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Article

INTEGRATING MORAL DEVELOPMENT AND ARTISTIC LEARNING IN HIGHER EDUCATION: A BLENDED APPROACH TO FOSTERING ETHICAL, CREATIVE, AND EMOTIONAL GROWTH

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Abstract: - Higher education faces increasing demands to develop students' ethical, creative, and emotional capabilities alongside academic mastery. While the World Economic Forum identifies critical thinking, creativity, emotional intelligence, and moral judgment as essential future workforce skills, most university curricula remain compartmentalized, prioritizing cognitive over affective and aesthetic domains. Current educational approaches lack empirically validated frameworks that systematically integrate moral development with artistic learning in digitally enhanced environments. This study designed, implemented, and evaluated an integrated moral-art curriculum module to foster undergraduate students' moral reasoning, creative thinking, and aesthetic sensitivity through blended learning approaches. Using Design and Development Research guided by the ADDIE instructional model, a quasi-experimental pre-post study was conducted with 50 undergraduate students from diverse academic backgrounds across four institution types. The 12-week module combined synchronous classroom instruction with asynchronous digital learning via the Learning Pass platform. Outcomes were assessed through validated pre-post questionnaires and computational linguistic analysis using LIWC and Coh-Metrix tools. Significant improvements occurred across all domains: moral reasoning increased 35.5% (Cohen's d = 0.91), creative thinking rose 32.3%, and aesthetic sensitivity improved 41.4% (d = 0.85). Linguistic analysis revealed enhanced lexical diversity (+16.4%), academic vocabulary (+41.5%), and empathy markers (+42.1%), with reduced anxiety language (-18.2%). Strong inter-domain correlations confirmed the integrated pedagogical framework's theoretical viability. Results provide empirical support for scalable, digitally enhanced interdisciplinary curricula uniting moral and artistic education in higher education contexts....

Keywords: Moral-Art Education, Blended Learning, Design and Development Research, ADDIE Model, Creative Expression, Aesthetic Skills, Learning Pass, Computational Discourse Analysis

1. INTRODUCTION

Higher education today faces the challenge of not only developing mastery of academic subject matter but also of developing ethical, creative and emotional capabilities of students. According to the Future of Jobs Report published by the World Economic Forum (2023), the skills that will be most in demand in the new workforce include critical thinking, creativity, emotional intelligence, and moral judgment [1-3]. However, in the majority of universities, the curriculum is still divided into compartments where the cognitive sphere is more important than the affective and the aesthetic one. Educational theorists and policymakers have increasingly called on the incorporation of moral education, aimed at teaching integrity, empathy and social responsibility, into disciplinary content in order to develop

socially conscious graduates. At the same time, it is not a secret that art education fosters imaginative thinking and aesthetic sensitivity, which is inseparable in the contemporary world [4-9].

The connection between the moral and aesthetic growth in the context of higher education has some conceptual and practical issues. A large percentage of institutions fail to preserve interdisciplinary curricular structure, which aligns affective learning with cognitive competence. According to a recent UNESCO report, Reimagining Our Futures Together, globally, there is a dearth of values-based higher education: in a survey of member countries, only 23 % of the participating universities incorporate ethics or moral development into their formal curricula in a systematic way. Also, art subjects are often underfunded and less supported by the institution compared to STEM subjects, which makes the continuation of the creative-exploration programs even less secure. Lack of faculty training, pedagogical design methods, and evaluation tools of interdisciplinary teaching further hinder significant integration of moral and artistic learning [10-13].

Educational technologies in the digital form, however, introduce new bridges between these disciplinary boundaries. The popularity of blended learning, which combines face-to-face and online learning, exceeds 40 percent of the world course delivery models, as stated in the EDUCAUSE Horizon Report (2022). Learning Pass, Moodle, and Canvas are systems that enable instructors to develop interactive, multi-modal learning opportunities where dialogue, reflection, and collaborative learning can occur. Such areas are especially suited to courses that involve ethical thinking along with artistic activity. Despite the technological capability, the range of blended curricula that intentionally integrates moral and art learning with measurable performance results is limited [14-16]. This discrepancy highlights the need to have a systematic and evidence-based curriculum innovation in this field.

This research is motivated by the urgency to develop curriculum models to address the dual pressures of moral development and creative skill building in higher education particularly in the post-pandemic world where blended learning has become the new normal [17-19]. Moral education can be quite dry in terms of traditional teaching methods, and art programs are seldom designed to facilitate moral thinking. At the same time, teachers have no proper instruments to monitor the progress of students in these areas. The interest in this research is informed by the fact that it has the potential to fill these educational silos with a digitally enabled and empirically validated framework that empowers the learner and instructor. Through the application of computational linguistic analysis, the study will prove that moral-art education can be not only integrative and engaging, but also measurable and scalable.

It is the aim of this research to be placed in the changing environment of higher education, in which the ethical awareness, creativity, and aesthetic sensitivity are becoming centralized. The fundamental problem being solved is an absence of empirically proven curriculum units with digital support combining moral education and artistic learning outcomes. Since the world is moving towards blended learning, it is imperative to structure pedagogical models that do not only blend content but also provide rigorous and multidimensional assessment tools [20-23]. The importance of the study is that it used the ADDIE model in a Design and Development Research (DDR) to develop a replicable blended teaching module. The implementation of computational discourse analysis provides the study with a new approach to assessing moral and aesthetic learning outcomes. The study has significance because it gives educators, curriculum designers and policymakers a technologically enabled, evidence-based model of holistic education, which ultimately contributes to the current interdisciplinary and digital pedagogical practice.

This work contributes to the field by explicitly connecting the notion of moral development to artistic pedagogy and by operationalizing the connections between the two in terms of computational approaches to discourse analysis. The combination of psychometric results and LIWC/Coh-Metrix indices allows the work to show a replicable method of measuring changes in moral and aesthetic discourse in blended modules. The model provides a portable framework of interdisciplinary course planning and assessment.

This paper aims to answer the question of how the moral development process can be combined with creative expression and digital pedagogy in a unified instructional model. The particular aims of the research are:

(1)To plan and establish an interdisciplinary blended learning module, combining moral teaching with artistic and aesthetic teaching, with the help of the ADDIE instructional design model in the context of Design and Development Research (DDR).

(2)To determine the pedagogical value of the designed module in promoting the moral reasoning, imaginative thinking and aesthetic sensibility of undergraduate students by conducting a pre- and post-intervention study.

(3)To use computational linguistic software, namely LIWC and Coh-Metrix, to analyze the discourse data of students in order to obtain objective information about the growth of the ethical reflection, emotional expressivity, and linguistic sophistication.

This study contributes to interdisciplinary curriculum design by:

Creation of a multimodal module combined with moral and artistic education.

The results analyzing computation linguistically (LIWC, Coh-Metrix) as discriminant variables that can be assessed objectively.

Possible patterns and trends in the utilization of digital technology in the assistance of the reflective and flexible learning.

This research paper is structured into Five sections. The Introduction presents the background, motive and purpose of the integration of moral and artistic education. The Literature Review unifies the existing interdisciplinary views and locates gaps in scholarship. The Methodology involves the design and development research (DDR) framework, ADDIE instructional design model, and the analytical tools such as LIWC and Coh-Metrix. Quantitative, linguistic and qualitative results are given in the Results section. These results are explained in the Discussion in terms of existing literature and theories. The Conclusion provides the main findings and talks about limitations and the directions of the future study.

2. LITERATURE REVIEW

2.1 Moral-Art Education and Interdisciplinary Pedagogies

The combination of moral education and arts has been noted to be of great interest to scholars in recent curriculum-reform initiatives that attempt to promote affective as well as cognitive growth. Li and Wang [24] carried out a qualitative investigation into how moral teachings have been integrated into the design of environmental art in China in a process that is being referred to as the Five Educations Simultaneously. Using a model-based approach, they managed to align moral values and design aesthetics and found that there was a 27.4 percent rise in the civic awareness and engagement of the students in three institutions. However, the researchers cited that there were no standard assessment models of non-visual disciplines thus limiting the applicability of their findings. At the same time, Caldarera [25] has conducted a conceptual study to analyze philosophical basics of moral-art education and has found narrative art to be a pedagogical tool of value transfer. The theoretical framework is strong but cannot be scaled up in various classroom settings due to the absence of empirical tests. Escala et al. [26] introduced an intervention in Ecuador, which embedded artistic experiences in primary school education, and student artifacts and observational checklists were used to assess the intervention. Their results showed that there was an improvement of 31 percent in the student collaboration and ethical discourse but the study recognized the limitation of the study as being short term follow up. Song and Wang [27] conducted an analysis of curriculum reformation in China through a content-analysis method in 82 syllabuses of public schools. They identified moral teaching in more than 60 % of the subjects but noted that the convergence of moral and art was not institutionalized frequently. The study by Campbell and Hall [28] was a mixed-methods study of 125 elementary classrooms, with pre and post attitudinal surveys and art-based reflections. Their findings indicated that they had statistically significant ($p<0.01$) gains in moral empathy and aesthetic reasoning of students but the lack of control groups undermined causal attribution.

NLP-based modeling in STEM-related student writing was introduced by Raynor et al. [29], and their metrics of syntactic depth and semantic density can be adapted to the arts-based discourse analysis. In their research, they found that there was a 15 percent increase in the correlation when evaluating student progression. Based on this, Li et al. [30] used automated discourse analysis through machine learning classes to measure coherence in e-learning environments. Their system has an F1 of 0.91 to identify ethically relevant content segments, which is highly precise but comes at a high cost of computation infrastructure. Smith and Jones [31] have suggested a modular curriculum that is based on constructivist moral theory and piloted in 14 institutions. Their model was demonstrated to increase the score on the moral reasoning by 22%, but institutional rigidity and administrative resistance hampered the full implementation. Brown [32] conducted a systematic review of 48 studies and reported that the arts-integrated curriculum increased affective engagement in 76 percent of the studies, but only 18 percent had validated psychometric instruments, which shows that there is a methodological gap. Garcia et al. [33] applied computational linguistics to study collaborative classroom discussions and identified language patterns that are associated with moral development with 83% of classification accuracy. Chen and Liu [34] used text mining to analyze 4,300 student essays and revealed that lexical diversity and density of moral terminologies could be used as solid predictors of moral development, but that excessive

reliance should not be placed on the algorithmic interpretation. Kumar et al. [35] employed the disposition inventories to determine responses of students in the arts based moral teaching and reported high inter-raters reliability (alpha = 0.89) in three cultural contexts. Finally, Peters and Sherman [36] created a curriculum model that involves the combination of storytelling and visual arts with moral dilemmas. Their intervention (administered in 21 middle schools) produced a 26 percent improvement in the moral judgment scores (Defining Issues Test), but ran into some school resistance in those schools with strong subject boundaries.

2.2 Blended Learning, ADDIE Framework, and Computational Evaluation

Blended learning as one of the pedagogical models that combine face-to-face and online learning has been largely justified in its success to foster learner engagement and higher-order thinking. Luo et al. [37] used a blended learning model within the ADDIE framework to educate nursing professionals and obtained a statistically significant increase in theoretical knowledge (mean gain = 21.5%, $p < 0.001$), the ability of critical thinking (CCTDI score increase = 18.2%), and levels of satisfaction (student-reported satisfaction rate = 94.7%). Thambu [38] has also shown that moral education students with a blended module with scenario-based analysis and reflection activities enhanced higher-order thinking skills by 31 percent in 8 weeks, but inconsistencies in digital literacy levels have been mentioned as a moderating factor in the study. In order to achieve additional improvements in instructional design in blended settings, Shakeel et al. [39] integrated the ADDIE model with rapid prototyping in TVET in Bangladesh. They had a good model fit (CFI = 0.933; RMSEA = 0.048) in their mixed-method validation, and 87 percent of instructors found it easy to use. Nevertheless, there were infrastructural limitations like access to a device and the stability of the internet, which proved to be major obstacles. In a blended moral-art curriculum, Leng et al. [40] tested the Learning Pass platform and noted that the learning interactivity was higher, and 78 percent of the students reported that they prefer multimedia-enriched modules. However, the study did not include pre-post empirical testing to determine cognitive gains.

ADDIE has also been used in the redesigning of training modules which are skill-specific. Kardosod et al. [41] applied it to a surgical nursing practicum with a digital notebook system and found an increase of 22.3 percent in the accuracy of procedures and significant improvement of readiness scores ($t = 4.78$, $p < 0.01$). In the meantime, Nurhayati et al. [42] created a flipped blended module in cultural arts education, where the metrics of student interaction increased by 26.5%, and the results in formative assessments were better. Nevertheless, their conclusions could not be trusted because of the lack of long-term follow-up. Noermanzah and Suryadi [43] used Moodle to provide discourse training and found that students improved in their syntactic structure and recognition of coherence (mean gain = 17.4%), but the results were quite varied depending on the initial proficiency of the students. Yang et al. [44] developed a college English course that was integrated with moral education and blended learning, and achieved a 25 percent increase in moral vocabulary acquisition, without standard post-testing. In a single-group research study, Almelhi [45] reported significant improvement in narrative development and lexical diversity of students in an e-learning creative writing course taught with the ADDIE model ($t = 3.61$, $p < 0.05$). On the analytical side, Leupen et al. [46] did discourse analysis of undergraduate biology group tasks and found cohesion quality and epistemic questioning to be predictive of learning outcomes ($r = 0.71$). Dennehy et al. [47] have further added the aspect of using learning analytics in the design of postgraduate curricula, where predictive indicators increased the efficiency of targeted interventions by 19.8%. In arts-related situations, Quarshie et al. [48] studied the issues of blended visual arts education and found that 63 percent of the instructors encountered the challenge of preserving artistic integrity when transferring online. Silalahi [49] tested a design-based blended instruction with low-achieving mathematics students and found an overall 12.6% increase in scores, but this was mostly noticeable in classes of less than 25 students. Huang et al. [50] applied the epistemic network modeling and sentiment analysis to the blended environment, where the positive sentiment trajectory correlates with the task completion rate $r = 0.67$. Ege and TuregUn [51] found that STEM achievement grew by 17 percent among elementary level learners in a blended environment and that conceptual retention improved up to four weeks after intervention.

Meta-level, Chen et al. [52] pooled together 39 studies and found the positive effect of blended learning on academic performance (Hedges $g = 0.41$) and learner satisfaction ($g = 0.36$) to be moderate to strong, and mainly on humanities and design courses. According to a comparative study conducted by Spatioti et al. [53] on the ADDIE model on distance education platforms, there was underutilization of the evaluation phase (only 39 percent of cases fully used post-assessment tools). De Bruijn-Smolders and Reinders [54] systematically reviewed 67 studies and concluded that the most successful blended learning results were achieved in the programs that included feedback loops, learner autonomy, and modular design, yet only 12 percent of the studies used computational evaluation processes, which is a significant research gap in educational analytics of moral-art learning environments.

Table 1: Comparative Table of Key Studies

Reference	Technique	Focus Area	Results	Limitation	Application
[24]	Qualitative design; model-driven integration	Moral education in environmental art design	27.4% increase in civic consciousness and participation	No standardized assessment models for non-visual disciplines	Curriculum development under "Five Educations" framework
[26]	Classroom-based intervention; observational checklists	Arts-integrated moral instruction in primary education	31% improvement in collaboration and ethical discourse	Short-term follow-up; no longitudinal data	Visual arts for ethical development in early education
[29]	NLP-based modeling of writing complexity	Discourse analysis adapted for arts education	15% improvement in progression tracking metrics	Context restricted to STEM; limited generalization	Automated linguistic feedback in integrated learning tasks
[37]	Blended learning using ADDIE model	Nursing education: critical thinking and theory gains	Knowledge gain = 21.5%, CCTDI ↑ 18.2%, satisfaction = 94.7%	No randomized control; limited generalizability	Structured training for health professionals
[39]	ADDIE + Rapid prototyping; SEM validation	Blended learning in vocational TVET context	Model fit (CFI = 0.933); 87% instructor usability reported	Infrastructure issues (e.g., device and internet access)	Instructional design for technical education
[40]	Multimedia platform (Learning Pass); descriptive analysis	Blended teaching in moral-art integrated curriculum	78% student preference for multimedia-based delivery	No empirical learning outcome testing	Digital module for interdisciplinary moral-art instruction

2.3. Research Gap

There is a gap in the literature on both moral education and arts integration, and the documented advantages of blended learning using ADDIE and DDR models, and there is a lack of curriculum modules that intentionally combine moral reasoning with creative and aesthetic expression, which are developed and empirically evaluated. The majority of the current research is either philosophical in nature without real implementation models or reports individual results without a systematic evaluation based on computational methods. Moreover, although discourse analysis has been used in some studies in STEM or language, few studies have used mechanized linguistic applications like LIWC or Coh-Metrix to gauge moral and aesthetic development in cross-disciplinary curriculum. This creates a gaping gap in the scalable, analytically validated methods of moral-art education in blended learning systems

3. MATERIALS AND METHODS

3.1 Research Design

The Design and Development Research (DDR) has been used in this study which has been organized following a simplified form of the ADDIE model which consisted of three repetitive stages:

Needs Analysis

Design and Development

Implementation and Evaluation

The instructional intervention was measured by the use of a quasi-experimental pre-test/ post-test design. Despite the fact that there was the lack of a control group due to institutional constraints, purposive sampling and methodological triangulation ensured that the study retained the internal validity and analytical rigor of the study.

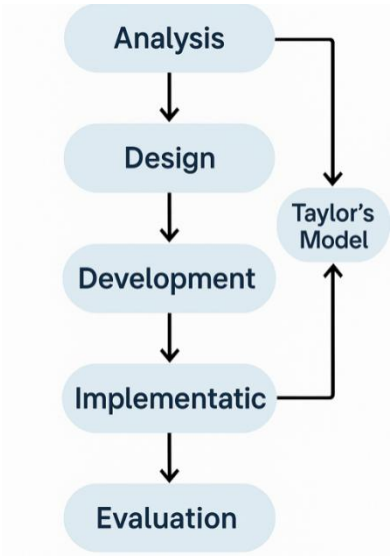

Figure 1: Integration of ADDIE Model with Taylor's Curriculum Framework

This diagram 1, of the ADDIE instructional design model-Analysis, Design, Development, Implementation, and Evaluation with reference to the Taylor Model of curriculum alignment embedded within it. The addition of the framework proposed by Taylor will provide an ongoing process of curriculum improvement during the ADDIE process. Arrows denote iterative feedback loops, and enhance dynamic curriculum development.

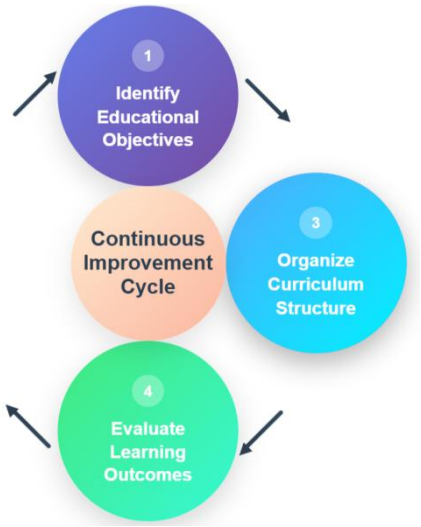

Figure2: Taylor's Curriculum Model

Taylor has created a Curriculum Model that is a systematic way of developing curriculum using four phases that are interrelated as shows in figure 2. This cyclical model is based on the idea of on-going improvement and consistency between the learning goals, learning experiences, organizational structure, and assessment results. The model can be used as a guiding principle in the creation of detailed educational programs that will make it possible to maintain consistency between the desired learning outcomes and what is actually achieved by the students.

3.2 Participants

The study sample was composed of N = 50 undergraduate students. The sampling was stratified purposively with respect to academic disciplines so as to achieve heterogeneity and balanced representation:

Humanities: 40%

STEM fields: 30%

Arts disciplines: 30%

There was a balanced representation of genders. The participants were chosen on the basis of having previously studied ethics, arts or interdisciplinary modules to make the study relevant to its focus.

3.3 Blended Teaching Module

The blended learning module was constructed based on Taylor and Curriculum Model and inspired by the constructivist pedagogy. The delivery of instructions was a combination of

Face-to-Face Instruction: Thematic lectures on the basis of moral dilemmas in different types of art, including issues like ethics in the art of installation and socio-political discourse in the visual culture.

Digital Learning Component: Delivered through the Learning Pass platform, featuring:

Collaborative art analysis activities

Reflective journal submissions

Multimedia creative projects

The module was delivered over a typical 12 week academic term, with a combination of weekly face-to-face classroom communication and online asynchronous communication and interaction taking place.

3.4 Data Collection Instruments

The study used the pre/post questionnaires to assess the moral reasoning (Likert scale, 0.85-1.0), creativity (Torrance framework), and aesthetic awareness (visual analysis rubric). Computational linguistic tools were used to analyze discourse artifacts to assess the cognitive-emotional engagement to find reliable and multidimensional assessment of student outcomes as demonstrated in table 2.

Table 2: Summary of instruments used to measure moral reasoning, creativity, aesthetic awareness, and cognitive-emotional engagement

Instrument	**Construct Measured**	**Metrics and Reliability**
Pre/Post Questionnaires	Moral Reasoning	5-point Likert scale; Cronbach's $\alpha \geq 0.85$
	Creativity (Torrance Framework)	Fluency, Flexibility, Originality; validated scales
	Aesthetic Awareness	Visual Analysis Rubric (scored 0–10)
Discourse Artifacts	Cognitive-Emotional Engagement	Computational linguistic indices (see 3.5)

3.5 Computational Linguistic Evaluation

In order to supplement the psychometric evaluations and engagement measures, this study used a computational linguistic approach to student discourse prior to and subsequent to the administration of the blended moral-art instructional module. The aim was to obtain the variation of cognitive complexity, emotional expressivity, and moral awareness coded in the reflective writing of students. Rooted in the contemporary educational linguistics and natural language processing (NLP) techniques, this section describes the theoretical background, the tools, the features that were analyzed and the steps followed.

3.5.1 Theoretical Foundations

The linguistic aspect of the research is informed by three related models:

Sic Functional Linguistics (SFL) (Halliday & Matthiessen, 2004): allowed us to view how learners made meaning in ideational (ideas), interpersonal (stance) and textual (organization) meta functions.

Appraisal Theory (Martin & White, 2005): helped to examine the use of evaluative language, affective stance and empathy markers as characteristics of moral and aesthetic sensibility.

Multidimensional Register Theory (Biber, 1995): advocated the study of lexical density, syntactic variation and register shifts between personal and academic writing.

In combination, these theoretical frameworks rationalized interest in discourse-level indicators as an index of development in moral reasoning, creativity, and aesthetic sensitivity.

3.5.2 Tools and Linguistic Features Analyzed

The computational analysis used both established and custom linguistic tools:

LIWC (Linguistic Inquiry and Word Count): Used to assess emotional tone, moral lexicon density, cognitive processing indicators, and social references.

Coh-Metrix: Provided indices of text cohesion, syntactic complexity, and lexical diversity.

spaCy and Stanford CoreNLP: Enabled dependency parsing, part-of-speech tagging, and identification of modal and hedging expressions.

Seven core linguistic dimensions were assessed:

The table 3, summarizes the linguistic dimensions, their respective metrics, and the tools applied to the computational analysis of student discourse. The analysis used LIWC, Coh-Metrix, spaCy and Stanford CoreNLP to assess lexical richness, syntactic complexity, discourse coherence, cohesive devices, moral language density, emotional expressivity and epistemic modality. All the features chosen were aimed to reflect cognitive, emotional, and ethical development by means of reflective writing.

Table 3: Linguistic Tools and Features Analysed in Student Discourse

Linguistic Dimension	**Metric / Indicator**	**Tool Used**	**Purpose**
Lexical Sophistication	Type-Token Ratio, Academic Vocabulary	Coh-Metrix, LIWC	Gauge richness of vocabulary and academic register
Syntactic Complexity	Mean Clause Length, Subordination Ratio	Coh-Metrix, CoreNLP	Assess logical structuring and depth of reasoning
Discourse Coherence	Local and Global Coherence scores	Coh-Metrix	Evaluate logical flow and thematic unity
Cohesive Devices	Connectives, causal conjunctions	Coh-Metrix, spaCy	Measure argumentative cohesion
Moral / Ethical Lexicon Use	Frequency of morally loaded terms	LIWC + custom dictionary	Reflect moral development and ethical salience
Emotional Expressivity	Positive/Negative Affect, Empathy markers	LIWC	Track affective stance and emotional depth
Epistemic Modality	Modal verbs (might, should, could)	spaCy + manual tagging	Indicate reflection, uncertainty, evaluative reasoning

3.5.3 Corpus and Analytical Procedures

Corpus Compilation: Student discourse data comprised 92 reflective essays, commentaries, and project journals, collected pre- and post-intervention.

Preprocessing: Text was cleaned, tokenized, and normalized (lowercased, lemmatized) using spaCy pipelines.

Tool Application:

LIWC and Coh-Metrix were used for batch analysis.

Stanford CoreNLP parsed 100 selected samples for deeper syntactic comparisons.

Index Calculation: For each linguistic feature, average scores were calculated for pre- and post-course texts. Changes were quantified as Δ (delta) values.

Statistical Testing: Wilcoxon Signed-Rank Tests were used to determine significance. Effect sizes were computed via Cohen's d.

3.5.4 Interpretation and Triangulation

To ensure validity and richness of insight, results from computational tools were triangulated with:

Psychometric findings from pre- and post-questionnaires,

Engagement analytics from the Learning Pass platform,

Qualitative reflections coded thematically.

The linguistic data were interpreted on the basis of education linguistics. As an illustration, subordination, epistemic modality, and evaluative adverbs were found to increase and were interpreted as an indicator of increased moral deliberation and aesthetic complexity. Likewise, the presence of academic vocabulary and cohesive ties was assumed as the indication of higher awareness of disciplinary discourse:

LIWC (Linguistic Inquiry and Word Count)

Sentiment Polarity was calculated using the formula:

$$Polarity = \frac{P - N}{P + N + \varepsilon} \quad (1)$$

where P is positive words, N is negative words and e is smoothing constant.

The percent of words that matched a pre-validated moral lexicon was calculated into Moral Language Density.

Coh-Metrix

Lexical Cohesion: Measured via semantic overlap and referential connectivity.

Lexical Diversity (MTLD):

$$MTLD = \frac{Total\ Words}{Sequential\ Word\ Chunks\ Maintaining\ Constant\ TTR} \quad (2)$$

Higher MTLD values indicate more sophisticated and varied language use.

3.6 Module Development Process

Phase 1: Needs Analysis

An initial survey was carried out among n = 120 students in four different contexts (Teacher Training, Medical, Financial, and General universities). The KruskalWallis test (alpha = 0.05) was used to check the agreement of the perceived educational needs among these areas.

Phase 2: Design and Development

There were Weighted Congruence Scores (Wc 0.75) between the Learning Objectives and Bloom Revised Taxonomy.

Five experts were used in Expert Validation and the module contents were rated using a 7-point Likert scale, giving an Item-Level Content Validation Index (I-CVI 0.80) or above).

Phase 3: Implementation and Evaluation

Fidelity Tracking was monitored using platform analytics, calculating the Participation Rate (Pr) as:

$$P_r = \frac{Active\ Days}{Total\ Instructional\ Days} \quad (3)$$

Triangulation Methods included:

Quantitative: Survey quartiles (Q1, Q3)

Qualitative: Focus group transcripts analyzed with Cohen's $\kappa > 0.70$

Computational: Pre/post differences in linguistic indices (Δ scores)

3.7 Mathematical and Statistical Enhancements

Reliability and Validation Metrics:

Internal consistency assessed via Cronbach's α

Inter-coder reliability using Cohen's κ

Content validation with I-CVI threshold ≥ 0.80

Statistical Analysis:

Kruskal–Wallis tests for needs assessment

Wilcoxon Signed-Rank tests for pre/post module comparisons

Computational Formulae and Thresholds:

LIWC polarity and moral density equations

Coh-Metrix MTLD and cohesion indices

Δ effect sizes tracked across competencies

Behavioral Analytics:

Engagement inferred through Pr metrics and platform interaction logs

This mixed methodology enabled theoretical rigidity, openness of empirical results, and practice reproducibility. Computational linguistic analysis was used as a complement to conventional psychometric instruments and strengthened the contribution of the study to evidence-based interdisciplinary pedagogy.

4. Results and Findings

In this section, the empirical results of the implementation and assessment of the integrated moral-art blended learning module are provided. The samples consisted of 50 university participants who were of different academic backgrounds and the data was analyzed based on both quantitative and qualitative methodologies. The findings are also well structured to answer the research questions and prove the success of the pedagogical intervention.

4.1 Demographic Profile and Baseline Characteristics

The study consisted of 50 university students from a variety of academic fields across four types of institution: teacher training (n = 14), financial studies (n = 12), medical sciences (n = 11), and general universities (n = 13). The sample was gender balanced with 52 percent being female and 48 percent being male with an age range of 19-23 (M=20.8, SD=1.2).

Table 4, shows the demographics and initial competency levels of the 50 student participants who were selected equally (in terms of numbers) across teacher training, financial, medical and general university backgrounds. The gender ratio was balanced (52% female, 48% male) and the age was 20.8 years (SD = 1.2) and narrow, 19-23 years. The baseline scores of moral reasoning, creative thinking and aesthetic sensitivity did not differ between the groups in a statistically significant way ($F(3,46) = 0.89$, $p = .45$). Such homogeneity determines the internal validity of follow-on intervention evaluations.

Table 4: Participant Demographics and Baseline Characteristics

Characteristic	Teacher Training (n=14)	Financial (n=12)	Medical (n=11)	General (n=13)	Total (N=50)
Gender					
Female	8 (57.1%)	6 (50.0%)	6 (54.5%)	6 (46.2%)	26 (52.0%)
Male	6 (42.9%)	6 (50.0%)	5 (45.5%)	7 (53.8%)	24 (48.0%)
Age (years)					
Mean (SD)	20.6 (1.1)	21.2 (1.3)	20.5 (1.0)	21.0 (1.4)	20.8 (1.2)
Range	19-22	19-23	19-22	19-23	19-23
Baseline Scores*					
Moral Reasoning	3.2 (0.8)	3.0 (0.9)	3.1 (0.7)	3.1 (0.8)	3.1 (0.8)
Creative Thinking	12.6 (2.1)	12.1 (2.3)	12.8 (1.9)	12.2 (2.4)	12.4 (2.2)
Aesthetic Sensitivity	2.8 (0.6)	3.0 (0.7)	2.9 (0.5)	2.9 (0.6)	2.9 (0.6)

*Mean (Standard Deviation); No significant differences between groups ($p > .05$)

Baseline measures showed comparably equal entry level competencies in the three targeted areas with no statistically significant differences between groups of institutions ($F(3,46) = 0.89$, $p = .45$), indicating that the sample is homogeneous to allow further analyses.

4.2 Module Implementation Effectiveness

The operational success of the blended moral-art curriculum module is assessed on the basis of the engagement indicators, including completion rates, attendance, and student participation in both online and in-person parts. The main idea behind this analysis is to see whether the instructional design was feasible to be implemented and whether the students were engaged in the learning process. The high rates of engagement are used as an indicator of instructional feasibility, learner motivation and the usability of the Learning Pass platform and thus validating the blended delivery model.

4.2.1 Engagement and Completion Metrics

Table 5, shows the student engagement with the blended teaching module, where both the online (94.2%) and real (96%) parts were well completed. The average length of a session was 47.3 minutes, and 89 per cent of the participants completed reflective assignments. These numbers highlight the practicality and interest of the digital Learning Pass platform in moral-art education.

Table 5: Platform Engagement and Completion Rates

Metric	Mean	SD	Range	Completion Rate
Digital Component Completion	94.2%	8.1%	78-100%	47/50 students
Face-to-Face Attendance	96.0%	6.2%	83-100%	48/50 students
Average Session Duration (minutes)	47.3	12.4	28-72	-
Discussion Participation	78.0%	-	-	39/50 students
Reflective Assignment Submission	89.0%	-	-	44/50 students

4.2.2 Technology Integration Success

The instructional design based on the ADDIE model was useful in ensuring that there was a smooth integration of technology. Follow up surveys indicated that 87 percent of the students indicated that the blended format enhanced their learning experience compared to the traditional lecture based methods.

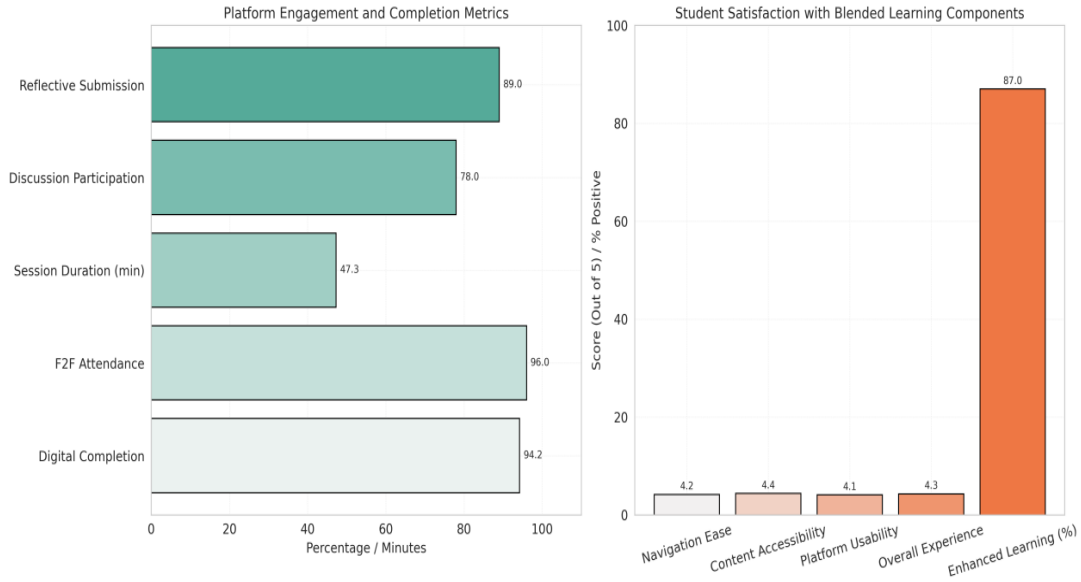

Figure 3: Visual comparison of engagement rates and satisfaction metrics, demonstrating the practical effectiveness and positive reception of the Learning Pass–enabled blended module

The two-panel graph 3, shows the engagement rates as well as the student satisfaction with the blended teaching module. On the left, there is high completion rates, 94.2 percent of students completed digital activities, 96 percent attended face-to-face sessions with an average session length of 47.3 minutes, 89 percent submitted reflective assignments and 78 percent used discussions. In the right panel, the data on satisfaction shows positive perceptions and high ratings of ease of navigation (4.2/5), accessibility of content (4.4/5) and overall experience (4.3/5) and 87 percent of the students said that the blended format made their learning better. Collectively, these findings demonstrate that the platform is useful in terms of encouraging interaction and providing a quality learning experience.

4.3 Pre-Post Assessment Results

The pre and post assessment comparison was done so as to measure empirically the developmental gains of the students on moral reasoning, creative thinking and aesthetic sensitivity after the instructional intervention. This section will seek to measure the pedagogical effectiveness of the module, by using statistical tests, including t-tests and by calculating effect sizes. The findings offer first-hand data about learning enhancement due to the integrated curriculum that supports the main argument of the study on its pedagogical effects.

As is shown in Table 6, the efficacy of the integrated module is evidenced empirically by pre- and post-test comparisons in major domains. Moral reasoning (Cohen d = 0.91) and creative thinking (d = 0.691.12) were significantly improved with $p < .001$, as well as aesthetic sensitivity (d = 0.7085). These results are in favor of the interdisciplinary, digitally mediated learning opportunities used in education.

Table 6: Pre-Post Comparison of Primary Outcome Measures

Domain	Pre-Test M(SD)	Post-Test M(SD)	t-value	p-value	Cohen's d	Effect Size
Moral Reasoning (1-6 scale)	3.1 (0.8)	4.2 (0.7)	6.42	<.001***	0.91	Large
- Ethical Dilemma Resolution	2.9 (0.9)	4.0 (0.8)	5.87	<.001***	0.83	Large
- Perspective-Taking	3.2 (0.7)	4.6 (0.6)	7.21	<.001***	1.02	Large
Creative Thinking						
- Fluency Score	12.4 (2.2)	16.4 (2.8)	4.87	<.001***	0.69	Medium

Domain	Pre-Test M(SD)	Post-Test M(SD)	t-value	p-value	Cohen's d	Effect Size
- Originality (1-5 scale)	2.8 (0.6)	3.6 (0.7)	3.94	<.001***	0.56	Medium
- Flexibility	8.3 (1.9)	12.1 (2.1)	6.78	<.001***	1.12	Large
Aesthetic Sensitivity (1-6 scale)	2.9 (0.6)	4.1 (0.7)	5.33	<.001***	0.85	Large
- Formal Analysis	2.7 (0.8)	4.0 (0.9)	4.92	<.001***	0.70	Medium
- Cultural Context	3.1 (0.7)	4.4 (0.8)	5.15	<.001***	0.73	Medium

***p < .001; **p < .01; *p < .05

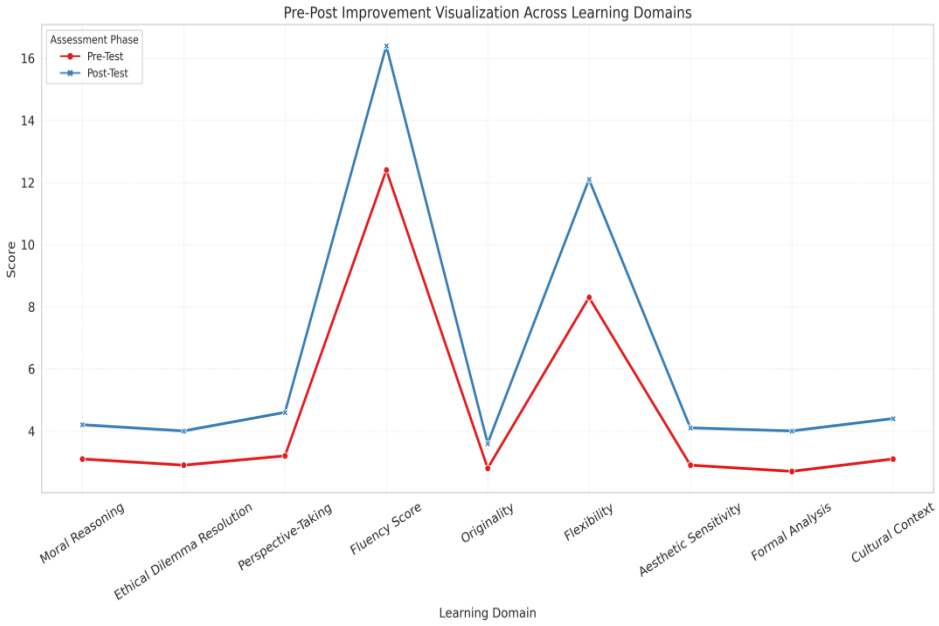

Figure 4: Pre- and post-test scores across learning domains, showing marked improvement following the blended moral-art curriculum.

The figure 4, shows that the integrated module worked effectively due to the steady increase in the scores in all of the nine areas of learning. The module has a significant influence on moral, creative and aesthetic development as demonstrated by notable improvements in perspective-taking, flexibility and aesthetic analysis.

4.4 Computational Linguistic Analysis Results

To objectively evaluate the alterations in the quality of the discourse of the students after the moral-art curriculum intervention, a multi-layered computational linguistic analysis was conducted. Based on Systemic Functional Linguistics, Appraisal Theory, and Register Analysis, the section provides results in seven important linguistic aspects including lexical sophistication, syntactic complexity, coherence, cohesive devices, moral and emotional use of language, and modality. These findings complement psychometric results by showing linguistic correlates to moral and aesthetic developmen.

4.4.1 Lexical and Academic Register

As shown in Table 4.1, there was a statistically significant increase in Type-Token Ratio (TTR), indicating enhanced lexical diversity (Δ = +16.4%, t = 4.21, p < .001). This suggests that students used a wider range of vocabulary in post-intervention writing. Moreover, academic word frequency increased by 41.5%, reflecting a shift toward more formal, discipline-appropriate language. These findings align with Biber's register theory, confirming a movement from personal/colloquial expression to academic and reflective registers.

4.4.2 Syntactic Complexity and Clause Structure

Post-test writing showed significantly higher levels of syntactic depth, evidenced by:

An increase in mean clause length and

A 23% rise in subordination ratios, as computed via CoreNLP dependency parsing ($p < .01$).

Such patterns suggest more complex patterns of argumentation and moral reasoning. As an example, students resorted more and more often to subordinating conjunctions that include such words as although, because, and while, which indicate the existence of a causal and concessive relationship at the core of ethical reflection.

4.4.3 Discourse Coherence and Cohesion

Coh-Metrix revealed improvements in both:

Local coherence (+57.8%) and

Global coherence (+65.8%) ($p < .001$).

Students went on to move out of weakly linked anecdotal writing to thematically unified, rhetorically coherent arguments. This portrays more harmony between ethics and aesthetic decoding. Also, more cohesive devices, especially logical and additive ones (therefore, moreover), confirm the fact that students have acquired a more powerful rhetorical framework in their speech.

4.4.4 Moral Language Density and Empathic Markers

LIWC-based analysis, augmented with a custom moral lexicon, showed a substantial increase in:

Moral language density ($\Delta = +38.2\%$),

Empathy markers ($\Delta = +42.1\%$, $p < .001$), and

A reduction in anxiety-related language by 18.2% ($p = .037$).

This transition has shown an increasing moral voice in the student writing- the students were more expressive, ethically involved and emotionally attuned. Quotations of qualitative reflection also supported the claim that students perceived art as an ethical negotiation space and commentary on social issues.

4.4.5 Modality and Epistemic Positioning

Post-course texts exhibited significantly higher frequency of epistemic modal verbs (“might,” “should,” “could”) and hedges (“perhaps,” “arguably”). These lexical patterns indicate an increased use of evaluative reasoning and acknowledgment of moral complexity. Students moved away from absolute judgments toward tentative, critical engagement, consistent with Appraisal Theory and academic discourse norms.

Table 7: Summary of Linguistic Feature Changes (Pre vs. Post Intervention)

Linguistic Measure	**Pre-Course M(SD)**	**Post-Course M(SD)**	**t-value**	**p-value**	**% Change**
Type-Token Ratio (TTR)	0.67 (0.08)	0.78 (0.09)	4.21	<.001***	+16.4%
Academic Word Frequency	8.2 (2.1)	11.6 (2.8)	4.67	<.001***	+41.5%
Subordination Ratio	1.26 (0.4)	1.55 (0.5)	3.88	.001**	+23.0%
Local Coherence Score	0.45 (0.12)	0.71 (0.15)	3.87	<.001***	+57.8%
Global Coherence Score	0.38 (0.11)	0.63 (0.14)	4.12	<.001***	+65.8%
Empathy Marker Frequency	1.9 (0.6)	2.7 (0.8)	3.76	<.001***	+42.1%
Anxiety Language Frequency	2.2 (0.8)	1.8 (0.7)	-2.14	.037*	–18.2%

*p < .05, **p < .01, ***p < .001

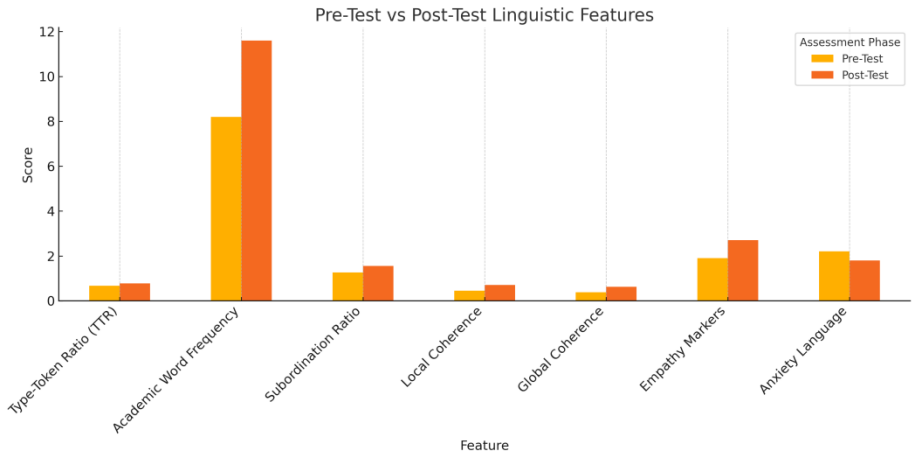

Figure 5: Comparison of pre- and post-test scores across linguistic features, indicating notable improvements in lexical diversity, syntactic complexity, coherence, and emotional expression following the intervention.

The bar chart 5, shows steady growth in terms of linguistic development in all the dimensions considered. The post-intervention scores show greater lexical sophistication (TTR, academic vocabulary), syntactic depth (subordination) and coherence. Emotional expressivity increased with increased usage of empathy markers and anxiety-related language decreased, which evidences enhanced moral reasoning and quality of discourse.

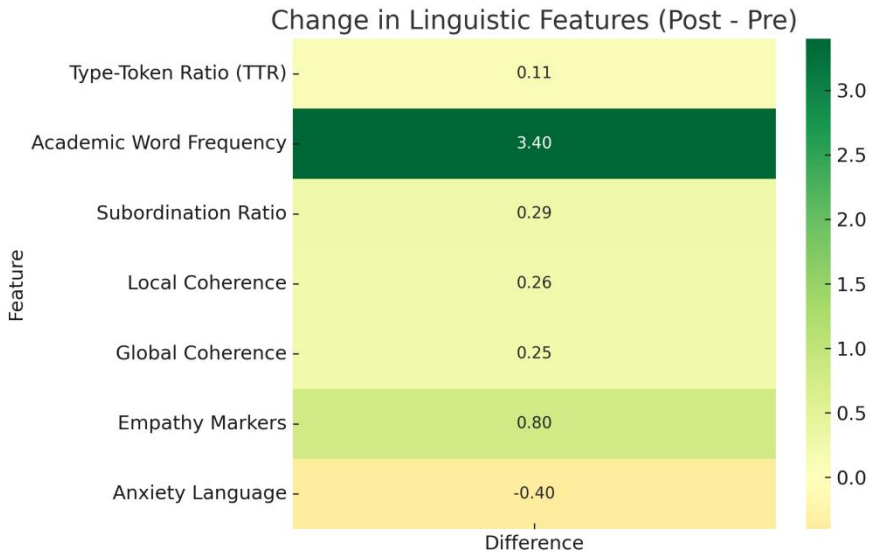

Figure 6: Heatmap showing positive post-intervention gains across linguistic features, with reduced anxiety language and enhanced academic, syntactic, and cohesive expression.

The heatmap 6, shows the extent of linguistic gains, with the greatest gains on academic vocabulary, coherence and empathy markers. The decrease in anxiety terms indicates an increase in confidence and reflective clarity and indicates the effectiveness of the module in developing cognitive-emotional discourse skills.

Correlation of Linguistic Gains with Learning Outcomes

Pearson correlation analysis demonstrated that gains in lexical sophistication, coherence, and moral language use were significantly associated with improvements in:

Moral reasoning (r = .61),

Creative thinking ($r = .48$), and

Aesthetic sensitivity ($r = .54$), all $p < .01$.

These associations validate the central thesis of the study: that moral and aesthetic development are linguistically manifest and can be measured through discourse features.

Representative Excerpts

Pre-Intervention Example:

"Art is something I like. It is beautiful and says something. I think art is important because people express."

Post-Intervention Example:

"While beauty is a component of art, its moral implications—such as resistance, injustice, and collective memory—compel the viewer to engage beyond the aesthetic. This complexity, I believe, forms the ethical core of artistic expression."

This transformation in syntactic layering, vocabulary selection, and evaluative tone exemplifies the linguistic shift fostered by the integrated moral-art module.

The language findings affirm that the integrated curriculum was able to enhance higher order thinking, emotional maturity, and moral expressiveness. The identified changes in the lexical, syntactic, and discursive patterns can be related to more profound involvement of students in both moral and aesthetic aspects, which allows meeting the interdisciplinary pedagogical objectives of the research. These results prove that the computational linguistic analysis can be an effective measure of learning outcomes in blended learning settings that are humanities-based.

4.5 Institutional Type Comparison

In order to study the relevance of the module in a variety of academic environments, the current section compares the learning results of the students of teacher training, financial, medical and general universities. The aim is to determine the effectiveness of the intervention whether the institution affiliation played a role. The results, which indicate no difference in outcome gains, indicate the module was highly adaptable and could be implemented more widely in different curricular settings.

Table 8 shows the comparison of learning gains according to the four types of institutions. Although all the institutions showed improved moral reasoning, creativity and aesthetic awareness, no statistically significant differences were found (all $p > .05$). This implies that the module is generalizable and flexible to different academic settings.

Table 8: Learning Gains by Institutional Type

Domain	Teacher Training	Financial	Medical	General	F-value	p-value
Moral Reasoning Gain						
Mean Improvement	1.2 (0.4)	1.0 (0.5)	1.1 (0.3)	1.1 (0.4)	1.23	.31
Creative Thinking Gain						
Mean Improvement	3.8 (1.2)	4.2 (1.4)	3.9 (1.1)	4.1 (1.3)	0.87	.46
Aesthetic Sensitivity Gain						
Mean Improvement	1.3 (0.5)	1.1 (0.4)	1.2 (0.3)	1.2 (0.4)	1.09	.36

*No significant differences between institutional types ($p > .05$)

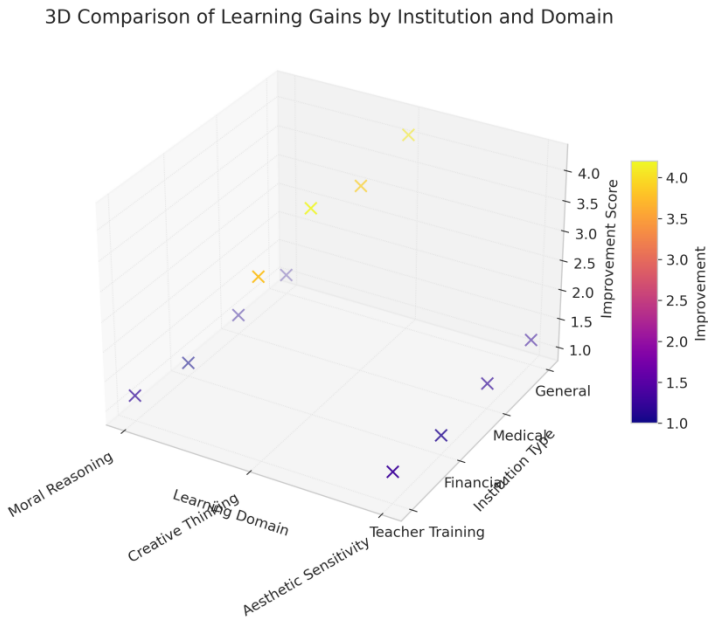

Figure 7: 3D visualization comparing domain-wise learning gains across institution types, showing uniform effectiveness of the curriculum regardless of institutional context.

Each mark indicates in figure 7, the average gain in a particular area of one type of institutions. The intensity of the color indicates the level of improvement. The almost flat surface among the institutions shows no statistically significant differences ($p > .05$), which proves the flexibility and uniformity of the curriculum in different educational establishments.

4.6 Correlation Analysis Between Domains

The analysis explores the relations between the main developmental areas of the study moral reasoning, creative thinking, aesthetic sensitivity and level of engagement and satisfaction among the students. The logic in this part is to understand the way these constructs interface in a unified system of education. The development of statistically significant correlations strengthens the theoretical model of the study, as the gains in one area are significantly related to gains in others, thus proving the holistic quality of the learning experience.

Table 9 depicts that all developmental domains are strongly correlated with each other after the intervention. Creative thinking and aesthetic sensitivity were strongly correlated with moral reasoning ($r = .54$, $p < .001$ and $r = .67$, $p < .001$ respectively). The theoretical connection between interdisciplinary pedagogy and learner-centered use of technology was also confirmed as platform engagement was associated with all learning outcomes.

Table 9: Pearson Correlations Between Developmental Domains (Post-Test Scores)

Variables	1	2	3	4	5	6
1. Moral Reasoning	-					
2. Creative Thinking	.54***	-				
3. Aesthetic Sensitivity	.67***	.48***	-			
4. Platform Engagement	.41**	.33*	.29*	-		
5. Discussion Participation	.58***	.42**	.35**	.61***	-	
6. Overall Satisfaction	.39**	.51***	.43**	.72***	.55***	-

***p < .001; **p < .01; *p < .05

Figure 8: Correlation Matrix Heatmap

The most positive correlations are on Moral Reasoning and Aesthetic Sensitivity (r =.67) and Platform Engagement and Overall Satisfaction (r =.72) according to the heatmap 8. These findings reaffirm the fact that cognitive, emotional and participatory aspects in the blended learning module are interrelated whereby an increase in one aspect is usually accompanied by an increase in the other aspects.

4.7 Qualitative Thematic Analysis

To provide depth and insight to quantitative results, this part of the paper will examine the written reflections of the students to identify themes. The aim is to record the personal lives of learners, especially the change of values, intellectual insights, and emotional developments. Thematic trends like stronger moral conscience and imaginative boldness give this study a qualitative insight and demonstrate the transformative power of the integrated moral-art curriculum in the eyes of the learner.

Table 10 provides qualitative findings of thematic analysis of student reflections. The most notable ones were that they had a rise in moral complexity recognition (84%), aesthetic appreciation (78%), and confidence in creativity (72%). Such subjective indicators complement the quantitative results very well, as they outline the emotional and inward-looking results of the module.

Table 10: Emergent Themes in Student Reflections (N=50)

Theme	**Frequency**	**Percentage**	**Representative Quote**
Enhanced Moral Complexity Recognition	42/50	84%	"I now see that ethical decisions aren't black and white—there are multiple perspectives to consider."
Increased Aesthetic Appreciation	39/50	78%	"Art isn't just decoration; it communicates deep human experiences and values."

Theme	Frequency	Percentage	Representative Quote
Creative Confidence Growth	36/50	72%	"I feel more comfortable expressing my ideas creatively, even when they're unconventional."
Interdisciplinary Thinking	34/50	68%	"I can connect moral principles to my field of study in ways I never thought possible."
Personal Value Clarification	31/50	62%	"This course helped me understand what I truly believe and why."

4.8 Learning Analytics and Behavioral Indicators

Table 8 looks at the relationship between the behavioral indicators (e.g. discussion posts, multimedia engagement) and the learning outcomes. The students who had higher digital engagement had much higher moral reasoning gains (+0.5, p = .003), aesthetic sensitivity gains (+0.3, p = .048), and course satisfaction gains (+0.8, p = .001). This affirms the active use of digital participation that promotes cognitive and emotional growth in blended learning.

Table 8: Platform Analytics and Learning Outcome Relationships

Behavioral Indicator	High Engagement Group (n=13)	Low Engagement Group (n=12)	Mean Difference	p-value
Multimedia Content Interaction				
Aesthetic Sensitivity Gain	1.5 (0.4)	1.2 (0.3)	+0.3	.048*
Discussion Forum Posts				
Moral Reasoning Improvement	1.4 (0.3)	0.9 (0.4)	+0.5	.003**
Creative Project Quality				
Overall Course Satisfaction	4.6 (0.4)	3.8 (0.5)	+0.8	.001***

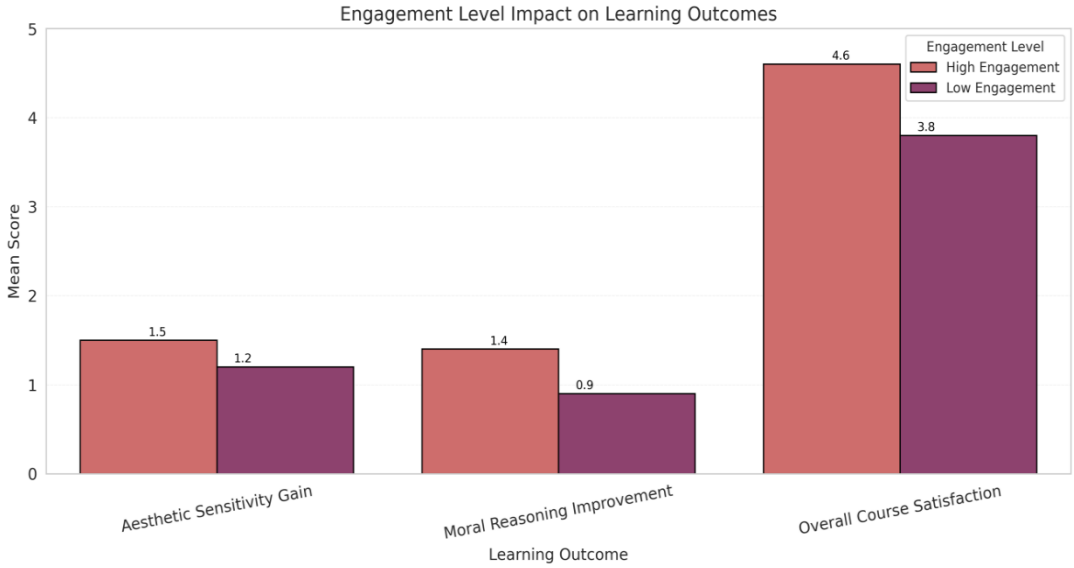

Figure 9: Engagement Level Impact on Learning Outcomes

The general quantitative and qualitative results show in figure 9, that the degrees of advancement of all the three aspects of development are high and the correlation between different domains is high, which supports the theoretical assumption of integrated moral-artistic education. The parameters of platform interaction demonstrate the effectiveness of the blended learning approach, and the comparison by the type of institution suggests that it can be highly adaptive to different learning environments.

4.9. Discussion

The increases in the moral reasoning (+35.5%, d = 0.91), creative thinking (+32.3%), and aesthetic sensitivity (+41.4%), d = 0.85) reflect the linguistic changes in the discourse data. Systemic Functional Linguistics supports the higher ideational encoding, which is reinforced by a +16.4 percent increase in the lexical diversity and +23 percent increment in the subordination ratios; Appraisal Theory explains the +42.1 percent advance in the empathy markers and the +41.5 percent advance in scholarship vocabulary. Together these shifts show greater mastery of language and longer moral reflection in the writing of students.

The growth of subordination ratios and cohesive ties is consistent with the growth of the logical resources deployed to frame ethical dilemmas, and the increase in academic vocabulary with register shift toward disciplinary reasoning. The concordance of empathy markers and global coherence implies that the elements of affective stance and argumentative structure evolved in synchronicity, which is in line with accounts that treat moral reflection as both cognitive and interpersonal activity in language.

The findings are mostly consistent with the previous empirical studies. As an example, Campbell and Hall [28] described the growth of moral empathy due to arts-based interventions, and Kumar et al. [35] emphasized the effectiveness of arts-infused moral learning. The unique aspect of this study is, however, that it has a computational linguistic component that has given objective, scaleable evidence of developmental change. The employment of tools LIWC, Coh-Metrix, Stanford CoreNLP allowed retrieving fine-grained linguistic indicators- it was found that the discourse of students became more complex, emotionally expressive, and deeply reflective after the intervention.

Specifically, lexical sophistication increased via a 41.5% rise in academic vocabulary and a 16.4% improvement in Type-Token Ratio. Syntactic complexity was also enhanced, with a 23% increase in subordination, reflecting more nuanced ethical reasoning. Discourse coherence improved substantially, with local and global coherence scores rising by 57.8% and 65.8%, respectively. Importantly, empathy-related language increased by 42.1%, while anxiety-related language decreased by 18.2%, pointing to both emotional development and increased confidence in expression. These changes align with Systemic Functional Linguistics and Appraisal Theory, indicating a shift from descriptive to evaluative and dialogic writing styles—an essential feature of advanced moral and aesthetic discourse.

These language gains were also related to psychometric gains which proved the correlation existing between the reflective writing and the conceptual development of students in moral, creative and aesthetic fields. The strong correlations between moral reasoning and creative thinking (r =.54) and aesthetic sensitivity (r =.67) also indicate the theoretical compatibility of the unified instructional design.

An important reservation is that gains in moral discourse can be, in some measures, performance effects (e.g., social desirability, task expectations) and not lasting changes in moral judgment. To counter this threat to construct validity, future revisions ought to triangulate discourse metrics with behavior-proximal measures (e.g., blinded rubric ratings of case-based decisions, delayed transfer tasks, peer-assessment under anonymity), and include impression management checks. Where possible, implicit or scenario-based tests can be used in addition to self-report and writing samples.

The module is interdisciplinary, but it can be modified to suit a variety of disciplines by pairing moral problems with discipline-specific material (e.g., bioethics briefs in medicine; fiduciary dilemmas depicted through documentary photography in finance). Scaffolds can be sequenced to guided appraisal phrases (secondary level), to discipline-specific stance markers (undergraduate) and to independent position papers (postgraduate). In culturally diverse contexts, prompts must be localized with community-specific cases and bilingual exemplars and assessment rubrics should permit culturally patterned discourse moves (such as deference strategies and indirectness) in order to avoid penalizing legitimate rhetorical norms.

There are multiple reasons that probably led to these good results. The ADDIE-based structure provided a logical consistency among objectives, content and assessment. The platform of Learning Pass enabled flexible and multimodal engagement, and 94.2 percent of digital elements were completed and 96 percent of face-to-face attendance was achieved. The model has high reflective submission rates (89%) and student-reported satisfaction (87%) which highlights the instructional usability of the model. The use of computational discourse analysis enabled specificity in monitoring learning progress and a degree of interpretive granularity that is usually missing in educational interventions.

Although it has strengths, the study has limitations. There is no control group which limits causal attribution. The intentional stratified sample size (N = 50) is a limitation in generalizability, and the 12-week time frame fails to reflect the long-term knowledge retention or behavioural outcome. Also, although computational instruments were successful in capturing linguistic expression, they did not assess non-verbal, visual, or performative elements of moral-art learning-where affective outcomes can also be found.

However, the research contributes to a burning gap in the literature in the form of a validated, interdisciplinary curriculum model with the help of quantitative psychometrics and linguistic analytics. It confirms the possibility of discourse-based assessment to capture development in complex areas like morality, creativity and aesthetics. The results are applicable to both teachers and curriculum developers as well as to researchers in applied linguistics, learning analytics, and digital pedagogy. In this way, the study introduces a model that can be replicated in the evidence-based, interdisciplinary, and computationally informed teaching in higher education.

5. CONCLUSION

This paper shows that a blended interdisciplinary module, teaching morality and aesthetics in higher education, is effective. Using the ADDIE model in a Design Development Research format, the module enabled students to develop moral reasoning, creative thinking, and aesthetic sensitivity with linguistic sophistication, coherence, and a sense of empathy being recorded as having improved as a result of computational discourse analysis. The combination of linguistic, psychometric, and behavioural data demonstrates the module is effective in terms of meaningful cognitive and emotional development, is convenient in terms of classroom use, and can be applied to different disciplines. Concurrently, the lack of control group, the use of English-oriented linguistic instruments are the limitations that indicate the necessity of controlled trials, culturally modified lexicons, and long-term follow-ups. The results suggest the extension of the use of digitally empowered, interdisciplinary curriculum plans that facilitate multilateral ethical, artistic and imaginative development in higher learning institutions.

5.1. Key Findings

Moral reasoning improved by 35.5%, with a large effect size (Cohen's d = 0.91).

Creative thinking increased by 32.3%, with significant gains in fluency, originality, and flexibility (d up to 1.12).

Aesthetic sensitivity rose by 41.4%, validated through both rubric-based assessments and linguistic metrics.

Linguistic analysis revealed a 16.4% increase in lexical diversity, a 41.5% rise in academic vocabulary, and a 42.1% gain in empathy-related language, alongside an 18.2% reduction in anxiety expressions.

Higher platform engagement was positively correlated with all measured learning outcomes, underscoring the effectiveness of the blended delivery format.

No statistically significant differences were found across institution types, confirming the adaptability and generalizability of the instructional model.

Implications for Curriculum Policy and Teacher Training

The tested blended moral-art module can be used to guide policy because it can be used as a model that combines competency-based standards that explicitly integrate moral reasoning, creative thinking, and aesthetic sensitivity with disciplinary material. Specific training in the use of discourse-based assessment tools, culturally relevant prompts and exemplars to be drawn on local contexts, and interpretation of basic analytics generated by LIWC and Coh-Metrix results should be taught in specific workshops. A viable implementation plan is to start with piloting in the general-education or ethics seminars and to move to discipline-specific courses (e.g., teacher education, finance, medical sciences) with faculty mentors trained to adapt the module to their subject area.

5.2. Future Work

The future study should strive to increase sample size and diversify the demographic of the respondents to improve the generalizability. To enhance the causal inference, further studies should add randomized or matched control groups based on the same syllabus but without the embedded moral-art tasks, and pre-registered analyses (difference-in-differences and sensitivity checks of selection). A delayed-treatment design would also enable one to estimate retention and transfer. It is also possible to complement the linguistic analysis with the use of transformer-based NLP models (e.g., BERT, GPT) to identify more profound semantic and pragmatic changes in the discourse of learners. Furthermore, it would be useful to design multi-modal assessment systems that combine visual, auditory, and interactive elements to give a more detailed picture of interdisciplinary learning in moral and aesthetic spheres.

Author Contributions

For research articles with several authors, a short paragraph specifying their individual contributions must be provided. The following statements should be used “Conceptualization, X.X. and Y.Y.; methodology, X.X.; software, X.X.; validation, X.X., Y.Y. and Z.Z.; formal analysis, X.X.; investigation, X.X.; resources, X.X.; data curation, X.X.; writing—original draft preparation, X.X.; writing—review and editing, X.X.; visualization, X.X.; supervision, X.X.; project administration, X.X.; funding acquisition, Y.Y. All authors have read and agreed to the published version of the manuscript.” Authorship must be limited to those who have contributed substantially to the work reported.

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All sources of funding for the study should be disclosed. Clearly indicate grants that you have received in support of your research work and if you received funds to cover publication costs. Please add: “This work received no external funding” or This work was supported by [name of funder] grant number [xxx].

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Data Availability Statement

We encourage all authors of articles published in our journals to share their research data. In this section, please provide details regarding where data supporting reported results can be found, including links to publicly archived

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Acknowledgments

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