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Enhancing the learning experience of the Navarasa theory through Virtual Reality

Divya Kamat¹, Neelam Bhosale², Hariom Jagtap³

^{1,2,3} Immersive Media Design, MIT School of Design, MIT Art,
Design and Technology University, Pune - 412201, India
Corresponding Author: divya.kam04@gmail.com

Abstract

This research proposes how Virtual Reality can serve as a multisensory medium to enhance the understanding of the ancient Indian Navarasa theory. It focuses on Ehsaas, an immersive VR game that turns the nine core emotional states into interactive spatial environments. Today's youth often navigate through complex digital environments which contributes to cognitive overload. There is also very limited awareness of the Navarasa theory as a model for understanding human emotions. The existing emotional learning methods rely on passive consumption in a generation that is habitual to interactive media. In an attempt to fix this, Ehsaas combines the cultural knowledge from Bharatamuni's Natyashastra with modern game design frameworks and Western psychological ideas to create an engaging and immersive experience. It follows an approach without the traditional win/loss conditions or timers, which encourages the player to prioritize psychological safety and self-determination. The players journey through diverse emotional realms ranging from serene environments of Shringar and Adbhuta to heavy spaces of Raudra and Bhayanaka, which transform abstract theatrical concepts into tangible psychomotor interactions. Through physical VR gestures the users can channel raw emotional energy into purposeful actions, which aid cognitive reappraisal. This research demonstrates how immersive technology can build empathy, emotional resilience, self-awareness and mindfulness to guide the users to a deeper experiential understanding of the Navarasa theory. It highlights the potential of VR as an innovative, interactive, therapeutic medium for sharing India's cultural and theatrical psychology through interactive learning. By connecting ancient traditional knowledge with modern digital experiences, Ehsaas creates a new approach demonstrating that immersive media alongside the Navarasa framework can serve as a way for self-discovery.

Keywords: Navarasa, Rasa Sutra, virtual reality, immersive learning, Indian Knowledge System

1 Introduction



1.1 Background and the Gap in Emotional Education

Emotions underlie almost all human psychological functions and social interactions. All cognitive processes like attention, memory, decision-making depend on it in some way. The ability to perceive, comprehend, and regulate one's emotions is generally referred to as emotional literacy, which is central to psychological wellbeing (Gross, 2014). However, Western psychology, which has dominated the study of emotions, often views emotions such as anger, fear, and disgust as negative aspects that need to be controlled or mitigated (Fredrickson, 2013). Consequently, there is a certain psychological gap, an absence of discourse, around how some Indian knowledge systems approach emotions from an emotional literacy perspective.

1.2 The Navarasa Theory

Bharata Muni's Natyashastra aims to fill this gap by presenting the Indian view of emotions through the Navarasa theory. Its foundation, the Rasa Sutra specifies nine primary emotional states (rasa) that build the human emotional experience. According to the Rasa Sutra, a rasa (aesthetic emotion) emerges through the interaction of Vibhava (situational causes), Anubhava (expressed behaviour), Vyabhicaribhava (transient emotional states) and Sthayibhava (stable underlying emotion). Rather than viewing emotions as something to be eliminated, this theory treats them as natural experiences that can be understood, appreciated and transformed (Mangattu, 2016; Anupama, 2025). Although it was originally meant for aesthetics and performance, the Navarasa framework is similar to modern contemporary concepts like cognitive reappraisal, somatic experiencing and emotional resilience. Promoting awareness of Navarasa therefore contributes not only to cultural preservation but also to foster a broader and more inclusive understanding of emotional literacy.

1.3 Virtual Reality as a Learning Medium

Virtual Reality (VR) provides a particularly suitable medium for teaching the Navarasa Framework via experiential learning, due to its immersive and engaging nature. There is a lack of this characteristic in lectures, books, videos and even screen-based games to a large extent as it leaves the user in a relatively passive and detached role. VR, on the other hand, enables users to interact with a constructed setting in an active manner, resulting in a feeling of embodiment, which can be very useful for explaining abstract concepts like the Navarasa (Gurjar & Yadav, 2024). VR has the capacity to turn an abstract cultural idea into lived experiences by combining its works well in immersive environments that involve physical interaction, such as in games, transmitting the body language of the Navarasa framework.

1.4 Aim and Scope of the Study

The above discussion serves as the basis for this study, which explores the connections applied to the Navarasa theory, psychology and game design principles to show the applicability of VR for embodied emotional learning. Specifically, the study is based on introducing the ideas and design of an interdisciplinary model and developing an application named Ehsaas for VR which will include the Navarasa theory. By integrating Indian Aesthetics, Psychology and Game Design principles, the study highlights the potential of VR for embodied emotion. It is a learning platform and a source of inspiration for the development of future immersive cultural experiences.

2 Literature Review

2.1 Navarasa, Emotional Engagement and Interactive Game Design

There is already a considerable body of literature on Navarasa theory. In most of this work, the potential application within digital spaces is confined to a single discipline. Very few studies attempt to integrate Indian aesthetics, psychology and game design into constructive discussion with one another. In aesthetic philosophy in particular, Mangattu (2016) traces the development of Bharata Muni's Rasa Sutra which began as a theory of dramatic performance and eventually became a comprehensive aesthetic theory, pointing in particular to the shift from dhvani (suggestion) toward rasa (essence). As per Mangattu (2016) rasa is not just a simple, passing or subjective emotion, but a temporal and intentional process that exists somewhat independent of the perceiver's current ego. Chitaliya (2024) builds on this temporal quality, arguing that rasa is even more apt to digital environments, considering the fact that such experiences are already inherently process-driven. Chitaliya (2024) cited that the first attempts to apply Indian aesthetics within a conceptual project were made in "Rasa VR". Nevertheless, Mangattu and Chitaliya are still more likely to be more theoretical in nature, providing little practical advice for implementing rasa theory in practice as a functional digital system.

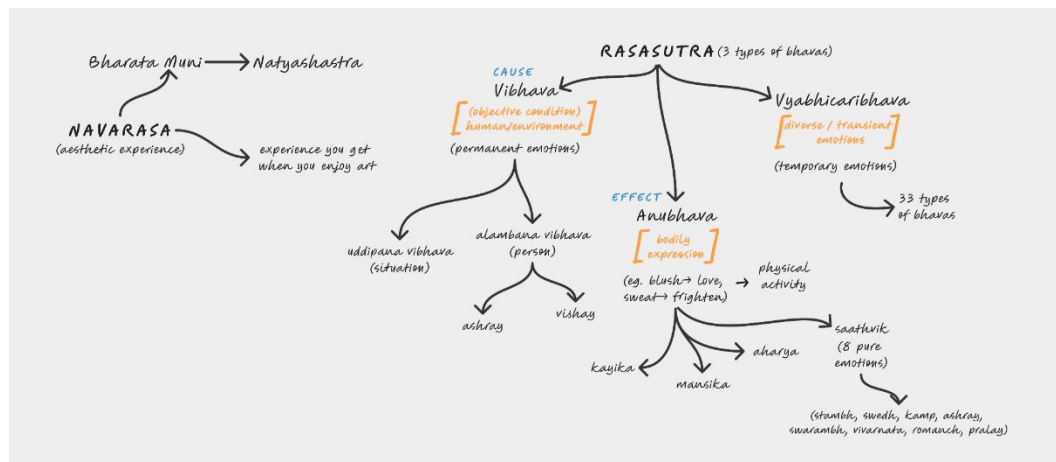


Figure 1. Understanding the Navarasa theory and Rasa sutra

Anupama (2025) delves further into the psychology realm, offering a reading of the nine rasas as adaptive psychological mechanisms rather than purely aesthetic categories. Rasa, in this sense, emerges through a person's active psychological engagement with the object of perception (Anupama, 2025). This mapping is fairly systematic, for example Shringar is associated with attachment and connection, Karuṇa with caretaking behaviour and Raudra with the transformation of energy etc. Anupama (2025) connects the Navarasa framework with the concept of emo-diversity, defined as the experience of a varied and balanced range of emotions in daily life. She suggests that, similar to the Navarasa philosophy, greater emotional diversity supports psychological resilience and overall well-being. This represents a genuinely valuable conceptual bridge between rasa theory and contemporary psychology, but the literature does not show how these insights might be translated into an actual interactive medium.

Beyond Indian aesthetics and conventional psychology, a separate body of research has investigated VR's ability to create emotionally engaging experiences in itself. Gurjar and Yadav (2024) explore how VR environments could be designed using principles that mirror the *Natyashastra*. Hughes (2024) approaches the subject somewhat differently, considering VR's ability to amplify emotional awareness in terms of a "virtual metatheatre." Hughes (2024) uses the metaphor of the "spotless mirror" to describe the immersive and mildly dissociative natures of VR, enabling users to see and process their emotions relative to a sense of psychological safety.

In the interactive design context, Baharom et al. (2014) and Gujar and Yadav (2024) explore emotionally resonant games in relation to Don Norman's three levels of emotional design which include visceral, behavioural, and reflective, and how these levels can be invoked in a game, particularly the reflective stage, to lead the player towards a state of flow which can then result in a positive emotional response.

2.2 Summary and Research Gap

Taken together, the findings of Hughes (2024), Baharom et al. (2014) and Gurjar and Yadav (2024) provide a fairly robust body of design principles to guide the creation of emotionally engaging VR. None of these studies, however, truly provide an empirically tested implementation of their proposed theories. The literature therefore points to a clear and persistent gap of a methodology that practically integrates Navarasa theory with spatial computing on an interdisciplinary level. This is the gap that the present study aims to fill, combining Indian aesthetics, psychological emo-diversity and interactive game design principles into a functional, tested VR model capable of generating genuine emotional engagement and psychological resilience.

3 Methodology

3.1 Research Design

To effectively bridge the gap between theory and aesthetic philosophy with interactive game design, a complete mixed-methods approach was adopted. This methodology was essential to inform the structural and environmental design of the Ehsaas VR prototype, ensuring the final experience is both culturally relevant and psychologically resonant for the users. The study involved three stages: a quantitative survey, semi-structured interviews and focus group discussions with experts.

3.2 Stage One: Quantitative Survey

The first stage of the research involved creating a Google Forms questionnaire and distributing it among fifty participants. The age span of the respondents was between 18 - 35, a choice informed by the researchers' belief that members of this demographic are most likely to have a pre-existing relationship with technology, including wellness-oriented tech products. The content of the questions was varied, covering topics such as the respondent's emotional literacy, mental fatigue and stress, their understanding of Navarasa and associations between colour and emotion, in the form of multiple-choice and open-ended questions, as well as a five-point Likert scale. The intent of the survey was to identify the target audience's primary emotional concerns, familiar emotional regulation techniques and their level of emotional intelligence. The survey identified participants' gaps in their understanding of Navarasa, the most prevalent emotional challenges reported by the respondents, and the areas in which they felt VR-assisted emotional regulation would be most beneficial.

3.3 Stage Two: Semi-Structured Interviews

The second stage included a semi-structured interview of 20 participants. The interviewees were asked to describe their understanding of various emotions and how they experienced them on a day-to-day basis. However, this time, the focus was on eliciting their associations, thoughts and imagery triggered by specific emotions such as love, anger, fear, sadness, wonder, and calmness. The emphasis was on identifying patterns to use in the project's emotional domain modelling and interaction design.

3.4 Stage Three: Focus Group Discussion

The third stage was a focus group discussion with three experts in the field, one for the virtual reality and game design sphere, one for psychology and one for the Natyashastra traditions. The focus group's purpose was to review the proposed design concepts and comment on their capacity to fulfil the project's objectives. The discussion covered the core interaction models, environment storytelling, emotional development, and the underlying principles which guided

their selection, including the proposed zero-fail design philosophy. They provided insight into ways in which games tend to manipulate the players' psyche, often unknown to them or the audience, and informed the design process further towards the principles of Self-Determination Theory.

4 Results

In total, there were fifty-three participants in a quantitative survey aiming to understand emotional awareness, familiarity with Navarasa, and attitudes towards using immersive technology for emotional learning. Firstly, it is evident that most of the target audience is between the ages of sixteen and twenty-four (54.7%). This data point aligns with the known trends in technology adoption, which strongly correlates with age. In the target audience, 41.5% experienced emotional overwhelm sometimes, while 35.8% felt it often, which highlights the level of emotional distress in this group: this age group is overwhelmed quite regularly. Meanwhile, 50.9% of participants believed that their emotions "pass by too quickly to make sense of them." Most of the participants felt somewhat confident in controlling their emotions but not overwhelming in their confidence in managing them. The majority of the responses were mixed and varied, but several themes stood out in responses regarding actions taken when emotions became too intense.

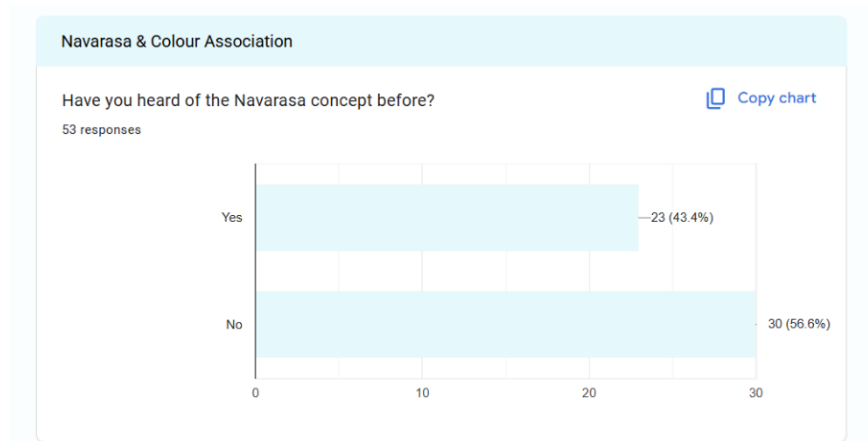


Figure 2. Google Form survey data

A significant number of participants were unfamiliar with Navarasa, with 56.6% being unaware about it before the study. However, most respondents were positive about the idea of categorizing emotions as a tool to make emotions more understandable and discuss them. In fact, 62.0% of participants who had no prior knowledge of Navarasa were positive about the idea. This data point is meaningful because it suggests that irrespective of any prior familiarity with Navarasa, there was audience receptivity to the educational potential of Navarasa.

The study yielded three main results from the study that were of significance to the design of Ehsaas. Firstly, the target audience is in a frequent state of emotional overload. Secondly, the idea of Navarasa was largely unknown to the participants. However, the general idea of learning about emotions was positively received. Thirdly, the participants expressed interest in learning more about emotions via an immersive, culturally rich medium, as an alternative to reading books and using generic wellness apps. Subsequently, interviews were then analysed thematically, focusing on participants' emotional connections. The responses were grouped thematically for simplicity and to highlight common themes, rather than analysing individual responses. This approach allowed them to identify the ways in which the participants associated emotions with various aspects of Ehsaas: colours, settings, sounds and interactions.

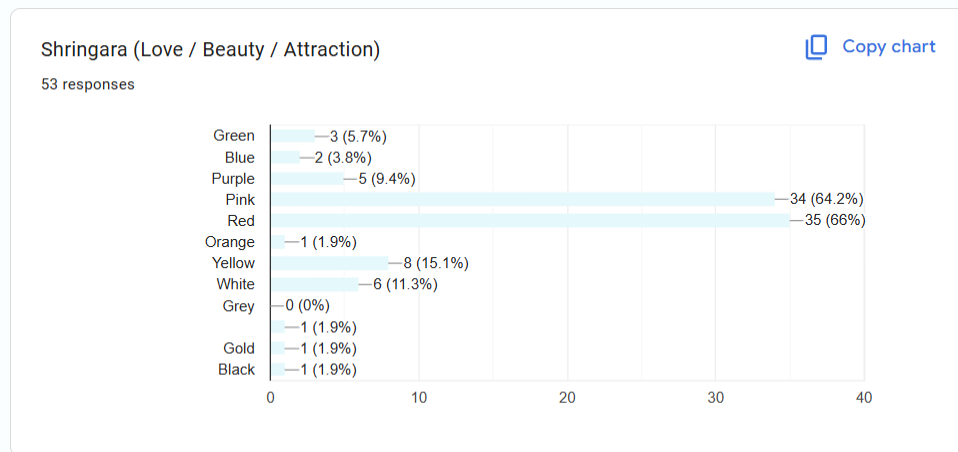


Figure 3. Google form survey data

Notably, joy was identified as the “freest” emotion, while anxiety, anger, and disgust were some of the most challenging ones. This research result influenced the design decisions related to the primary types of interactions in Ehsaas, as well as the game’s tone and intent. The analysis found that the participants associated Shringar with nature. The most common associations reported by participants were warmth, greenery, water, comfortable sounds and generally calming surroundings. By contrast, Hasya was strongly associated with social events and interactions, friends and humorous situations. Karuna was linked with rain, darkness, silence, and loneliness, with most respondents reporting that they associated compassion with acts of charity or even dealing with personal loss.

Raudra was strongly associated with red, fire, and explosions, and most participants felt that emotions such as anger should be contained, not expressed freely. Bhayanaka was associated with darkness, unfamiliar places, uncertainty, public speaking, and generally situations that scared the participants. Most respondents associated Veera with perseverance, strength, confidence, and helping others, rather than with violence and war: the themes of overcoming



challenges and supporting others were much stronger for the participants. Bibhatsa had two major sub-themes: physical disgust and moral disgust. The former was associated with dirt and physical decomposing matter and the latter was associated with morally wrong actions and behaviours. Adbhuta was associated with wonder and discovery, and most participants reported that they associated surprise with exploring new things and new places. Shanta was associated with nature, quiet areas, slow movements and open spaces. Most of the participants reported that they associated calmness and peace with exploring the world around them at a leisurely pace, without any pressure to accomplish tasks.

The overall theme that emerged from the final set of questions was that the participants sought meaningful emotions rather than meaningless achievements (scores, etc.) and competitive elements, and wanted the game to end in a way that would leave them satisfied, not frustrated. This data point influenced the themes and design of Ehsaas, particularly the use of its zero-fail system and the design of calming endings. In general, the findings highlight the ways in which the participants associated emotions with various aspects of Ehsaas, and provide a basis for designing a VR experience that would make the target audience feel emotionally fulfilled.

5 Discussion

5.1 Ehsaas as an Interdisciplinary Contribution

Ehsaas is truly a unique distinctive bridge between ancient Indian aesthetic philosophy and modern psychological science and immersive spatial computing. The central objective of this research was to make the Navarasa theory accessible to young adults with a project that involved adapting a model into a participatory, physical mode of engagement instead of being studied as a text. The results of the mixed methods research thematic interviews were sufficiently informative to guide the architectural and environmental design of the game. Considered alongside the available literature on the Rasa Sutra as well as the contemporary emotional design, it becomes evident that Ehsaas is more than just a game. It uses familiar cultural concepts to create a learning experience that supports users in understanding emotion and building psychological resilience.

5.2 Cultural Receptivity to Navarasa

The gap of unfamiliarity and openness about the Navarasa carries a significant meaning, supporting the main idea of this project that Indian Knowledge Systems remain underutilised within mainstream emotional education (Mangattu, 2016), and there is a clear need for such systems when introduced to the individual. People did not express a desire to suppress challenging emotions, but instead expressed a preference for reflection, which is the default in Western psychology (Fredrickson, 2013). Talking about emotional feelings, sitting with them or occasionally briefly stepping away were the preferred responses to cope with emotional



intensity. Ehsaas builds directly on this tendency and uses Rasa Sutra to frame emotions as natural, almost aesthetic "flavours," that can be explored safely, suppressed.

5.3 Embodiment as a Core Design Principle

A clear pattern emerged from the analysis of the interview data. A wide range of participants identified feelings as physical sensations, rather than as mental experiences. Hence, the experience prioritizes embodied physical movement rather than relying on primarily established controller-based inputs, thus reflecting how emotions were perceived as bodily experiences. This approach also matches with the Rasa Sutra's concept of Anubhava, in which there is a strong emphasis on the physical expression of emotion in both experience and communication of emotion.

This embodied logic was expanded throughout the Navarasa logic, along with the associations that participants described during the interviews. For the design of each environment, both the traditional colour association for the Navarasa as mentioned in the Natyashastra and the colour-emotion associations found in the primary user study were used. In this synthesis, the cultural context of the visual language of Ehsaas was preserved while at the same time they were intuitive enough to communicate their perceptions of the world around them in an emotional way.

5.4 Prototype Development: The Shringar Level

At present, Ehsaas exists in prototype form. The entire nine rasas are conceptually represented, but development efforts have focused on one high fidelity rasa: Shringar (love, beauty, devotion). This level is used as a proof of concept for the interdisciplinary approach in general and is built directly from participants' descriptions of connection in the interviews.

When asked specifically about Shringar, the response was always towards nature with reference to warmth, greenery, water, soft sound and peaceful surroundings etc. The Shringar environment was therefore created with a focus on the organic, and colour palette of deep greens and soft gold. This is not just a matter of taste, but also adhering to Bharata Muni's own colour-emotion pairings, the effects of which Gurjar and Yadav (2024) have shown to be measurable in a virtual reality environment.



Figure 4. Environment design for Shringar level of Ehsaas



Figure 5. Environment design for Shringar level of Ehsaas

This level uses background music that enhances the process of evoking the Shringar rasa. An element that appeared throughout the interviews was to move through the water and this is what the player does in a rowing motion, which is a movement that is repeated in rhythm. This was not a random selection. Rowing is an opening of the chest and shoulders, but it is also an opening synchrony in somatic psychology, where openness of the chest and shoulders is linked to vulnerability and receptivity, the physical basis of love and connection. With a reference to the Rasa Sutra, the movement of the oars is called Anubhava, the objective cause, and the environment is Vibhava, the physical cause. As the player becomes accustomed to this pattern, soft natural soundscapes accompany him/her while they become part of Sthayibhava, the calm emotional tone of Shringar. No conflict to solve, no urgency of time and no score to build up. The player is allowed to stay in the feeling of connection for as long as they want.

5.5 Reframing Navarasa as Experiential Learning



The integration of user feedback, classical aesthetics and virtual reality technology used in this way radically reorganize the concept of what learning Navarasa can mean. The conventional methods like reading Natyashastra or watching classical theatre keep the learner at a distance from the text, and make him an observer instead of a participant. These methods could provide only an intellectual grasp of rasa, but not an experiential one.

Ehsaas aims to fill this gap and makes Navarasa an experiential reality. The use of virtual reality is especially appropriate because it awakens both sight and sound, but also demands physical involvement and attracts mind and body, whether or not the player intends it. This is in line with Anupama's (2025) work on emo-diversity, which involves providing a person with a structured, safe environment to sequentially move through different emotional states starting with the warmth of Shringar and ending close to the openness of Shanta.

5.7 Cultural Significance of Ehsaas

This work also has a cultural aspect that deserves attention. Ehsaas overcomes the traditional theatrical framing of Navarasa by putting it in a contemporary digital medium, making it truly accessible to a generation plagued with digital fatigue and no historical equivalent. This is a slight but important proof that emotional literacy isn't solely a Western clinical symptom-management approach. An alternative path exists, one that regards emotion not as a problem to be managed but as a journey worth undertaking.

6 Conclusion

This paper demonstrates that Indian Knowledge Systems have a much larger emotional lexicon with a different conceptual framework from suppression as compared to the Western emotional education, which is the Navarasa as mentioned in the Natyashastra as per the works of Bharata Muni. The description of the emergence of rasa as a result of the interaction of Vibhava, Anubhava, Vyabharibhava and Sthayibhava is strikingly anticipatory of ideas that were developed independently by contemporary psychology like cognitive reappraisal, somatic awareness, emotional resilience. What this paper aims to show is that these two traditions are not simply compatible, but complementary. The second contribution of this work is to demonstrate that VR is not only a convenient delivery method for this content, it is an appropriate and suitable delivery method. The Navarasa framework is, however, at its very heart, an embodied philosophy of lived, felt experience, not of abstract categorisation and therefore is not easily taught by words or talk. VR's ability to be physically and immersively engaged enables a way to teach 'emotion' that is similar to the way that the framework understands emotion 'as enacted and experienced' rather than merely 'as described'. Ehsaas, is Virtual Reality game that acts as an interdisciplinary model bringing together Rasa theory, psychological framework and principles of game design, also serves as the scaffolding for a



learning structure that allows a contemporary learner to engage with a centuries-old aesthetic philosophy.

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