. Usually, shishyas are brought into the gurukulam’s study method in their early age of 6-8 years old. This encourages the shishyas to learn the art in depth as the age permits. At the beginning stage, the interest and attention is given to each shishya in personal.

The Guru can provide special attention to teaching the gist of South Indian Music both practical as well as theoretically. Through this learning process, the shishya is able to learn not only the art but also the musical traits of his/her guru. Shishyas have the tendency to assimilate the Gestures, Bhavas, the singing style and other qualities pertaining music as well as the personal qualities of the Guru. This indirectly moulds a wholesome shishya who is well prepared to face the performing world after approximately 15-18 years of training under one guru. These were the practice during D.K.Pattammal, M.L. Vasantakumari and M.S.Subbulakshmi’s era. This trend has changed from then till now. The expectations of the shishyas as well as
parents have changed tremendously. No doubt the gurukulam teaching have not faded off completely. Shishyas are hesitating to live with the guru and being away from home fears them. Let us explore and see how these changes took place and it is drastic development towards music.

3.2 Current teaching methods

3.2.1 Through Institutions

Till 20th century, Gurukula system was a trend in India. South Indian Music conserved various generations through this system. Our music was developed and supported by kings and other rich people. After the society got changed by the British rule, the rulers became the collaborators of the British government and got influenced by their western life style. This change affected the traditions of our country and music was also not safe. As per the requirement of the society, gurukula system of learning also gave way to the new institutions format by introducing fine arts as subjects in universities and colleges.

During the British rule the western culture paved the way for English education in India. The country was also benefited with the science and technology of the west. During 1781, East India Company established the Calcutta, Madras with an idea to qualify the Mohammedans for jobs in the state. Similarly in 1792, Warren Hastings established another institution for Hindus at Banarus with the purpose of creating qualified Hindu assistants to European judges. Sir William Jones also established, the Bengal Asiatic Society of Bengal in 1785 to encourage the historical research. During 1857, three universities viz, University of Madras, University of Calcutta and University of Mumbai were established along the lines of the University of London. Afterwards a number of new Universities were established4. In the period of British rule, there was a great influence of the western culture and the education
system of our country also underwent rapid changes. The major change was the introduction of music and other art forms in schools and other institutions along with other subjects. There was a great need for making music easily available for the common masses. Gradually with the changes occurred in the socio economical field, music teaching was also introduced in schools and colleges. Indian musicologists like Raja Surendra Mohan Tagore, Pandit Bhakthkande in the field of Hindustani music, Vidwan Subbarama Dikshitar and Sri. Chinnaswami Mudaliar in Carnatic music collected and published all that was available about the theory and practice of Indian music in the schools. The stage was now set to organize music institution and courses of study in music. The formal system of institutionalized teaching of Carnatic music started taking shape in 19th and 20th century. In 1919, Maharaja College of Music and Dance-Vizianagaram was established. Annamalai University introduced music in 1929 in its Music College with a diploma course. Madras University introduced B.A music in Queen Mary's College-Madras in 1930. In 1931, two more institutions came up in Madras- Central College of Carnatic Music and the Teachers Training College. Swathi Tirunal Music Academy, Trivandrum and Kalakshetra Madras were established in the year 1936. Some of the other institutions established for the teaching of performing arts during this period were Kerala Kalamandalam in 1941 and Tyagaraja Govt. College of Music and Dance-Hyderabad in 1952. Dr. Narayana Menon says, “The gurukula system has served us admirably for a long period”. But now the social organization is changing rapidly and with its ways of living. In a city like New Delhi or Calcutta, the system today may seem to be an anachronism we are in the throes of a metamorphosis in which a static feudal society is being rapidly transformed into a lively democratic one. The jet plane is being replaced by the bullock cart. The public is the new patron of music and not the princess or the
nobility. The concert hall is the new arena of music making, not the chambers of the well-to-do patrons.

Many institutions tried to adopt the good aspects of the gurukula system while introducing music as a subject and this pattern of training can be said to have lingered on for many years. Annamalai University took the initiative to introduce this pattern of teaching in its music college and many aspirants received training in this system. Presently, more than one dozen Universities of South India and a few of North are providing facilities for teaching Carnatic music in different types of diploma and degree courses.

Universities are the centers of higher education where the training is imparted in every field of life to mould the students as better citizens to meet the challenges of the society and for building the nation with all scientific and technological developments. Universities also preserve and propagate the cultural heritage of our country.

The learning or teaching process and procedure through a specified curriculum via institutions colleges and university has got its specific reputation. Most institutions have their authorized syllabus that helps the teachers to guide the students through the subject. In the field of fine arts, the syllabus is very essential and helpful as the art of music is an ocean. As there are many minute areas that a student should explore is a guide through the syllabus provided by institutions. For example, at our prestigious Annamalai University music faculty, the syllabus for the bachelor of music vocal is given in specific as the subject matter differs from each section of the faculty. The sample of syllabus for the bachelor of music-vocal is given below.
3.2.2 Syllabus for first year B.Music vocal

1. Svara lesson – RECOGNIZING SVARASTHANAS
2. Geetham - ANY 2
3. Lakshanaageetham - 1
4. Tanavarnam - 2 (IN ATHI THALA)
5. ATA TALA YARNAM - 1

6. KEERTHANAMS TO BE SUNG IN THE RAGAS BELOW
   I. Madhyamavathi
   III. Chakravaham
   V. Panthuvarali
   VII. Karaharapriya
   IX. Ananthabhairavi
   II. Mayamalavagaulai
   IV. Kalyani
   VI. Ketharam
   VIII. Sankarabaranam

(Setting and practice of kalpanasvaras for any five keerthanas in any of the ragas above)

7. Thevarams - 2
8. Prabantham - 1, Thirupavai – 1
9. Thirupugazh - 1

Students who are keen in undergoing a complete course for obtaining a concrete recognition will have to abide to the syllabus set by the university. This allows the students to have a systematic structure in tearing the art. Teachers who have the experience in this field theoretically and practically will be guiding the students based on the syllabus provided. At each level, variety of portions will be taught these training will enhance the student’s capability to qualify after a period of 3
years for the basic degree course. The approach of this method of teaching is different, compared to other methods mentioned earlier. It is such due to the number of students taken in for the course and it varies from learning from a private Guru. The attention given to the students are equal not taking into consideration the absorption capacity of the students.

3.2.3 Through Notation

As we have seen above during the ancient teaching methods, palm leaves were used to write notation of music places. Krithis were written on palm leaves during the trinity’s era. As the world has become more civilized, the uses of palm leaves were reduced as note books were widely used in the 1900’s. No doubt a Guru’s presence is a must so the method of teaching became easier. The student had a better understanding on what they were actually learning as they had the notation to assist them at class as well as home during practice.

Notations are basically a guidance on how the lessons are to be taught with this method of guidance gurus are at a better level to teach the students. For example, a krithi which was learnt by a guru from his or her Guru(s) during their learning period may have been forgotten and by having the lessons written in notation form, it helps the gurus plus the students to have a smooth sailing lessons without any break or diversion. Apart from learning this magnificent fine art through notation shows us the various ways to explore.
3.3 Technology usages in Music Education

3.3.1 Idea of Multimedia

The Ideal education is the complete development of the human personality. Good and pure music is an important essence and supplement in the guidance of emotion and in the development of the body and mind\(^7\). Learning this extraordinary fine arts through the aid of multimedia is far more magnificent that one could ever imagine.

‘Multimedia’ is a term frequently heard and discussed among educational technologist today. The term can alliteratively mean ‘a judicious mix of various mass media such as print audio and video’ or it may also mean the development of computer based hardcore and software packages produced on mass scale and still considering individuality for usage and learning. It is the combination of hardware and software that allows the user to integrate animation, video, audio, graphics and test resources to develop effective presentations on an affordable desktop computer\(^8\).

At current status, Multimedia is a carefully woven combination of text, graphics art, sound, animation and video elements. This method becomes an interactive multimedia when the end user or viewer of the project, takes control of the how, what, when elements that are presented through the media source. Multimedia has its specific uses such as developing writing skills, problem solving, simulation in science and mathematics, manipulating data, acquisition of computer skills for general purpose and for business and vocational training, assessment and communication to understand population and students, assessments for teachers and students in remote location, individualized and co-operative learning and management and administration of classroom activities. As to this stage, we have observed the meaning
of multimedia and its use. Let us have a glance on how multimedia plays an important role in education system as a whole, included in music education.

### 3.3.2 Music Education through Multimedia

What is Multimedia? and What is the use of Multimedia in education? This could be sought through an understanding of the capabilities and limitations of the medium. In the teaching of music, an instructor can display a singer alive though the aid of multimedia using various equipment and technology to portray the essence of South Indian Music, for example, Raga Alapana and Rendition of krithis.

Multimedia enables the tutor or institution to provide interactive and attractive learning methods through which the learners are able to experience a variety of learning procedure in the field of South Indian Music, in this context Multimedia refers to a combination of Text, Audio, Video and Animated Graphics that allows teaching and Learning method more interesting and informative with the aid of multimedia, the cost per-unit is very much lower compared to other method of learning as the Multimedia provides augmented learning and teaching experience at a lower cost. Due to the needs of students of this generation and the advancement of technology in the western region, the implementation of Multimedia has become an essential need in the education, including the South Indian Music.

The main reason to introduce Multimedia in the music education system is to ensure that the process of learning becomes more systematic, goal oriented. Flexibility in time and space, increase in participation of programmes, unaffected by distance and the pattern of teaching is tailored to the individual’s learning style and increases the collaboration between the teachers and students. The fear factor among students reduces and learning process becomes more good and friendly. Let us
explore in depth the way Multimedia assists the teaching and learning procedure in the south Indian music.

3.3.3 Through Recording - pre and live recording

Live recordings and pre-recorded lessons or teaching have been introduced with the aid of Broadcasting stations, Radio stations and musical studios. Many students have gained knowledge through this method as they are able to listen and record the programmes broadcasted on air or even live programmes. Established analog technologies already have shown profound effect on the system of education. Analog technologies are commonly used in radio, TV and tape recorders. Programmes broadcasted are done by radio stations like AIR (All India Radio), Rainbow FM and not forgetting the media broadcasting stations such as Vijay TV, SunTV, JayaTV, KalaingarTV and MakkalTV. These media channels provide programmes either pre recorded and live programmes under the Fine Arts category. The advantage is that the students and gurus can record these programmes at their interest depending on their personal preference. For example, on kalaingartv, the programme called ‘kalaikovil’ is telecasted portraying kutcheris performed by upcoming and famous artist. These programmes have variety of collections as to the specified functions organized. The variety of song provided can be recorded via video or audio. This enhances the collections of song for the students to team and for the gurus to teaching.

Apart from increasing the number of collections of songs, this method enhances the listening capacity of the students. Through their understanding and listening capacity, the learning process is developed. Students who have experience in hearing and writing notations through listening capacity are much more advantageous
than the other. Teaching through this method, enhances the listening capacity of the students, may it be a beginner, intermediate or an advance level student. This method increases the capacity of identifying the ragas songs and increasing their grasping powers. Apart from this, they are being fine tuned to listen to such records when their first attempt to identify the ragas through hearing becomes a success many students, performing artist even the gurus have gained through their teaching methods.

3.3.4 All India Radio

The government has a sustained interest in promoting traditional Indian music. One of the efforts has been occasional broadcasts of educational programs on Indian music. Some of the most significant effects have been from the ‘National Programs’. These are performances given by India’s top artists which are aired all over the country. An artist may perform something on national TV and within a week, other musicians around the country are doing similar things. What makes this so important is that it introduces a fundamental change in the way the musical information is transferred.

All India Radio, officially known as Akashvani is the radio broadcaster of India and a division of Prachar Bharati (Broadcasting Corporation of India), an autonomous corporation of the Ministry of Information and Broadcasting, Government of India. Established in 1936, today, it is the sister service of Prachar Bharati’s Doordarshan, the national television broadcaster. All India Radio is one of the largest radio networks in the world. The Doordarshan Kendra (Delhi) is also located on the 6th floor of Akashvani Bhavan. Sound broadcasting started in India in 1927 with the proliferation of private radio clubs. The operations of All India Radio began formally in 1936 as a government organization with clear objectives to inform,
educate and entertain the masses. All India Radio started recording concerts and broadcasting them - live or recorded. This meant that even the common man could hear good music in the luxury of home.

AIR today has a network of 232 broadcasting centers with 149 medium frequency (MW), 54 high Frequency (SW) and 171 FM transmitters. The coverage is 91.79% of the area, serving 99.14% of the people in the largest democracy of the world. AIR covers 24 Languages and 146 dialects in home services. In external services, it covers 27 languages 17 national and 10 Foreign Languages.

Music lessons broadcast by AIR falls within the reach of many interested in learning the pieces. Rare compositions are brought to light & biographies of composers, Musical Quiz and references to Lakshana Grandhas provide enough material for a student of music to improve his knowledge. Musical features as opera presentations and musical discourses as ‘Kaalakshebhhams’ give an insight into the nature and structure of the man enable one to know of the ragas & tunes used to illustrate different emotions.\(^9\)

The tea shops are often the center of entertainment where people used to gather to chat has also started to have the radio and play music. Here, mostly devotional music which was semi Carnatic and light music was popular because Akashavani's Carnatic music timings were generally late night. The availability of other channels, like the radio, discs, audio-cassettes, amplifiers and television endowed film songs with the strength of an independent aural medium developed the music's growth. The Ministry of Information & Broadcasting has declared November 11, 2002 - November 10, 2003 as the centenary year of recorded music in India. DD has begun producing a commemorative series entitled century of recorded music a retrospective. DD's Director General S.Y. Quraishi says, "This series will be a tribute to all the great artists who have contributed to the recording industry". The series will encompass all genres
of Indian music like film, classical, folk music and will be a veritable feast for music lovers. Featuring the rare songs from the archives of AIR, Films Division, National Film Archives, Sangeeth Natak Academy, Indira Gandhi National Cultural Academy, Chennai-based Shruthi Foundation, ITC Sangeeth Research Centre and the zonal cultural centers of the Culture Ministry, the magazine format DD series is to be aired for half an hour on DD Bharati and National channels on prime time in early '03. Carnatic music will also get a pride of place with contributions of M.S.Subbulakshmi, D.K.Pattamal, Semmangudi Srinivasa Iyer, T. Chowdaiah and others. Prominent film and music personalities are also pitching in to ensure that this production is treasured.

3.3.5 Television

Television was invented by John L. Baird in 1926. It is the most effective, modern and conducive mode of communication. The Doordarshan is the public television broadcaster of India. It is one of the largest broadcasting organizations in the world in terms of the infrastructure of studios and transmitters. Recently, it has also started Digital Terrestrial Transmitters. On September 15th 2009, Doordarshan celebrated its 50th anniversary.

Doordarshan had a modest beginning with the experimental telecast starting in Delhi on 15 September 1959 with a small transmitter and a makeshift studio. Each office of All India Radio and Doordarshan were placed under the management of two separate Director Generals in New Delhi. National telecasts were introduced in 1982. Television has been a very useful device used to broadcast several informative programmes throughout the globe with the support of cable television and Satellite broadcasting companies such as Sundirect, Airtel, Astro in Malaysia, Rupavahini in Srilanka, Deepam in London.
These broadcasting agencies and stations have been playing a very important role in spreading knowledge in various fields through telecasting of programs for public’s view.

Music education is one of the subject matter that is being broadcasted on these stations through various ways. Music education during the ancient days has been an entirely different procedure where it involves a guru – shishya bonding on a one-to-one basis. Trend has taken a vast diversion and drastic change due to the advancement of technology and influence of multimedia in the field.

Television was one way as to how the drastic development took place from the use of LP’s, Gramophone and now currently CD’s, DVDs and other digital devices to transmit the programs pertaining music education and live conferences. Programmes such as ‘kaalaimalar’ by JayaTV that has specified segment for Carnatic music lovers and students is one way to show that the teaching method has improved vastly with the aid of multimedia. This programmes are conducted by leading carnatic vocal performing artist Sri Neyveli Santhanagopalan in the south Indian music field. This programme has created a great impact and awareness of the importance of music education among the public and as to how-far the Fine arts has developed from the colonial are to current are of multimedia technology.

Slowly more channels in Doordarshan and many other private channels were introduced and today we have more than 300 channels available with Broadband, DTH etc also thrown in. Each channel competes hard for TRP ratings. Apart from this, the lessons that are conducted by the artist on this programmes has been brought into awareness and interest worldwide. This clearly shows the development of south Indian music does not only reside in one particular country but has travelled throughout the world with the help and support of media like television. Broadcasting
stations have made a wise decision by having legal ties with broadcasting stations with other countries, taking into consideration the development of knowledge, culture and tradition in various aspects. For example, in Malaysia, Astro vaanavil has legal ties with JayaTV where by Astro vaanavil has obtained the license to broadcast the programmes telecasted on JayaTV this gives the public in Malaysia to view shows including shows like kalai koil, kaalaimalar on the channels provided there. Observing this method of broadcasting, it is guaranteed that the fine art has reached to those living abroad. Programmes like Margazhi maha utsavam in JayaTV, Chennaiil Thiruvaiyaru in VijayTV spread the South Indian Music world wide.

Chennaiyil Thiruvaiyaru - is the Grand Carnatic music festival held in chennai during December last week. Eminent personalities from the Carnatic music does the world performing arts on stage witnessed by 50,000 audiences and even more. Now, in its 6th consecutive year, Chennaiyil Thiruvaiyaru returned with an even bigger line up of stars from the Camatic Music world and for the first time ever, popular singers from the Film Industry also participated in the event.

Telecasting South Indian Musical based competitions such little masters, Ragamalika, SPB’s Ennodu paatu padungal are programmes of JayaTV and also world famous competitions of Airtel super singer from VijayTV and sapthaswarangal nowadays modified as sun singer from SunTV are musical Competitions but these competitions requires basic knowledge of Carnatic music in order to participate and win. Because that TV channels invites great legends of carnatic and cine music persons like K.J.Yesudoss, Hariharan, Unnikrishnan, Shankar mahadevan, Anuradha Sriram, Sowmya, Bombayjayasree, Nithyasree, chitra, S.P.Balasubramanyam, Mano, Srinivas, Malgudi Suba and others as their Judges. They put up marks on perfection of
Sruti, Tala, Musical Sangathis, Nuances based on rules of South Indian Music. As the competition between channels grows, the audience choose the winner with a wide choice to choose from. This has brought awareness among the parents as well as the participants themselves with the realization of the importance of south Indian music education so the effort is taken by themselves to get educated in this field of fine arts.

Ragam sangeetham from RajTV, Cleveland Carnatic Ideal from Jayatv and Raga Ratnam Junior is a musical talent search in the Carnatic classical tradition that seeks out phenomenally gifted young exponents of the art, in the age group of 07-14, 14-25 a reality show that locates talented vocalists in the oldest practiced classical music system in the world and brings out a musical genius from amongst its ranks. This programme offered the first TV platform for young Carnatic devotees to compete against each other. Exacting and exhaustive auditions bring to the fore 10 outstanding singers who will contend for the final prize. Most of the competitors not only have a good grounding in the intricacies of the classical genre but also claim to have Manodharmam, Hearing knowledge, Proficiency in mudras, knowledge of ragas etc. There are many music festivals now organized in Chennai, more for the primary reason of relaying it on TV than reach to all people.

In some cases, the interest of learning this art does not only encourage the young age but the seniors in age have also shown immense interest in this field of south Indian music education. The credit of spreading this art does not only go to one channel in particular, other channels like SunTV, VijayTV, which is famous for their Isai aruvi channel and Sri SankaraTV. All these channels have directly and indirectly played a very positive role in developing the music industry especially carnatic music with various programmes and competitions. Those who are indirectly involved in these development are the panel of judges that are invited to judge for these
competitions. The encouraging advices provided to the participants are just not only to mould them but also insist them about the process of learning the south Indian music and its subject matter. These reality shows are the proof on how television as a multimedia aids and helps to promote and educate the public about the importance of Carnatic music, not worrying about which corner on earth one is residing.

Thus, the Radio and Television established a great link between the public and musicians, giving them great publicity and popularity of south Indian music along with the News, entered the common households. They begin the day with devotional music and give wide coverage to moral, cultural, spiritual, social and educational features and music is being used as a suitable vehicle to convey the messages to the common man. All religions are represented. Choir, choral music and group singing in many languages are becoming popular and innovations and new methods adopted in vocal and instrumental music are proofs of fresh experiments music with deep rooted traditions as well as with modern adaptations are broadcast. Folk music as well as classical dance music is also broadcast. The fact that there are so many channels giving Carnatic music related programmes it means the number of youngsters who get exposure also has increased to multifold. These youngsters have benefited greatly by this and are in turn propagating Carnatic music, helping it develops in different routes.

3.3.6 Through.wav/mp3 files and CD Player

Live programmes are only one part of the learning process in this field. Apart from these methods audio CD’s have also played a great role in the process of teaching and learning many records have been released on the basic and advance lessons of South Indian Music. Students who are not in the financial positions to pay a large amount for a personal tutor, opt for this method as the cost of the audio CD
may be much lesser than an entire courses cost paid to the tutor. The learning and
teaching process has become very conducive for students as well as teachers may be
the basic level not the advance level. Methods through CD's may not be as full-
fledged as to how the gurus teach on a personal basis. The minute portion of this
ancient fine art may not be taught in depth through CD's.

There are also many players for playing Audio CD's in different formats in our PC.
The RasikaV2 music players coming with Rasika-Gaayaka-Sishya are specially
designed for the needs of the camatic music students (or even a musician) who wants
to learn new krithis from recorded audio files or Audio CD's. In ordinary music
players the progress of music is shown by a moving indicator which at the best may
be a horizontal line spanning about 3/4 of the screen or less. This enables selection of
a point for playing music only with a rough accuracy. Mostly such lines also do not
have a scale or mark to identify a point or facility to save starting and ending points of
a selected part. They also do not have the facility of playing a part of a music if
required, repeatedly (the last facility may be available in some sophisticated .wav
editors).

The RasikaV2 music players ‘Student's.wav/mp3 player’ and ‘Student's CD Player’
have an excellent interface to anyone who wants to learn songs from either .wav/mp3
files in the PC or from Audio CD's. The Screen shot below shows the Student's
wav/mp3 player with the audio file 'palinchu2.wav' loaded. The program can play all
.wav files and most .mp3 files the latter depending upon your operating system and
the codes installed.
The progress of play is shown on a 'Time line' spread over 5 panels so that you can select the starting point accurately. In the screen above the music is at the 25th second - shown by the vertical line which moves with the play. For songs less than 5 minutes the division is 1 second and for songs between 5 and 10 minutes duration of each division is 2 seconds (as in the example above) and so on. The starting point is selected by clicking at the required place.

You can mark one or more blocks for playing if need be for repeated play also. This repeated play of part of a music is the best way to learn a new piece. Blocks are marked either by holding down left button of the mouse and dragging or by marking start of the block with the mouse left button and marking end with Shift + mouse left button.
Blocks are played by right clicking and choosing the play option.

The right click gives a pop up menu with many options.

We can also mark blocks while the music is playing. We can either mark separate blocks of parts of the song which we want to play repeatedly for learning or we can mark continuous blocks covering each sangathi of Pallavi, Anupallavi, Charanam etc. we can name the blocks and save the block information which will be retrieved when the file is opened later. When the mouse-pointer is moved over a block the name given to the block appears on the line below the panel.

Normally wav files do not have facility to enter comments. Even .mp3 files have limited facility for entering information about the song. The Student's.wav/mp3 player allows to enter comments and save them for both .wav and mp3 player. In the first screen above the song title, ragam, talam and name of the artist have been saved in the comment.
The Student's CD player has an identical interface and similar facilities. Here is a screen shot of the program:

It will be useful both for the student and the musician who wants to learn new songs recorded (or downloaded) in the PC or from the CD. For a more advanced student who has no regular access to a teacher, the wav/mp3 and CD players will greatly reduce the learning time because of the convenience of quickly starting at any point in the music or looping a difficult part and listening and joining in alternate passes. In Carnatic music there is no fixed pitch for the tonic (Aadharha Shadjam). A person chooses a sruthi most suited for his or her voice - commonly referred to by the 'kattai' system (the first white key on a keyboard or harmonium is 1 kattai). Male singers usually sing between half and 2 kattai. Children and ladies use 4 to 6 kattai. In a recorded cassette the music would be in the sruthi (kattai) of the singer which may
not be the same as the students. In direct lessons, it is the teacher who adjusts his or her voice to teach in the sruthi of the student. In Sishya and Gaayaka the student can choose an aadhara sruthi to suit his/her voice while if a cassette is used by the student to abandon his natural sruthi to sing with the cassette and then sing in his own sruthi later which is quite difficult for a beginner. Sishya and Gaayaka also enable change of tempo - lessons can be learnt at a slower tempo in the beginning and later at faster tempos. The most important advantage is that a part of the lesson can be selected and made to loop indefinitely - the student can alternately listen and join with the music. In the case of a cassette rewinding and locating the beginning of a particular part of the lesson is difficult and time consuming and there is no looping facility. Finally, unlike in the case of a cassette or CD there is a visual interface. In the case of Sishya the talam actions are also seen.

Nevertheless, this method is still considered an easy as well as conducive method of Teaching and Learning. Purchasing of CD’s should be done carefully as some selective krithis and lessons are meant for different level of students. For example, krithis composed by Oothukadu Venkatashubaiyar, Muthuswamy Dikshitar has tough sahityas that may be quite difficult for students of basic level. Education of the fine arts is surely possible through this method. Therefore while purchasing the selected CD’s, students and teachers should be aware of the capacity and the level at which they are to learn such composition.

3.3.7 Carnatic DVD

After the CDs and MP3s, now it is the turn of Carnatic DVDs that have caught the interest of Rasikas, Artistes and producers of music records. The concert is recorded with visuals sometimes like a song picturization in films with interesting background unlike the staid live concerts on TV channels. Now
there are many Lecture Demonstrates, Carnatic Lessons, Ragam, Thanam, Pallavi’s available as DVD’s. In future more concerts will be available and the DVD will be the norm than the novelty.

3.4 Through web and video conferencing

Conducting lessons through web and video conferencing is considered the most flexible way of teaching as well as learning. The flexibility is applicable to both the students as well as the teachers. Some cases, the student does not get the liberty to attend on a face to face mode. These students can make use of the web conference technology and attend classes either on a one to one mode or as a group web conferencing of one to many. The concept of web conferencing of one-to-one are usually preferred by those who are intending to obtain special attention in the subject matter whereby the student has ample time to grasp the lessons taught by the guru. Students have the freedom to clear their theoretical and practical doubts on the spot as there is privacy. In cases of conducting classes based on one to many, the tutors may be at a different location and the students may be gathered at one common location or may also be at different location. With the aid of internet, the tutor and students are able to meet on web conferencing to conduct the lessons.

The convenience of having conference engines such as SKYPE, YAHOO MESSENGER, HOTMAIL, MSN MESSENGER have been a great contributor for the development of web conferencing. This method has and is been of a great use towards the development of south Indian music\textsuperscript{14}. This method of learning is very convenient for students and teachers who are unable to be present at a particular prefixed location. It is definitely more conducive and time saving. Classes through web conferencing can be recorded with video or without video. This method is applicable
not only for personal tutors but also for institutions that conduct classes with the help of visiting lecturers from abroad.

3.5 Need web and video conferencing

Account with VC or chat Server

- Video Camera & mount or tripod
- Microphone in computer, camera or other
- Software
- Connected to the Internet in some Fashion
- Computer
- Someone who is on same service
- IT Support Cooperation on Campus
- Internet Connectivity
- Communication with tech personnel at remote campus
- Special Room or Portable Unit
- Scheduling (Time zones)
- More specialized Lighting and Audio
- Testing Time
- Someone who has the same stuff

3.6 Net connection in Institution

Most institutions are using net connections to enhance the speed and teaching efficiency. Net connection in these area are channeled to many systems, therefore many students are able to use the net connection at the same time simultaneously. This method resources the rush for system and students are able to complete their task
on time. Most institutes provide online classes which enables students to obtain their lectures, notes, assessment questions and other preferred reference from the webpage of the institute that links to the specified subject area. This reduces other hassle such as time wasted by tutors during distribution of notes in class and students may want to need the particular subject matter before hand which may delay the learning process without net connection facilities to provide notes in advance.

3.7 Through Excursion or Recording studios

Excursions and Tours have played a major role in the academic education system. Application of such method towards south Indian music is a sure success. Studies through tours and excursions to recording studios have played an important role in many student’s life as well as current great musicians. The experiences gain in this method of learning, the fine art has certainly developed the interest among students that has brought awareness to the teachers about the student’s interest towards the fine arts.

This Learning method has certainly brought major development and interest as well as a rise in creativity towards the students. The use of electronic equipments, sound mixer, sound proof room, method of recording and the score writing using the aid of software has brought tremendous growth in South Indian Music throughout the world. The experience of having a video of a recording studio’s role towards music education has certainly brought awareness about sound balancing and its importance in the music field.

The development of this caliber will certainly be very useful when the students venture into the performing field. This will certainly be a plus point to them in terms of techniques used in sound balancing at studio’s and auditoriums during
performance. The back of exposure through this method may not provide outstanding
performance and results to the students.

Tours to the recording studios will certainly provide a wider and broader
perspective of South Indian Music towards the students and teachers as they are aware
of the equipments, the technique of sound balancing and the recording methods is
used for them to implement the needful ideas in their lessons and performance.

3.7.1 The music academy digital tag

The Music Academy's archives of music recordings and books are a veritable
treasure trove. A long time dream that is now materializing is the project for digitizing
its music recordings. The Academy has its possession in its own recordings as well as
those donated by well wishers of about 6000 hours. Sri. R.T. Chari, our esteemed
Committee member, a passionate connoisseur of Carnatic music and heritage has a
collection of about 6000 hours of Carnatic music. He is in the process of handing over
all this to 'The Music Academy Tag Digital Listening Archives' which has been set up
at his own cost. It will initially have 10 touch screen kiosks linked up to a central
server which houses have all the music. At the touch of a screen connoisseurs one can
listen to any individual musician or a composition or a concert or excerpts of
concerts.15

"Such an experience of listening to a vast collection of music on a touch screen
facility is unique in India", says Dr.Pappu Venugopala Rao, one of the secretaries
of the Academy. This device was bought in Korea which enables a cassette recorder to
be inserted into the CPU from which the music can be directly transferred to the
computer. CDs and DVDs can be externally plugged into the computer for transfer of
their contents. The archives will include the private collections of the late G.Narasimhan
editor of The Hindu, the contributions about 40 individuals he involved in the project and the late S. Natarajan, former Music Academy secretary among others. Those of Semmangudi and MS singing together and 10 year old T.N. Seshagopalan singing bhajans accompanying himself on the harmonium are a couple of interesting examples of the rare recordings available\textsuperscript{16}. The Music Academy Tag Digital Listening Archives set up for the Academy at his own cost by Sri. R.T. Chari, one of our Committee members inaugurated just before the season, attracted keen interest from connoisseurs even as the festival was in progress. He said “I would appeal to more and more collectors to come forward to offer their recordings through our Listening Archives for the benefit of musicians, discerning rasikas and students of music”\textsuperscript{17}.

3.7.2 NCPA archives

Almost 5,000 hours of audio recordings are taken from live and studio performances and 1,200 hours with of film footage of musicians, the NCPA's archive ranks among the world's finest documentary resources for Indian music\textsuperscript{18}.

These Archives play a central role in the NCPA's objective to record and preserve for posterity the finest performances in classical and folk music traditions which have been handed down through oral tradition by renowned teachers over generations. The NCPA library is a unique resource for Mumbai, as the only Performing Arts library in the city, giving access to a collection of almost 20,000 books and more than 5,500 recordings which can be heard using our in-house audio equipment. As well as an extensive collection of books on Music, Dance and Theatre, they cover Film, Painting, Sculpture, Architecture, Photography, Television, Fashion and Even Magic, dealing with theoretical as well as practical aspects of these subjects.
Books on Classical music forms, the core of the collection with a particular focus on Ethnomusicology which is the library’s special area of research. Allied to this is an important section on Anthropology, featuring books which explore the different tribes of India.

The ‘Treatises’ on Indian music published before 1900 are a special feature of the music collections. They have a strong periodicals section on Indian Arts, subscribing to 24 publications dealing with subjects across the range of arts. Articles on Dance, Music, Theatre, Film and TV are indexed and form an important part of the NCPA’s research resource.

3.8 Internet

As to how television was and is used as a Multimedia device to educate the world about South Indian Music, the Internet has its specific role to play in this field. It is a recent development in the field of music education taking into count the development and advancement of new technologies associating with learning music. Online music education or in general via internet can be discussed and analyzed in various methods, such as Downloading Materials, for example, Songs, Viewing Video Of Artist On Website Like www.youtube.com and conducting online classes on one-to-one and one to many via Skype, yahoo messenger, MSN messenger and other online search and chat engines.

The trend has changed from ‘classroom gurukulam methods’ to education through internet, for example, a student who has the basic knowledge of music may have the interest to learn a particular krithi, let us take Vatapiganapatim in raga set to Adi Tala. He or she may want to proceeds learning on their own initiative. The urge and interest to learn, will motivate the students to download the particular krithi from
the websites like www.sangeethapriya.org, www.karnatik.com or may also download videos from www.youtube.com where different singers have sung one particular krithi in different styles with variety of sangathis.\textsuperscript{19} When students get tuned to this method, they are indirectly developing their listening and presentation skills that will keep them to identify the raga styles and expressions on stage and puffer of a singer in particular.

Learning process of Camatic music online does not only apply for student. Even teachers are also using the online facilities to enhance their music knowledge, as what they have learnt from their gurus, based on Gurukulam method may only help them to a certain extent in their teaching. As the students are developing their music knowledge, teachers should also take the move to keep their level on par or higher than their students. Apart from self downloading, and learning from that materials, online classes via SKYPE, YAHOO MESSENGER or MSN MESSENGER is also another possible way to enhance music for teachers as well as students.\textsuperscript{20} Teachers or students who are living abroad or who are unable to travel to their guru’s residence can apply this method of teaching SKYPE, YAHOO MESSENGER where both the teacher and students must be well equipped with computer system with interest connection, headset with mike for communication purpose.

Conducting classes through this method, both students and teachers are at comfort at their preferred location as they need not have any formalities such as books, stationery to take notes as the online system has got facilities to record on the spot, while classes are going on. This method saves time taken by the teacher to teach. While the online classes are on the move, the teacher can exchange the downloaded materials with the students without interrupting the class. This is known as
multitasking that is applicable in all circumstances. Let us analyze further, the other methods of spreading music education with the aid of Multimedia.

3.9 Mobile Learning

Mobile Learning is defined as any sort of learning that happens where the learner is not a fixed pre-determined location or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies. In Music education through mobile learning reduces the limitation of learning at a location in specific with the use of portable devices such as mobile phones like NOKIA 770, PDA, PALM, O2 and other types of Mobile with internet connection and 3G capability mobile learning focuses on the Mobility of the learner, communication with portable devices and higher technologies and the focus is on how society and institutions can cope, accommodate and support an increasing mobile population.

This method of teaching and learning is convenient as it is accessible from any location. For example, when a student has doubts on which is the Thai raga of Madhyamavathi raga, students are at the capability to immediately browse the details by typing ‘THAI RAAGA of MADHYAMAVATHI’ in the search column on the various search engine on the webs such as yahoo, Google and click search to search the needful details. The needful details will be displayed on the mobile screen without any hassle. For instance, if the student does not have internet connection available on their mobile phone, they can directly call their teachers for guidance. By this way teachers are at the capacity to clear the student’s query and also analyze the student’s weak area and provide them personal coaching in the future.
Telephone companies offering cellular phone communication technology on a card inside the computer (no need for a hot spot). Music hardware has reborn as software. Basic software are already on student’s computers and they most likely to know how to use it. Most laptops are built with communicative abilities for other devices and other laptops (e.g. Bluetooth).

This also enhances the student teacher bond through mobile learning. Devices used for mobile learning does not restrict the usage of just mobile, as not book (mini-laptop), PDA, PALM including MP3 players are also considered devices used in this method. There are several benefits and positive values obtained while analyzing mobile learning method. By using the mobile learning method, students are using less books and they are exposed to light weight equipment and devices. This helps the students to be more ‘IT SAVVY’ and enhances the development of technology in music field. The use of mobile learning will be even more useful if it is used in the class room, for example, exchanging a particular krithi with the aid of Bluetooth Facilities, songs can be transferred at a faster mode other than this, if a student has a portable notebook, teachers can share their audio, video collections by the USB port connectors to transfer the krithis from PC-to-PC.

In the case of mobile learning being facilitated in institutions, instead of just providing computer systems for the tutors, students should also be provided computer systems in order to enhance the speed of teaching in terms of time management. The Lessons that are to be taught for that particular day, the audios and notations of the lessons are pre-recorded and saved. Once the students are familiar with the song sung by their Guru in class, this audio is then sent via Bluetooth mail or saved on the desktop on a Multi-sharing basis on the computer systems available at the institution.
Through this Multi-sharing, all students will obtain the audio and will be able to use it for their personal practice. Apart from surfing and obtaining the audios or videos, at the institution’s Multimedia lab, students, having obtained the username and password to access the multimedia lab at the institution, will be able to browse through their Mobile and access the needful files and the audios that can be downloaded easily without being physically present in-front of the desktop.

It is very obvious that Mobile Learning has become very conducive for both students as well as teachers in the field of music as the scope of learning is just not tied down to procedures taught during Tyagarajaswamy and Muthuswamy Dikshitar’s period.

3.10 I-pod

In the current era, IPod’s usage has become very competent among student and teachers due to its mini size, sound clarity, technological advancement and the importance of one having such devices has become a necessity, especially in the music world. As we can observe, I-Pod is practically an audio and video storage device. Companies like APPLE, MAC, SONY have invented the device with various functions and features. In some I-Pods there are only storage features where one needs to have the cable and I-tunes software to transfer songs from Pc-to-I-Pod.22 There are also devices with recording features where recorded items are automatically stored in the I-Pod. Let us go further into analyzing on how I-Pod helps one in obtaining musical education.

During the ancient days, music education was prominently conducted through hearing, notations, LP records, cassette records and the current trend is using I-Pods to record the lessons taught in class. The recording on the I-Pod is in a way much better
as in its quality of recording and bearing it with the inbuilt stereo sound where equalizers can be modified according to the listeners taste as most I-Pods have huge memory space (8GB, 16GB, 30GB) which gives the user the liberty to store more songs and some can even store video music education with the use of I-pod. It has become very conducive as the most of the institutions in these days have computer systems that support the software of I-Pod. For example, Apple I-Pods are using I-Tunes software. With the aid of this software installed in the computer system, transfusing files from desktop to I-pod becomes an easy task. Most universities in the western region have developed this method of teaching, the university of North Texas has also implemented the use of I-Pod for musical education purpose. The University has a particular site on the web where students are interested in compiling the lessons can obtain the materials as well as assignment pertaining to music or audio records and repertoire through the websites provided by the university for enrolled students. By recording the items taught in class and downloading pre-recorded items uploaded on the website, students are able to listen, analyze and conduct a personal comparative study on the lesson being taught and its actual presentation by famous artist with the aid of I-pod. The clarity of sound is far better than listening it on LP records or even cassettes as the quality and surround system is perfect and adjustable recording system is perfect and adjustable according to the students taste and creativity. A part from sound quality, I-Pod is a portable electronic device which is handy and makes listening and learning very easy. The students who use this device for downloading and listening purpose are able to follow day-to-day classes much better than to those who do not have this facility to record. I-Pod being a portable electronic device, students or even teachers also able to hear audios, view video clips pertaining to music anytime anywhere without much hassle.
3.11 Through Multimedia lab or wireless lab

Education through the aid of Multimedia lab is a clear indication of technology advance, especially, in the field of Fine arts. Learning through the aid helps to expand their knowledge in the field of fine arts as well as Multimedia Technology. Students are at liberty to explore the world of south Indian Music, through the use of Multimedia such as Internet connectivity, classes through internet with personal or public tutors and being able to download the lessons pertaining to their curriculum through specified websites. Some cases, students who are well versed with internet usage are able to select the websites and download places of various singers and add-on variety to their learning process. As true are certain websites that do not have the downloading options, students can have the privilege to hear the krithis or other musical pieces online through the online radio.

There are several websites that are useful for students as well as gurus for the Downloading and Listening facilities.23 They are www.tamilbeat.com, www.sangethapiya.org, www.musicindiaonline.com, www.kamatik.com are the most common websites that provide downloading and online listening facilities. Students are at the privilege to listen and download a particular krithi sung by various composers, it may be neither child up growing artist nor top leading artist. The comparison of voice quality and method of singing can be analyzed through this learning method.

Multimedia is defined as computer systems providing audio and video material as well as text.24 It can be applied in various field of education including music, in specific South Indian Music. The basic function of the multimedia lab or wireless lab is to provide additional resources for students as well as tutors, to make
use of the technology for audio and video review and to produce a creative and effective multimedia study material lab is a set of tools that can be utilized for pedagogical and experimentation purposes. Its aim is to have a different teaching approach and ways to enjoy music multimedia come in many formats. On the internet one can find many of these elements embedded in web pages and today’s web browsers have support for a number of multimedia formats. In this segment we will discuss about different ways and methods of how to use and support of multimedia in music education. The multimedia lab functions to provide assistance and teaching aid with the help of software that are specific in nature. The combination of hardware and software enables us to get the end product called Multimedia. Education in specific music education requires high quality multimedia in order to make sure the music knowledge is spread worldwide. The hardware are essential and several software are installed into the hardware for the purpose of composing notation writing, editing and more, so having a tutor trained in this field to guide the students in this field with the air rent resources that I have obtained and observed in the South Indian Music field, software and hardware are rarely used to conduct class. The invention of software and the required hardware will explain the importance of the entire multimedia lab to educate there are of South Indian Music.

3.11.1 Features of a Multimedia lab

Computers are now making it possible to combine sound, images and motion together. This unit briefly describes the inside story of the Multimedia, the concept of Multimedia Lab as to the hardware and software that pre-determines the quality of the education method, especially in the South Indian Music field.
An operating system is the program that is essential and responsible to manage the other programs in a computer, once it is installed or loaded into the computer. The other programs are called Application Program, operating system determines the distribution of time and order for multiple application programs running simultaneously. It also manages the sharing of memory among multiple applications. Microsoft XP and Microsoft vista are the examples of operating systems while MS-PowerPoint, MS-Word are the examples of an application programs.

3.12 Through software

Software are programmed to assist the users to perform their duties with confidence. Likewise, with the aid of musical software’s, the teachers and students are at a comfort zone as their needs to perform their daily tasks are guided with the aid of Musical software’s. According to researcher M. Subramanyam’s work that is an automatic introduction of detailed gamakam notation in rare notation. His program plays what is typed and the notation available in books is skeletal (not depicting the gamakams). His efforts in this direction are described in the web site and also has audio clips to show how the conversion has worked. The article published on the subject is available at http://camatic2000.tripod.com/AutoGamakam.pdf. Musical software, such as musical score writing, music tune composing are common software used in the western classical music. Such software have also motivated the South Indian Music industry to provide assistance to those teachers and students who are in need of a guide to make lessons more interesting. The usage of software are at demand, as it increases the thinking capability of the students and teachers to write music notations, kindles the mind to increasing the ‘manodharmam’ concepts to
improvise notation, compositions and creating new sangathis for a particular krithis. This enhances the creativity power, not only for the students but also for the teachers.

This method of teaching also allows the student to be aware of their mistakes that can be corrected by either the software itself or the gurus if they are present. This method does not cause boredom to the students but it increases their creativity and interest towards the Fine Arts.

3.12.1 Function of software invented

Software are the tools for designing Multimedia and this invention will be crucial for Multimedia Lab development. The creation of this software is based on the south Indian music syllabus and methods. This particular software has very specific and minute use for the development of south Indian music. This software has got pre-recorded voice of the singers of different sruthis. They are considered as the ‘multimedia gurus’ on the software. These singers have recorded their voices according to their respective srutis. This software contains basic lessons such as swaravali varisai, Jantai varisai and lessons up to raga Alapana formats and kalpana svaras formats. The objective of this software is to provide South Indian Music lessons to the students through the aid of Multimedia. This software, functions in both Online and Offline manner. During music classes, conducted by tutors, the classes that are fully equipped with desktop, the software is installed into the systems of the students in class. As the lecture demonstration takes place in class, the tutors handle the entire system through the domain system, allotted to the tutors for class usage. Let us explore and how this method works.
3.12.2 Working with the software offline

As the students enter the classrooms, they are to key in their log-in ID and password, in order to access the software during class hours. As the tutors log-in into their system, students are not allowed to view the online web of the software. This is due to the domain system takes full control of the sub-systems connected to the domain. The reason to create such method is to make sure that the students are focused towards the lecture sessions. For example, when the lecturer explains with practical demonstration about the characteristics of raga, the notation of the raga characteristics will appear on the white screen in front of the class as well as on the screens of the individual system.

For example, Rasika-Ver2 is more useful Carnatic software for music listener, learner and musicians. It has been running in Windows Vista and Windows7 for sometimes in many PCs. Navigate to the RasikaV2 folder, right click on the program file and click 'Run as Administrator'. The program files in RasikaV2 package are Rasika6.exe, gaayaka6.exe, Gka6Open.exe, Sishya.exe, Srbox.exe, Tamb6.exe, Novice.exe, CdAudio.exe, WaveAudio.exe (the extensions .exe may not be visible in our explorer but the type will be shown as 'Application'.) We can also identify them by the Tambura, like icons for all except srbox.exe which has a sruthi box like icon. The programme file of Talam Module and Ragam Module are available in this package. The Krithi list menu opens a window showing the krithis cited in the Ragam module as examples, arranged in alphabetical order. It has been suggested to 'press the first letter for quick browsing'. Pressing an alphabet letter will generate the 'Permission denied' error closing the program. Please navigate using the scroll bar and mouse or Page-Up and Page-down keys.
3.12.3 Format of gaayaka files

Carnatic Music (South Indian Classical Music) notation files for playing with gaayaka.exe or gaayaka6.exe (one of the programs in Rasika and RasikaV2 packages) have a standard extension.gka and have the following format. The entire file is in ASCII including the header and is basically an adaptation of the ordinary conventions in writing notation for Camatic Music compositions\textsuperscript{28}. The notation uses the syllables sa, ri, ga, ma, pa, da and ni which are the solfè used to sing the notes with sa representing the tonic. The header contains part of the information which is usually given in printed notations at the start. The headers are different for files created with version 1.3 and earlier and those created with version 1.4 and later although the extension .gka is the same. The difference arises out of the facility to generate automatic 'Talam' (rhythm count) sound in the later versions. Although the headers contain ASCII information the headers are structured and there should be only a single space between the numbers in the headers and before the last string in quotes.

3.12.4 Header for versions 1.4 and version 2 (RasikaV2 package):

The first number is always 999999 and the second 0. These are used to find the version and warn if the file is from an older version and would not have Talam information. The subsequent numbers represent the scale (7 digit number each digit representing the types of the seven notes), note duration (in .01 seconds), notes per Aksharam (for talam), Jaathi of the Talam, Talam number (see the table below). This is followed by the Talam structure as a string in double quotes. The following table gives detailed information on each of these fields\textsuperscript{29}.

<table>
<thead>
<tr>
<th>Number in the Header</th>
<th>Attribute represented</th>
<th>Value and interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>First number</td>
<td>Version</td>
<td>Always 999999 for versions 1.4 or later</td>
</tr>
<tr>
<td>Second number</td>
<td>Dummy</td>
<td>Always 0</td>
</tr>
<tr>
<td>---------------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>Third number</td>
<td>Scale</td>
<td>(Melam). A seven digit number representing the types of notes used in the scale</td>
</tr>
<tr>
<td></td>
<td>First Digit</td>
<td>0 - Shadjam (this position is always 0)</td>
</tr>
<tr>
<td></td>
<td>Second Digit</td>
<td>1 - Suddha Rishabham, 2 - Chathusruthi Rishabham, 3 - Shadsruthi Rishabham</td>
</tr>
<tr>
<td></td>
<td>Third Digit</td>
<td>0 - Suddha Gaandhaaram, 1 - Saadhaarana Gaandhaaram, 2 - Anthara Gaandhaaram</td>
</tr>
<tr>
<td></td>
<td>Fourth Digit</td>
<td>1 - Suddha Madhyamam, 2 - Prathi Madhyamam</td>
</tr>
<tr>
<td></td>
<td>Fifth Digit</td>
<td>0 - Panchamam (this position is always 0)</td>
</tr>
<tr>
<td></td>
<td>Sixth Digit</td>
<td>1 - Suddha Dhaivatham, 2 - Chathusruthi Dhaivatham, 3 - Shadsruthi Dhaivatham</td>
</tr>
<tr>
<td></td>
<td>Seventh Digit</td>
<td>0 - Suddha Nishaadham, 1 - Kaisiki Nishaadham, 2 - Kaakali Nishaadham</td>
</tr>
<tr>
<td>Fourth number</td>
<td>Note Duration</td>
<td>1 to 100 - note duration in 1/100th of a second</td>
</tr>
<tr>
<td>Fifth number</td>
<td>Notes per aksharam</td>
<td>The number of notes used in thaalum's one aksharam in the notation</td>
</tr>
<tr>
<td>Sixth number</td>
<td>Jaathi of the thaalum</td>
<td>Represents the number of aksharams in the Laghu of the thaalum</td>
</tr>
<tr>
<td>Seventh number</td>
<td>Thaalum number</td>
<td>0 Dhruma, 1 Matya, 2 Roopaka, 3 Jampa, 4 Thripupa, 5 Ata, 6 Eka, 7 Khandha Chaapu, 8 Misra Chaapu, 9 Modern Roopaka</td>
</tr>
<tr>
<td>Eighth number</td>
<td>Thaalum Sound Structure</td>
<td>1 - beat (clap), 2 - wave or count, 3 - silence (in Chaapu only). The string will have as many digits as the aksharams in one thaalum cycle.</td>
</tr>
</tbody>
</table>

Example: The header 999999 0 0221022 032 04 03 04 "1221212". First 2 numbers are not further processed. 0221022 indicates that the scale has the notes sa, ri2, ga2, ma1, pa, da2, ni2. This example is for Melam 29.

032 indicates that one note lasts for 32/100 seconds

04 - 4 notes per Aksharam
03 - Jaathi - Thisra or 3 - the Laghu of the Talam has 3 units

04 - Name of the Talam Thruputa

"1221212" - structure of the Talam sound - a beat, 2 counts, a beat, a wave, a beat and a wave (waves and counts have the same sound in the program) this example represents Thisra Jaathi Thruputa Talam. Header file for versions earlier than 1.4 there is no information regarding version. The file starts with a 7 digit number which represents the scale (melam) as described above (for the 3rd number in the later version’s header). The second number represents the tempo in .01 seconds. There is no information regarding talam as versions up to 1.3 did not have facility to generate talam sound. Thus the header in older versions would be simple. For instance, 0122012 022 represents melam 51 and tempo of 22.

3.12.5 Opening and playing files created in different versions:

A file created in earlier versions of Gaayaka when opened with a later version will show a message that auto talam information has not been incorporated and may be set using the Talam menu. The file will play without any change. Talam can be set and saved in the new format. Files created with later versions of Gaayaka when opened with earlier versions will generate an error 'invalid melam data'. The file will be opened without processing the header and the edit window will show the header also - a string of digits like 999999 0 0221022 032 04 04 04 "12221212" in the beginning. To play the file these digits have to be deleted, the correct melam and tempo have to be set using the controls in the program. The file can then be saved to play in the older versions, only the melam and tempo would be saved. Rasika is to appreciate the music better and perhaps, also develop some swara gnyanam, be able to identify more ragams, distinguish between allied ragams etc. The other group is the
music student who can use Rasika to study the theory with the accompaniment of audio.

**Gaayaka** is for the student and budding musician. It can be used for practicing lessons in between sessions with the teacher and to enter notation from books, play them and improve the notation with gamakam etc. Beginner's lessons come with the software and even lessons not included can be entered and used for practice. For the more adventurous it can be used for experimenting, composing etc.

**Sishya** is specially for learning beginner's lessons with a better interface than Gaayaka (clearer indication of note being played, synchronized visual for Talam action etc) but with the limitation that only lessons supplied with the software can be used.

**Novice** is a step by step guide for the novice in using Sishya. This program helps the beginner who has no previous coaching or exposure to classes in Carnatic Music. A sample screen is given below\(^\text{30}\).
4. Rhythm or Thaalam

In Carnatic music we keep rhythm by hand gestures called 'Kriya'.
The three basic gestures are (See the pictures below):

1. Beating the palm downwards on your thigh (possible only if you are sitting!) or on the other palm (a clap)
2. Counting with fingers
3. Turning the palm up (wave).

The order and number of times these kriyas are performed in a cycle defines the Thaalam. In the lessons window of Sishya the hand gestures are shown on top right corner at each point of the music (along with a bell like sound). All the lessons (except Anankaarams) are in a simple 8 unit Rhythm cycle called 'Aadhi Thaalam' which goes like this:

1. clap, 2. count(little finger), 3. count(ring finger), 4. count(middle finger)
5. clap, 6. turn palm up, 7. clap, 8. turn palm up

This one cycle is called an Aavatham and is repeated till the song ends.

In addition, explaining the different terms is required for the beginner, the program also gives audio of 'sa pa Sa' in 1 kattai and 5 kattai in voice, tambura and sruthi box to enable the student to check his voice. Rasika which is a description of the system puts lot of stress on Gamakams both in the textual narrative and in the music. The more important Gamakams are described with audio examples in the introductory module. The description of ragams in the Ragam Module also stresses on the use of Gamakams and the audio phrases sounds natural as if played on a Veenai or Flute (which can be chosen). In Gaayaka enough enhancements (such as control of transit time from note to note, microtonal variation in note pitch) of the current notation system have been incorporated to enable generation of Gamakams. However this is not automatic. Notation has to be written for the Gamakam which is not easy.

To make it easier for the user, readymade notation for more common gamakams used
in common ragams are included with the software. This notation can be copied and pasted in the composing screen. Many of the 'Users Contribution' notations have been written by the users by copying and pasting the readymade gamakams. Sishya offers lessons up to Geethams both with and without gamakam. The Varnams are only with gamakam.

Students are at liberty to record the lecture demonstration as well as the notations provided through the facilities by the software itself as the lessons material taught in depth will not be available in online. The software provides an option to record the lectures and storage capacity of 2GB per students is allocated within the software to store lectures as well as their favourite krithi collections download through the online software which is applicable after class hours. Students can also copy the downloaded lectures and other krithis collections into their personal pen-drives or MP3 players for their listening purpose at home. Apart from this method, students can also use this software to hear pre-recorded lecture demonstration by famous artists such as Abhishek Raghuram on the different aspects of Tala usage in rendering Varnams.

By developing the listening capacity, students can easily develop their skills of Manodharmam or Creativity which is very essential and important in the South Indian Music Education. This method of education is a best used during class hours and for reference purpose at the music library. For this software to be used at the Music library, it has collections of krithis sung by various artists of different generations. Apart from the practical lessons conducted in class, the students are able to explore the style and bhavam sung by other artist, it can be found in the software itself under the compositions and Krithis tune. This is definitely a plus point for the students as well as the tutors, as this will certainly enhance the listening capacity and improve
their manodharmam. Camatic Music Guru is a tutor/player/lesson generator. We need
Java Runtime JRE1.6 and to use this\textsuperscript{32}.

\section*{3.12.6 Features}

- It will generate / play Carnatic music lessons for all 72 melakartha ragas and
  ragas with 6 or 7 notes in their Aarogana/Avarogana - for any Tala/Jaathi
  combinations.
- It supports Veena, Violin, Sitar, Sarod and Piano as instruments for playing.
  You can select up to two instruments at the same to play the notes.
- It supports percussion using Mridangam, Tabla. You can configure OFF/ON
  percussion.
- Supports playing solkattu alone (very limited feature as of now)
- Have your own notes and play them too.
- Save the music as wave file, Western Staff notation (You need LilyPond
  software installed in your computer)
- Save the lyrics as a PDF. The notes will have subscripts, double/triple speed as
  overlines.
- You can also sing and check your Snathi and set it for instruments.
- The software is supported in Tamil, Telugu, Kannada, Hindi, French, German,
  Spanish and English.
- Play krithis (available in internet) for selected raga and download the krithis to
  your computer. Use as MP3Player for music files in your computer.

TaalAcharya software to use Home, Classes, Concerts, Music/dance rehearsals and
Recordings\textsuperscript{33}. 
• Basic Talas (Adi 1-4 kalai and Roopakam)
• Chapu Talas (Tishra, Mishra, Khanda & Sankeernam)
• 35 Talas (Dhruva, Mathya, Roopaka, Jhampa, Triputa, Ata, Eka in 5 Jatis 1-4 kalai)
• More than 25 different Tempo options
• Image Zoom in/out, Rotation, Move up/down, Hand/Front View.

Most software also has collection of Lyrics of compositions of all composers in dual languages, English and Tamil. The reason for providing such facility is to accommodate those who do not know either language. Musicologist such as T.K. Govinda Rao has provided lyrics with meanings in his books which has made south Indian music known worldwide. Following his ideology, this software will provide the same context in both languages to cater for students from abroad as well as for
those who have language problem. The software also contains an icon on pre-recorded items and self recorded items. Under the pre-recorded column, the tutor, during practical sessions records the class items for students self practice purpose. This will be helpful for students to follow closely to the method taught by the tutor for better and excellent output, during their next practical session. The other icon is self recording. This option is given to the students to record their own voices on the specific krithis or Lessons taught during class, for their self-improvement, this self-recorded pieces can be sent to their tutors via mail, provided by the software itself when it is connected online. This improves the quality of lessons as well as the caliber of the students and certainly provides a positive atmosphere during class due to the raise of confidence amongst the students and tutors.

3.12.7 Working with the software online

As far as this software is concern, it does not only work offline but has the capacity of working online to provide immense resources that are available in learning the south Indian music\textsuperscript{31}. This software provides special links to view websites and other carnatic music links which has video and audios as well. From example, this software has inserted links to view vocal recitals by Abhishek Raghuram in video format provided on www.youtube.com. These links may be useful for the tutors as well as students for their personal development. Tutors will be able to use such links as guidelines to enhance their teaching methods during classes. This method certainly helps students to understand the subject matter that is being taught. Apart from just being conservative with video demonstration and links here also been programmed to
have web conference with musicologist, artists and tutors who have dedicated their lives for south India music. Tutors can fix appointment with the Artist, musicologist to have web conferencing sessions for their students and conduct a solid discussion on selected areas of South Indian Music. This option of web conferencing is limited to students as they are only allowed to use this facility during lecture hours with the guidance of their tutors. For anyone learning carnatic music online, guruswara has come up with an online training tool for carnatic music. Guruswara is the first of its kind online Carnatic music solution for vocal excellence that has been developed to revolutionize and transform Carnatic music practicing methodology\textsuperscript{35}. It will enable the guru’s to give assignments and track student’s progress. Students can practice and assess their performance in accordance with the parameters like Sruti, Laya, Bhavam, Swaram, and Gamakam. If you find this tool interesting, please let anyone knows who interested in learning carnatic music but do not have access to physical resources due to non-availability of gurus or vicinity problem. Guruswara can be handy to them.

3.13 Distance Education

Almost every person has an innate desire for Music Learning. But only a few have the opportunity to learn South Indian Music on regular basis. For others it always remained as a dream to learn music formally due to reasons like lack of time work load etc. But now technology has made music learning easy. Today, to learn music one need not to go to the Guru’s residence or a college at appointed times. Distance Education or Distance Learning is a field of education that focuses on the pedagogy, Technology and Instructional system designs that aim to deliver education to students who are not physically ‘on site’ in traditional class room or campus. It has
been described as ‘a process to create and provide access to learning when the sources of information and learners are separated by time and distance or both’ \textsuperscript{36}.

Distance Learning is the process of creating an educational experience of equal quality for the learner to best suit their needs outside the classroom. Distance Education courses that require a physical on site presence for any reason (including taking examinations) is considered a hybrid or blended course of study\textsuperscript{37}. This technology is becoming widely used in many universities and institutions around the globe. With the recent trend of technological advance, distance learning is becoming more recognized for its potential in providing individualized attention and communication with students internationally. According to Dr. S.A.K. Durga, the noted globetrotting voice-culture missionary, important enough to alter her itinerary and take part in this challenging exercise. She exhibited how musical skills can be imparted to willing students through audio or video cassettes. This Mechanical training helps them in understanding larger and more complex patterns of sound and finally in practicing them as a regular music composition. The video cassettes produced have helped students to improve their music abilities without physical presence. Yet, the music scholar warned that the requisite characteristics or qualities should be present both in the student and the teacher for the distance education to be as meaningful as a proximate one\textsuperscript{38}. Modern distance education has been practiced at least since Isaac Primah taught shorthand in Great Britain via correspondence in the 1840s. The development of the postal service in 19\textsuperscript{th} century led to the growth of commercial correspondence colleges with nationwide reach. For example, ‘The University of London was the first university to offer distance-learning degrees, establishing its external programme in 1858’\textsuperscript{39}. The society to encourage studies at
Home was founded in 1873 in Boston, Massachusetts. In Australia, the University of Queensland established department of correspondence studies in 1911. Musical Annotation, Composition and Orchestration would be better served if they were offered to distant students using modern technology. While a physical teacher should be available to all students at primary level to instill some initial training of music, at higher levels it could be taken up through distance. Music education is possible through the mode of distance education and online education with the advancement in technology, music lovers and music learners easily overcome the hurdles of time. Several universities in India, including Annamalai University is offering programmes in music through distance education. Technology alone made it possible.

Dr.N.Ramanathan introduced distance mode of music education through the Correspondence stream by the Madras University in 1984. He says about the course structure at the peripheral level the courses under the distance education in Madras University are of two kinds:

a) Regular Stream

b) Open University System (OUS).

Classes are taken by the study material and contact classes. Study material is again of two kinds according to the division of music into practical and theory. For performance, model lessons of music recorded in audio-tapes were prepared. These were supported by notations prepared for all the audio material. Audio recorded lessons were prepared initially for three options in practical namely Vocal, Veenai and Violin. To supply only vocal material for all the students they were seemed quite happy with this arrangement. In fact, this arrangement paved way for enlarging the practical options to include Flute, Nagaswaram, Clarinet, Mandolin etc. Thus students can now offer any instrument for the main practical subject. In the theoretical aspects
printed lessons were prepared in two mediums, English and Tamil. Later for topics like gamaka and ragalakshana, audio illustrations were incorporated in the cassette tapes sent for practical.

3.13.1 Personal Contact Programme

Personal Contact Programme is a feature of distance education where the students get an opportunity to have a personal contact with the experts in the respective disciplines. The arrangement is intended to create a meeting where the students can clarify their doubts that they may have in the study material received. It is not meant to be a classroom teaching session but to be more in the nature of consultation and discussion. As per the principles of distance education stream attendance in contact classes is not compulsory. In music 40 to 48 hours are allotted per paper. However while framing the timetable, 60 hours were allotted for practical and less for theory. However with regard to the course content, the personal contact programme and the examination there are no differences between the regular stream and the OUS32. The student receives apart from printed material, audiocassettes (videocassettes may soon become a part of the course material) that demonstrate the song in clear steps. Dr.N.Ramnathan said that some of these students have attained performance level skill without consulting any human Guru. The demonstration of software Rasika and Gayak, that not only array all fundamental raga and prominent compositions in camatic music but also allow the learners to use them interactively, emphasized the scholar’s thesis that while excellence is a matter of personal factors, adequate information to equip the student towards such a goal may be conveniently imparted through the distance education model. According to Shri Om Prakash Chourasia informed that the scholars participating in the seminar had resolved that
formal courses, for students residing beyond the geographical scope of universities, leading to similar degree certification. Informal courses dealing with various applied aspects of music. Short courses that supplement knowledge pursued in other streams. Seminars, workshops and Projects to be devised to transcribe, after due process of analysis and objective selection, the existing information in the form of print, audio, video and human expertise to the fast developing media of digital communication, that ensuring real time interaction, paves the way for collaborative and individualized learning.

3.13.2 Online Education

Non-conventional methods of music education like long education through Skype, Webex, Audio recordings, uploading the classes via internet must be encouraged the new technology can be utilized for making music education for those interested in the long-learning mode. The ways in which several governmental and non-governmental agencies shall have to re-document their archives for easy global access. They shall have to plan strategies for conversion of all important material into electronic media that can be stored and exchanged conveniently on CD/DVD ROMs or as digital files over the net. The global learner must be given a chance to understand the rich tradition of Indian music. Once the data was freely available in online after the various bodies interlinked to share their resources, DTH could also be utilized to provide customized teaching on demand.

In the online education guru or musician will invent the learning resources without losing the conventional values and new technologies that are used to provide the learning materials through email, notepad, word documents, PDF files for theory to the students with necessary instructions. The students are also provided with
contact classes via online organized by the guru for clearing the doubts. There is no
doubt that online mode of music education is in effective method to attract a wider
range of student friendly and easily accessible. In the 20th century radio, television
and the internet have been used to further distance education. The internet has made
distance education or learning distribution, faster and easier.

3.13.3 Types of technologies used in distance education

As we have seen in the introduction to distance education, the definition itself
reflects the method of this mode of education. Due to the unforeseen reason,
students/tutors who are unable to be physically present at class, use this distance
education method to enhance their knowledge in the field of education that they are
keen in studying. There are several types of distance education introduced to reduce
the percentage of less educated members in the world. They are:

- Correspondence conducted through regular mail
- Internet conducted

(a) Synchronous technologies

- Web based Volp
- Telephone
- Video conferencing
- Web conferencing
- Direct broadcast satellite
- Internet radio
- Live streaming
(b) Asynchronous technologies

- Audio cassette
- Email
- Massage board forums
- Print materials
- Voice mail / fax
- Video cassette / DVD
- Telecast/ Broadcast, in which content / subject matter is delivered via radio or television.
- CD-Rom, in which the student interacts with the content stored on a CD-Rom
- Pocket PC/ mobile learning, where students accessed course content stored on a mobile device or through a wireless server.
- Integrated distance learning, the integration of live, in-group instruction or interaction with a distance learning curriculum.

3.13.4 Uses of distance education

- Students can work at their own pace
- Reach more students
- Best way to reach remote, rural, geographically-restricted, health restricted students
- Collaboration opportunities with other schools and international contacts
- Maintain essential communication with students and colleagues
- Good opportunity for remote master classes and ensemble coaching
- Forces you to learn to organize and prepare your classes better, both on and off site
• Technology just keeps getting better
• It is so easy, especially with video built into new Macs
• We are falling behind music programmes in other countries in the use of technology

The Distance Education has traversed four to five generation of technology in its history. In India, the FM channel is very popular and is being used by universities to broadcast educational programmes in various areas such as teacher’s education, rural development, agricultural programmes for farmers, science education, creative writing, mass communication, in addition traditional courses in liberal arts, including music education in specific south Indian music. The increasing popularity of MP3 players, PDAs, smart phones has provided an additional medium for the distribution of distance education content and some college’s professors allow their students to listen or even watch video of a course as a podcast. For example,

‘Viewing a concert paper produced by artist forming a guide to students who are about to present concert paper as a part of their examination’.

In the given example above, a student can either watch the concert presentation on video or through video broadcast on television, internet, VCD, DVD and on mobile too. This can also be taken as a form of distance education. The rise of technologies leading to the development of online music education is well documented and such studies have become particularly popular in the United States in recent years (Schlager, 2008; Webster, 2007). Salavuo (2006) has examined the recent popularization of informal engagement with music technology in online social networks which may embody a form of informal community music education.
The following is a partial list of North American institutions that offer online degree programs in music education:

- Auburn University
- Boston University College of Fine Arts
- Duquesne University
- East Carolina University
- Ohio University
- Stephen F. Austin State University
- University of Hawaii-Manoa
- University of Southern Mississippi

The most common degree offered online in this subject area is a Master of Music, although one institution also offers a Doctorate of Musical Arts degree. As of mid-2008, one institution - Boston University - has over 800 online graduate students in music education.45

**3.14 Merits and demerits of education through Multimedia**

Musicologists have been trying to use the powerful force of music for molding the character and behavior of an individual. Music is more of a character development subject rather than only other education. Moreover, having introducing multimedia into the education of music develops a more innovative and creative set of students. Music on its own has the capacity to develop the fundamental aspect of perception, social consciousness through esthetic experience. The development of self-expression through the subordination of personal interest for the benefit of the self as well as the group.
The introduction of multimedia into music arena has certainly enhanced the expansion of Music Education. Steven Hick has mentioned in his research presentation, that there are several benefits obtained by using multimedia in the education system. He says that the introducing of multimedia in the education system has a great impact in the learning methods. Several studies over the years have shown multimedia education or to be specific multimedia learning has taken less time, that is enjoyed more and has increased the amount of knowledge grasped at one session. In a review of numerous Meta analysis studies Najpar (1996:30) found that learning was higher when information was presented via computer based multimedia systems than traditional classroom lectures.

Interaction is a mutual action between the learners, therefore learning system and the learning materials have found that interactive method of learning has strong and positive effect on learning. Bosco (1986) reviewed that 75 learning studies and found that learner’s learn faster and have better attitudes towards learning in using interactive multimedia. Using the specific courseware on a CD-ROM this has been adopted by many institutions in the late 20th -21st century. This learning method gained popularity and many begun to use it at learning centers, home, while traveling or to even enhance facilitated management development programmes. Having these facilities, education becomes more flexible to learn or even teach. By using the Multimedia courseware in CD-ROM, with the aid of internet or the intranets the learning approaches are even more flexible.

Taking into consideration the influence of multimedia in education system has also brought several developments in the education of South Indian Music. South Indian Music initially was taught in the method of Gurukulam whereby the students are to be by the side of their guru and all times. Trend has changed where the
introduction of multimedia has brought tremendous changes, where the method of education is being more dependent on the use of computer, internet and the need of guru being physically present at class not a necessity unless and when needed. The expansion of education with the aid of multimedia has certainly given many students the opportunity to expand their knowledge in the respective field of education. The expansion of their education method has indirectly reduced the cost of payment made by students who are less fortunate financially and physically disable to be present at class. Multimedia education also helps the student to be independent in gaining knowledge. The multimedia acts as a guru at this point and clears the doubts on a spontaneous basis.

There are more merits than demerits in the education system with multimedia. Nevertheless having multimedia in the education system has its own defects. Not all institutions are able to have the multimedia facilities for their students as the cost or budget allocated for the institution might be lesser than expiated. Apart from the cost, using multimedia requires heavy amount of electrical power. In some nations having power cuts, will certainly affected the education process.
3.14.1 Merits of Multimedia education

- Increases learning effectiveness
- More appealing over traditional, lecture based learning methods
- Officer’s significant potential in improving personal communications, educations and training affects
- Reduces training cost
- Easy to use
- Offers system portability
- Provides high quality video images and audio
- Frees the teachers from routine tasks
- Gathers information about the study results of the students
- Promotion of collaboration and critical thought
- A tool for learning, research and discussion to support face-to-face projects and practices
- Enhanced opportunities for self-reflection (and were often surprised at these outcomes)
- A new kind of academic support – freedom vs. instruction
- Raised confidence, due to community interactions
- Immediate access to the community, to meet a lot of people in a short.
- social networking and bonding
- technical hints, tips and information
- business, marketing and publication
- creativity and perspectives of the creative process
- Qualitative judgments where there might be no ‘right’ answer.
3.14.2 Demerits of Multimedia education

- Expensive
- Not always easy to configure
- Requires special hardware
- Not always compatible\textsuperscript{49}.

Summary of Music Education

The introduction of technology in south Indian music has revolutionized the methods of music education too. Just as the ancient gurukula method of education was replaced by the academies and institutions, the arrival of new software, APPs and Webtools has made music education cheaper, simpler and faster. Many APPs have come into existence with which the learner can learn music from anywhere at any time. In fact the modern technology can be said to have rewind the ancient system of ‘gurukula’. Now the learner need but go to the institution to learn. He can learn as a student of Gurukula learnt in the past. In other words, technology is the virtual guru for the present student. All that the learner needs is interest.

About thirty years ago, the learner and the teacher had to meet face to face at an appointed hour in a fixed place. Because of it, only a few could have access to music. Usually, the urban had the advantage of learning music because they could have easy access to the residence of the teacher. The rustics could not find time and access to learn music even if they were interested in learning.

Thanks to the advancements of telecommunication, the world has become a global village. Distance has become mollified. Internet has enabled people across the world to come closer. As a result, there is no different between the urban and the rustic. Whenever the learner feels free, he can spend his time to learn music.
The technology has also helped the music teacher to have an easy access to his disciples. He can record his class and upload it on the web so that the learner can listen to it any time he wants. Thus technology has removed hurdle of time. Facilities like online booking, online money transfer, mobile phone calls have enabled both the teacher and learner to save time.

There are innumerable software and other APPs which have made music education easier and simpler. A number of recorded concerts are available in the internet, which helps the learner to improve him. In the past, a learner had go to the concert hall to listen to a programme. But today, he can listen to a programme from the place where he is. He can also replay it. Besides, there are web archives which give him access to a number of concerts and classes all over the world.

Thus, technology has proved to be a boon for music education. Both the learner and the teacher are benefited by it.
Endnote of Music Education:


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10. Mr Quraishi, The Economic Times, Recorded Music in India Strikes a Chord, Turns 100 TNN, Nov 12, 2002.


12. www.karnatik.com


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38. The Possibilities of Teaching Indian Classical Music on the Distance Education Model. The International Seminar Held at Bharat Bhawan, Bhopal on 27th, 28th and 29th November 2000, Organized by Ustad Alauddin Khan Sangeet Natak Academy, Bhopal, Sourcesby www.artindia.net, viewed on 27th july 2012.


43. I-bid 38.


46. Dr. Steven Hick Benefits of Interactive Multimedia Courseware (c) 1997. Trican Multimedia Solution Inc.

47. I-bid 46.
