Role of Learning Management Systems for Music Education: Hindustānī Classical Music, Khayāl

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Abstract:

This article gives an insight into how the technology of learning management system (LMS) is implemented in the process of teaching and learning the traditional performing art form like the Hindustānī classical music, Khayāl. Khayāl is an evolved form of music that encompasses intricate elements of improvisation. The lack of standardisation in the existing teaching systems poses a challenge to bring this genre of classical music to a common platform with the purpose of institutionalisation. Besides this, the world has gone through a technological revolution with the use of the internet in different walks of life including education. While the adaptation to the changing world has been possible with many individuals and organisations teaching online, it is important at this juncture to examine the quality and effectiveness of the distance learning online format used in music. This study is carried out by choosing, as a model, the Shankar Mahadevan Academy, a pioneer institution in the field of imparting Indian classical music education mainly online, through their SeekLMS platform and an overview of what the LMS platform brings forth to aid the learning of music.

Keywords: Indian classical music, Khayāl, digital learning, blended learning, music education, academic content, pedagogical practices, learning environment, LMS

Introduction:

The Hindustānī classical music Khayāl is characterised by an imaginative musical form of improvisation of a Rāga within the framework of the repeating rhythm cycle, the Tāla. The Guru- śiṣya tradition is central to the process of teaching-learning of this art form. "A learning management system is a software application or web-based technology used to plan, implement and assess a specific learning process".(Kirvan, Brush). This study aims to find out how the learning management system impacts the process of imparting music education, especially through the online medium. The study is carried out by using the case study method. The Shankar Mahadevan Academy established in the year 2010, is backed by SeekLMS, a robust learning management system (LMS) that offers customisation for music education. This institution was able to meet the demand for cutting-edge technology and new-age cyber classrooms, during the pandemic, thus is chosen as the model for this study.

This online music academy for music is built out of the vision of two friends, Shankar Mahadevan, the maestro of music and Sridhar Ranganathan, a technology entrepreneur. The idea was to use disruptive technology and best practices to further music education. Sridhar Ranganathan elucidates this idea as follows- "Technology and innovation go hand in hand - innovation can be due to new technology or a new

use of an existing technology. Disruption - usually means "stopping" or impeding. In this context - you can think of it as 'challenging status quo'- thinking ahead for a better solution by challenging what has been happening for generations- for example- in a way- "pressure cooker" was a disruption, electric cars are a disruption. In our context, taking Music learning online is a disruption. With the increase in the number of people and the number of cars on this planet, the reduced bandwidth on the roads (aka Traffic) makes it very inconvenient for students to reach an offline class, while the increase in bandwidth on the Internet makes it far more convenient to learn online maintaining punctuality and time management."

The working and operation of the LMS:
The Learning Management system employed here fundamentally has five pieces:

1. **User Management-** involves creating different roles; the roles of a teacher, student, content creator, curriculum coordinator and system administrator are defined separately.
2. **Batch creation -** one or more students /teachers can be assigned to a batch.
3. **Content Management -** Specific pieces of content categories like learning content, teaching aids, assessments, rubrics and student-specific content like grades etc are managed by the LMS and used in specific process flows.
4. **Assigning a specific portion of content to a batch of learners -** Content created is saved on the cloud. It can be accessed from anywhere with any device through an app or a web browser.
5. **Assessments, Grading and Certification -** the LMS takes input from teachers in the form of a rubric, calculates the grade automatically publishes the grade and generates a certificate that is made available to the student from their dashboard.

On the operational side, the platform incorporates the features like

- **Live class tracking -** this enables support personnel to connect with a student or teacher who may have not logged in on time and remind them to log in.
- **Changes in Batch timings -** Empower support personnel to change batch timings based on the request from a teacher or student/s.
- **Affiliate Support -** The LMS allows the creation of silo centers that would deliver classes for a specific set of students (eg: a school or an offline center) or geography.
- **Online Web Conference Support -** the LMS is designed to work with any Web Conference tool (eg: Zoom, WebEx, Google Meets, or MS Teams) and provides an easy mechanism for both students and teachers to join a learning session.

Discussion:
The evaluation of expertise in an art form is often done by measuring skills predominantly. When applied to the art form like Khayāl, this approach is inadequate. The unique characteristic of Khayāl is that the Rāga exposition unfolds through the meeting of absolute creativity through extempore expressions and absolute structure provided by the banister of rhythm created by Tāla. Rhythm is slowed down to create space and a fertile land for imagination to blossom. The development of skills and foundational theoretical concepts need to be integrated with seeds of creative thought involving higher-order thinking.
The curriculum designed with this thought process consists of the following components:

1. Content- Syllabus (what is to be taught)
2. Teaching methodology (how to teach)
3. Assessments (Evaluation and benchmarking)

4. Recitals and concerts (Performance)

5. Archival and outreach

The following discussion involves the functioning of these components of the curriculum laid out on the LMS platform. The first three are being assessed from the perspectives of a student, a teacher and the researcher/content creator. The fourth component, recitals and concerts discusses the facilitation of the culmination of the teaching-learning process. The fifth is that of a social responsibility of the institution towards the preservation and increasing accessibility of valuable content worldwide.

1. Content:

Indian classical music comprises a vast body of content that includes the following aspects - skill development (Svara Sādhanā), compositions (Bandiś) with improvisation, theoretical base (Śāstra) and listening material.

With an intent to provide all that goes into learning Indian classical music, the Online Music Book^{TM} or the OM book^{TM} was designed. "The notion of scaffolding is now increasingly being used to describe various forms of support provided by software tools, curricula, and other resources designed to help students learn successfully in a classroom." (Puntambekar, Hubscher) The OM book^{TM} has features that offer content as well as scaffolds for learning. It incorporates the role of a teacher by facilitating teacher-student interactions that aid learning.

1.1 Student's view

"What strikes me about the OM book is how the curriculum, the different elements required for learning and LMS are so well integrated, the same time it uses different modalities; it is almost like this system is designed for music. A multi-modal environment is more conducive to learning, especially for music it is more important." (Puntambekar, 7:06-8:10min) The LMS provides a platform that has specific features designed for music learning. The Online Music Book^{TM} or OM book™ is an effective cognitive tool that uses multiple modalities for learning involving both visual and auditory learning styles.

- Audios and Videos recorded by experienced teachers and performers serve as model presentations offering the choice of content that will enable learners to select the material that is best suited to their level of readiness and interest. The additional compositions featured to offer the choice of content serve as listening material.

- The Svara Sādhanā exercises are broken down and sequenced. There is a facility for the student to revisit the learnings at any time.

- Notations in the form of script- follows the Bhatkhande Svaralipi system

- Music theory (Śāstra) - includes definitions, raga descriptions and theoretical concepts in the form of text as well as explanations through video and audio.

- Listening material that is an integral part of developing the listening ritual or samskāra is provided under the reference section of the Online Music Book^{TM}.

- Inbuilt Tanpura- provides instant support at the time of practice.

- Inbuilt class summary system - allows the student to view the notes left by the teacher at the end of each session summarising what was done, what is to be practised, what is to be recorded and sent for review and what is the preparation needed for the next session.

- Practice tool- OM Riyaz or Online Music Riyaz is a tool through which a student records one's practice. This aids self-assessment and also serves as an interactive mechanism that helps the teacher to monitor the student's practice. The audio feedback shared by the teacher points out specific areas of improvement as well as provides solutions.

- The content extends to learners of different learning styles, learning levels, skill sets and special needs. Tripti Lakshminarayanan, a parent describes her child's experience- "A person with autism does not like surprises. They will always feel calmer to know beforehand what's coming up. That will be the first reason why OM Book^{TM} is helpful for Jahnvi. She likes to explore the book as soon as the new course begins and looks forward to the classes with a lot of enthusiasm. Again she has always been a strong visual learner..most people with autism tend to be. During the week she listens line by line to what is taught to her along with her OM Book^{TM} notations to reinforce her learning. So her learning reinforcement between classes is with the OM Book^{TM} and class recordings as the teaching aid, her teacher's teaching style plays a major role too"

The following graphic shows the components of the OM BookTM and the skills supported by these components rendering the OM bookTM as a multimodal cognitive tool.
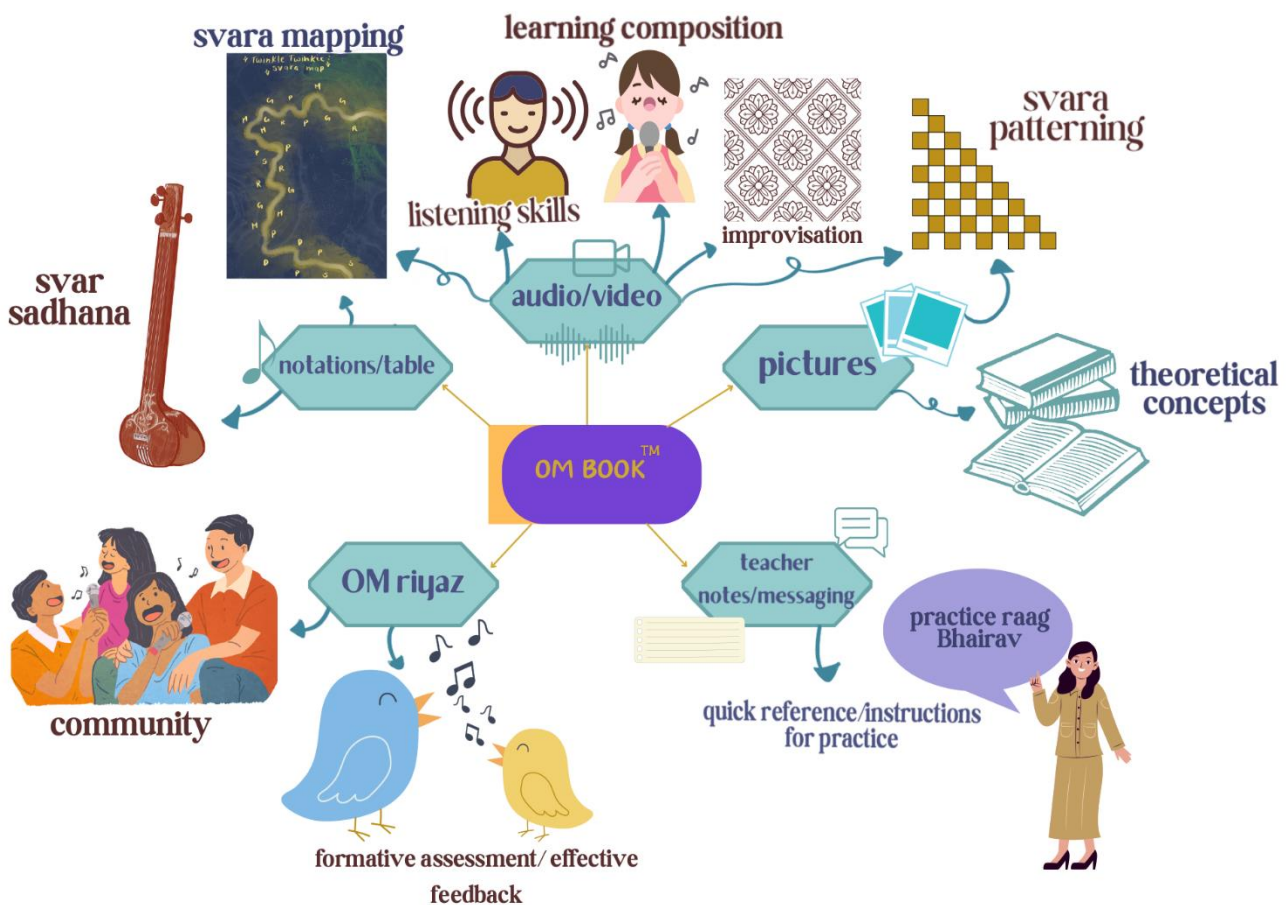
Other cognitive tools:

The system supports an application called 'Listen to Learn' through which the student accesses the recordings in audio format any time anywhere on the phone and other devices.

The 'Sur Sadhana' application gives a visual representation of the note sung and scores on the accuracy and stability of the note. The time in seconds to hold a note can be chosen by the student. With an inbuilt

Tānpurā and reference notes in different keys to choose from, this application is an effective scaffolding tool, especially for beginner-level students.

1.2 Teacher's view :

In addition to the OM Book^{TM}, a teacher has access to the instructor plan in the form of teachkits. While the OM Book^{TM} is a treasure house of content and compositions, the teachkits host a plethora of ideas on teaching techniques.

- The progressive curriculum is presented with clear learning objectives and outcomes under instructor plans.
- Learning outcomes are designed according to international standards that are appropriate for a learner at every stage, and that will pace the learning to suit the learner.
- The content is broken down into structured modules and lessons that will aim at skill development as well as higher-order thinking inevitable for internalising the art form.
- The teachkits and the OM Book^{TM} are created with inbuilt flexibility for the teacher to choose content, activities and methodology that is suitable for each student or batch.
- The improvisational elements like the ālāpa, tāna, svara vistāra are provided in small packets as models giving enough space for the teacher to explore these aspects with the student during live sessions. The recordings of live sessions are available for teachers and students to go through.

Alongside this, the teacher undergoes a teacher-training program that provides study material. This content has emerged out of the collaboration of experts in the field of education and music. The teacher training content that includes recorded mock sessions, text, assessments along with references opens a new doorway to explore innovative teaching techniques.

1.3 Content Creator's view:

The LMS provides possibilities for content creators to cater to different learning styles. The complex theoretical concepts such as the time theory of rāga-s could be illustrated with the help of visuals and lectures. The sing-and-repeat format could be emulated by videos of a model teacher and student. The Bandiś is taught with correlating svara-s. The vocal nuances are slowed down and demonstrated with the help of svara-s. To develop higher-order thinking skills of evaluation, analysis and creativity - svara identification/mapping and composition exercises are devised under Svara Sādhana. Thus the repository encompasses a wide range of content from exercises to develop vocal techniques, demonstration of composing and singing alaṅkār (sequential svara pattern), and exercises for developing svara identification/ mapping to concert performances demonstrated with Tabla.

Artists from different gharāna traditions are brought to a single platform providing exposure to our rich traditions and knowledge systems, thus benefitting students as well as teachers. The educators develop a broader outlook and enrich their own repertoire of compositions.

The rāga based popular songs, songs from different languages, Bhajans are grouped together under topics such as composer, rāga, genre and so on or used as single song units. This could be used as allied content to enhance interest levels and create a basic understanding of rāga-s among students who relate to songs by their familiarity and listening habits, thus creating an appropriate learning path for a learner.

Guided listening is an integral part of learning classical music and is as important as regular practise. A wide range of listening material could be provided to the student with the help of tools like OM Book^{TM} and the listen-to-learn application.

2. Teaching and pedagogy:

2.1 Student's perspective:

The student is assigned to the same teacher across structured courses fostering a continuous process of learning. The standardisation achieved through the LMS platform reduces the impact of change of teachers that may occur due to various reasons. The teaching methodology is student-centric and caters to the needs of different learning styles, and learning levels based on gift or prior learning experience, imbibes a safe classroom environment.

While learning systematically under a Guru, the student gains exposure to the instructional styles of some of the stalwarts through the content in the OM Book™. The class summary and instructions left by the teacher, the audio reviews given for practice recordings are available within the OM Book™. The integration of class summary into the OM Book™ adds the teacher's voice to the OM Book™. The practice tool, OM Riyaz further facilitates the student-teacher interaction in between the scheduled sessions. The student is able to track one's own progress using these tools. The class recordings generated by the interactions of the Guru and śiśya are saved as a valuable resource for the student to revisit the creative process, and develop and design presentations.

2.2 Teacher's perspective:

Data management is a characteristic feature of the LMS that aids the Guru- śiśya equation - the system maintains records under the student's profile as well as the teacher's profile. This gives the advantage for a student to learn from the best-suited teacher and continue with the same teacher giving an opportunity for a teacher to groom the student over a period of time.

The system supports a teacher in the day-to-day work that involves content, planning lessons, assessing students and recording data regarding the student's journey through different courses.

- The class schedule is seen upfront.
- The video conferencing facility is integrated into the system.
- The performance and progress records of any student could be accessed at all times.
- After every session, the teacher has the facility to write a short summary of what was taught, what the student needs to practise and what to look forward to in the next session. This note is addressed to the student through the OM Book™ and this is also listed under the teacher's schedule helping the teacher in recall, ready reference and preparation for multiple classes.
- The practise tool OM Riyaz helps the teacher monitor the student's practise and give relevant feedback to students practising at different levels. The audio feedback facility allows the teacher to pinpoint the area for improvement- and provide the sing-along lines to a beginner in the student's singing pitch. To an advanced-level learner, the teacher pushes the boundary by modelling the improvisational elements of ālāpa or tāna patterns. For example, a student practising at an advanced learning level has shared the sthāyī(the first half of the composition) with improvisation, through the practise tool; the teacher may provide a feedback recording with guidelines encouraging the student to take a step forward and explore the ālāpa of the antarā (the second half of the composition).
- The teacher is able to view the Sur Sadhana scores of her students practising using this application.
- The teachkits™ provide lesson plans that incorporate clear guidelines on how a particular concept could be taught, with emphasis on exercises to inculcate creativity from the word go. The exercises start with creating small clusters of note patterns and creating small variations in a line of the song learned, progressing into the student creating an entire composition. Similarly, analytical skills such as svara mapping are developed by using specific exercises to build a correlation between melody and svara. These teachkits™ that contain the lesson plan as well as training material in the form of collated

teaching techniques help in building effective pedagogical practices and encourage thoughtful discussions among teachers.

2.3 Content creator's perspective:

The implementation of the curriculum materialises in a seamless manner ensuring standardisation by facilitating training for teachers in the following three ways -

• The teacher certification course with training sessions and course material.
• Peer learning and self-assessment are facilitated by making the best use of session recordings.
• The lesson plans designed for each of the 12 lessons per course- include learning objectives, exercises and content along with clear guidelines based on the teaching methodology.

The teacher training course integrates modern teaching methods and practices with the traditional system to generate effective techniques that cater to worldwide students coming from a variety of cultural influences and skill sets. The ideas such as scaffolding and teaching for creativity are practically demonstrated in the model videos applied to key areas like Svara sādhanā, Svara identification, introduction to a Rāga and creating ālāpa.

The recorded sessions help monitor classes on an institutional level. These sessions are used to offer assistance to trainee teachers by the experienced. For example, a trainee teacher could choose her class recording and seek suggestions from an experienced teacher, who can view it on the common platform. Teaching concepts like Laya, composition and Svara mapping have unique techniques that any teacher can access and implement with the freedom to add her enhancements to them. The new ideas that spring up in the classrooms can be further collated and incorporated into the training content for the benefit of educators.

3. Assessments and benchmarking:

3.1. Student's view:

Assessments aid the process of deepening and internalising the learnings. Assessments use this platform's facility to integrate various aspects like visualisation, attentive listening, correlation of these two facets and so on. Anupama Roy, a senior student puts it as - "Some of the things that stood out in SMA were the assignments, I was actually shocked to see one of the questions - create a mood board for rāga Mārva".

The formative assessments strengthen the foundation in areas of skill, knowledge, creative exercises and putting together a performance. The summative assessments provide an opportunity to perform and avail a report with feedback.

• Learners have the facility to record and upload or use an online recorder.
• For theory, there is a facility to submit documents, presentations, photographed write-ups and write short answers.
• The assessments support listening material for ready reference.
• The assessment plan consists of formative assessments in the form of submissions and live performance-based summative assessments in the form of rubrics-based observation.
• For benchmarking, level examinations are conducted annually; close mapping with well-recognised national curricula in Hindustani music is done.

3.2. Teacher's view:

• The educators initiate discussions around formative assessments reinforcing concepts. The assessments also drive the feature of guided listening.
• The process of evaluation is simplified and incorporates a timely messaging system.

- A sense of objectivity is brought in by the provision of rubrics with the feature of auto-totalling of scores and space for descriptive feedback.

3.3. Content creator's view:

With the two types of assessments - submission-based and observation-based, a holistic learning environment is provided to the student.

- The system supports analytical question types like multiple choice and true or false and hosts assessment types to develop aural perception, identification and interpretation, and communication through demonstrations with provision for reference audios.
- The submission-based assessments are formative in nature and focus on skill development, theory and presentations; the observations are performance-oriented.
- The observations are recorded using clear rubrics with a minimum of 5- point descriptors and auto-totalling of scores. Certificates are programmed to be generated automatically by collating the formative and summative assessments.
- The theory exam paper supports different question types allowing write-ups supported by audio demonstrations. This submission assessment can be programmed to be a timed bound paper to be completed in a given time frame.

4. Recitals and concerts (Performance)

The LMS plays a significant role in the efficient organising of performances and maintaining quality standards. It supports collaborative learning and performances through interactions. Recital groups are created under each teacher and the recital schedules are planned ahead with the students getting notifications to join their recital. Moving the large-scale group recitals from offline to online mode during the pandemic has been possible due to the robust LMS technology. These recitals are conducted with experts joining from different parts of the world and share their feedback and knowledge with the learners. Projects involving creating compositions leading to well-produced music is possible with the learning tools and the inbuilt organisation within the system.

For online group performances tracks with the original Tabla recordings are provided. This experience helps in the execution of more complex ideas using studio like techniques of using headphones and microphones.

While the learners are well trained with techniques useful for recording studios, this technology provides maximum possible inputs to be able to perform in a live concert. An environment for live interactions is necessary to make this experience fulfilling.

5. Archival and accessibility:

The Shankar Mahadevan Academy platform supports the program titled 'Archive to Alive' with the motto of 'making every archive learnable, not just collectible'. Some of the content that is available in this digital archive includes 'Naman Sajan Piya' - the compositions of Ustad Khadim Hussain Khan of the Agra Gharāna, compositions of Mysore T. Chowdaiah and the 100 slokā-s that form the Soundarya Lahiri. The compositions along with audio and notations are available for learners across the world.

Conclusion :

A curriculum that promotes higher-order thinking in learning is the essential ingredient in the process of imparting music education with Khayal as specialisation. Dr. Sadhana Puntambekar, a Professor in

Educational Psychology and a passionate learner of Hindustānī classical Khayāl says that this system along with the curriculum promotes the 'distributed scaffolding', it is not just the tools, it is the teacher, the interactions, the assessments everything works together to enhance the learning process. The LMS effectively supports the Khayāl curriculum which is constituted by the content, the listening material, pedagogy and assessments. It provides a robust platform that records data and aids the processes to utilise this information efficiently. It provides a feedback system that incorporates surveys, banners to display upcoming events and messaging systems. The LMS allows for remote collaboration between experts to create Centres of Excellence in bringing their collective expertise to the experience. The students and teachers get access to best practices from various experts in one place.

It is found that a blend of crucial aspects of pedagogy along with the conventions followed in the Guru śiśya tradition could be brought onto the same platform to impart music education using the learning management systems. The learning management system has the potential to support learning online, in person, a hybrid model, or the self-study model of learning.

The challenges may arise in the areas of availability and affordability of devices and powerful networks. Another difficulty witnessed is the challenges that occur in offering training to the Guru-s and śiṣya-s who seek to learn, depending on the musicians' openness to use technological tools. The future holds promise in these areas.

With more innovations in progress, the use of Neural networks and AI technology could be explored for conducting studies to extract common patterns emerging across the recorded classes with a set of teachers and their students. This information could lead to collating commonalities of practice and derive pedagogical insights to tweak the lesson plans and training. Gaming on engagement- may be developed to create leaderboards to be used as a part of pedagogy to motivate students towards following a goal-oriented practice routine.

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