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ARTICLE

Cultivating holistic educators: Integrating ESD and the five pillars into the BES program

Emerson G. Cabudol*, Cedrick John V. Alejandrino, Rupert Jeremiah A. Bustamante IV, and Kyle Russelle P. Paredes

University of the Philippines Open University, National Highway, Brgy. Maahas, Los Baños, Laguna, 4031 Philippines

ABSTRACT

This study examines how the Five Pillars of Education are represented in the intended curriculum of the Bachelor of Education Studies (BES) program at the University of the Philippines Open University, in relation to Education for Sustainable Development (ESD) and selected Sustainable Development Goals (SDGs), particularly SDG 4. The study was an exploratory single-case documentary evaluation with a structured content-mapping component. It reviewed the program learning outcomes, the 2018 BES curriculum, and published course titles and descriptions. Forty-eight catalog courses were coded for each of the five pillars (Learning to Know, Learning to Be, Learning to Do, Learning to Live Together, and Learning to Transform) as Yes (explicit contribution), Possible (potential contribution), or No (no evidence in the available description). Explicit (Yes) representation was found in 48 courses for Learning to Know (100.0%), 30 for Learning to Be (62.5%), 1 for Learning to Do (2.1%), 2 for Learning to Live Together (4.2%), and none for Learning to Transform (0.0%). Including Possible codes raised these figures to 100.0%, 87.5%, 29.2%, 60.4%, and 31.3%, respectively. These figures describe curricular visibility rather than implementation quality, student attainment, graduate competence, or contributions to SDG outcomes. The study is a preliminary documentary assessment intended to support review of the BES program in relation to the university's sustainable development mandate, within which ESD is embedded. The findings show limited explicit attention to applied learning (Learning to Do), learning to live together, and transformative learning (Learning to Transform), and provide a baseline for aligning program learning outcomes and course descriptions with learning activities and assessments. Future work should validate the codes against syllabi and assessment tasks and examine teaching practice, student work, and alumni outcomes to determine how the intended curriculum is enacted and attained.

*Corresponding author
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INTRODUCTION

The Bachelor of Education Studies (BES) program of the University of the Philippines Open University (UPOU) is an education degree that prepares students mainly for education systems development and for pedagogy in alternative settings (UPOU, n.d.-a). Unlike formal teacher-education programs, it focuses on designing and improving formal, informal, and non-formal curricula, modes of instruction and delivery, and educational tools and materials for quality education and lifelong learning.

This study treats Education for Sustainable Development (ESD), the Five Pillars of Education, the social, environmental, and economic dimensions of sustainability, and the Sustainable Development Goals (SDGs) as related but distinct frameworks. ESD is the overarching educational orientation that seeks to develop knowledge, skills, values, and agency for sustainable development. The social, environmental, and economic dimensions describe the substantive domains of sustainability, whereas the SDGs specify internationally agreed development goals and targets. The analysis first maps the forms of learning visible in the curriculum and then uses selected SDGs as interpretive reference points. A course is not considered aligned with an SDG solely because its general subject matter appears relevant (Montaudon-Tomás & Montaudon-Tomás, 2019; United Nations, n.d.; UNESCO, 2024).

The Five Pillars describe broad forms of learning: Learning to Know, Learning to Be, Learning to Do, Learning to Live Together, and Learning to Transform. The first four pillars come from the

KEYWORDS

Education for Sustainable Development; Five Pillars of Education; curriculum mapping; intended curriculum; SDG 4; SDG 10; higher education

United Nations Educational, Scientific and Cultural Organization (UNESCO) framework on the functions of education and lifelong learning. Learning to Transform is not part of that framework; this study adopts it as a fifth pillar from Montaudon-Tomás and Montaudon-Tomás (2019), who proposed it to bring contemporary perspectives on sustainable development, and on ESD in particular, into the four-pillar model. The authors did not develop this pillar; they adopt it as proposed in that source and operationalize it for coding as described in the Methodology.

Program Learning Outcomes

According to UPOU (n.d.-a), the BES program aims to develop the following program learning outcomes:

- A critical perspective on the role of education and the challenges faced by educational systems in a modern developing society in a global context;
- A strong foundation in the key concepts and disciplines of education, including philosophy, psychology, history, and social and cultural theory;
- Skills in the design and delivery of educational programs, including instructional design, assessment and student support, curriculum development, and instructional materials development using a range of educational technologies;
- Skills in the systematic study of education policy and practice, including research literacy, argumentation, and the communication of educational ideas; and
- A holistic, integrative, reflexive, and research-based approach to learning and education, including students' own education as professionals and lifelong learners.

The program's systems orientation is consistent with UPOU's mission to widen access to quality higher education while maintaining academic excellence and freedom (UPOU, n.d.-c). Courses in community, Indigenous Peoples, Islamic, distance, online, and open education reflect the program's sectoral and alternative-education orientation (UPOU, n.d.-a, n.d.-b).

Curriculum Details

The BES curriculum has 141 units of coursework in the following groups: required and elective general education (GE) courses, common and mandated courses, Education Foundations, Education Policy and Research, Instructional Design and Technology, and a capstone (UPOU, n.d.-b). Unlike teaching degrees organized around a disciplinary specialization, the BES program emphasizes the analysis and development of educational theories, systems, technologies, programs, and policies (University of the Philippines Diliman, n.d.).

The analysis draws on work on competency-based curriculum design, curriculum mapping, transformative teacher education, and ESD-oriented pedagogy. Prior studies stress transparent alignment among competencies, learning activities, and assessment (Cravero et al., 2024; Melillán et al., 2023). Others emphasize interdisciplinary and design-oriented learning (Hemani & Punekar, 2015; Hsieh, 2020; Liu et al., 2024; Macagno et al., 2024) and opportunities for learners to act on sustainability challenges, including in teacher education (Biseth et al., 2022; Bourn & Soysal, 2021; Dambudzo, 2015).

This study is limited to the curriculum version and public materials described in the Methodology. It examines the intended curriculum—the knowledge, competencies, and priorities stated in official documents—rather than the enacted curriculum experienced in classrooms or the attained curriculum shown by graduates.

The study addresses the following research questions:

1. To what extent are the Five Pillars of Education explicitly or potentially represented in the BES program learning outcomes and in the publicly available course descriptions?
2. How are the social, environmental, and economic dimensions of sustainability represented across the intended BES curriculum, and how are these representations related to selected SDGs, particularly SDG 4?
3. Which areas of the intended curriculum show limited or ambiguous ESD integration?
4. What literature-informed curricular revisions could strengthen alignment among outcomes, learning activities, and assessment?

METHODOLOGY

Research Design and Scope

This was an exploratory single-case study of curriculum documents that used structured content mapping. The case was the UPOU BES program, an education degree whose stated orientation toward alternative settings, lifelong learning, and sustainable development made it an appropriate case for examining ESD-related learning. Documentary analysis was used because the available evidence consisted of official program learning outcomes, curriculum requirements, and course descriptions. The recommendations were developed with reference to the design-thinking literature (Hemani & Punekar, 2015; Liu et al., 2024; Macagno et al., 2024), which was not used as a data source.

Data Sources, Curriculum Version, and Unit of Analysis

The documents analyzed were the UPOU BES program brochure, the official program description and learning outcomes, the 2018 BES curriculum, and the publicly available titles and descriptions of 48 catalog courses. The unit of analysis was the catalog course. The five program learning outcomes listed in the Introduction were analyzed separately. Required and elective courses were distinguished because an elective is not taken by every student. The analysis did not include classroom observations, student work, direct measures of graduate competence, or a systematic evaluation of professional practice.

Analytical Framework

Framework	Role in the study	Analytical use
ESD	Overarching educational orientation	Whether curriculum language addresses sustainability-related knowledge, values, action, equity, and change.
Five Pillars	Forms of learning	Know, Be, Do, Live Together, and Transform.
Sustainability dimensions	Substantive domains	Social, environmental, and economic concerns represented in program learning outcomes and course descriptions.

Framework	Role in the study	Analytical use
SDGs	Policy reference points	Specific goals were referenced only when official course wording provided a defensible thematic connection.

Curriculum Mapping and Coding Rules

Each course was coded Yes, Possible, or No for each pillar. "Yes" indicated that the course description explicitly addressed the pillar through its topic, competency, action, or intended application. "Possible" indicated that the description implied a relationship that a syllabus, learning activity, or assessment task would need to confirm. "No" indicated that the available public description did not provide sufficient evidence. However, "No" does not prove that the pillar is absent from teaching practice, and "Possible" is not treated as confirmed implementation. This approach follows principles of curriculum mapping and competency-based curriculum design (Cravero et al., 2024; Juraschka, 2021; Melillán et al., 2023).

Pillar	Evidence considered in the available text
Learning to Know	Analysis, inquiry, understanding, interpretation, evidence, or systems thinking.
Learning to Be	Ethics, reflection, identity, agency, professional disposition, or lifelong learning.
Learning to Do	Application, design, implementation, facilitation, production, or problem-solving.
Learning to Live Together	Collaboration, intercultural understanding, inclusion, peace, dialogue, or community participation.
Learning to Transform	Action intended to change educational practices, institutions, communities, or sustainability conditions.

Coding Process, Reliability, and Bias Control

The mapping was conducted by the authors through a desk review of the documents, content analysis, and an evaluative workshop. Disagreements were resolved through discussion until consensus was reached. Independent coder ratings were not recorded, so no inter-rater reliability coefficient can be reported; this is a limitation of the study. To allow others to check the work, the study states the coding definitions, reports all 48 course-level decisions in Annex I, distinguishes Yes from Possible codes, and reports exact numerators and denominators. A replication should use at least two independent coders, record an evidence excerpt for every code, and calculate a chance-corrected agreement statistic before reaching consensus.

Because the authors are affiliated with the institution whose curriculum was evaluated, their familiarity with the program may have introduced confirmation bias. This risk was managed, rather than eliminated, by fixing the coding definitions in advance, distinguishing Yes from Possible codes, retaining the complete course-level matrix in Annex I for external audit, and reporting the study as a documentary self-assessment rather than an independent one. These measures reduce, but do not remove, the risk that the authors' position shaped individual coding decisions.

Aggregation and Descriptive Analysis

Each catalog course was counted once, and counts and percentages were calculated for each pillar and code (n = 48). The combined "Yes or Possible" figure is reported as a measure of curricular visibility, not of confirmed integration. Because every course except the six-unit capstone carries three units, courses were counted without weighting. Counting every course equally ignores differences in compulsory status, student exposure, instructional time, and educational importance; this is discussed as a limitation. A secondary sensitivity analysis restricted to required courses is reported in the Results and Discussion.

RESULTS AND DISCUSSION

Sustainability and the BES Program

The BES program adopts an interdisciplinary approach to education across social levels and modes of delivery. The program description mentions peace, social justice, human rights, sustainable development, national and international understanding, and cooperation. These statements show a broad social and educational orientation that is consistent with ESD.

In the program learning outcomes, the social dimension of sustainability is more visible than the environmental and economic dimensions. The outcomes emphasize critical engagement with educational systems, professional practice in program design and delivery, and research, while access to quality higher education is emphasized in the university mission (UPOU, n.d.-c). Environmental and economic sustainability are less explicit and are mostly inferred from individual courses. This pattern points to uneven visibility in the official curriculum language; it does not demonstrate the depth or quality with which sustainability is enacted in courses.

Some courses, including those on adult, vocational, distance, and open education, have plausible links to SDG 4 (United Nations, n.d.). Courses on gender, culture, Indigenous Peoples, Islamic education, citizenship, peace, community education, health, and environmental education have defensible thematic links to other SDGs. These links are interpretive and should be checked against course-level learning outcomes and assessments before they are described as formal SDG alignment (Van Nguyen et al., 2024).

Program Learning Outcomes and the Five Pillars

Table 1. Interpretive mapping of the BES program learning outcomes to the Five Pillars (✓ = pillar evident in the outcome wording).

Program learning outcome	Know	Be	Do	Live Together	Transform
Critical perspective on education and	✓			✓	✓

Program learning outcome	Know	Be	Do	Live Together	Transform
educational-system challenges					
Foundation in key concepts and disciplines of education	✓	✓			
Design and delivery of educational programs			✓		✓
Systematic study of education policy and practice	✓		✓		✓
Holistic, integrative, reflexive, and lifelong professional learning		✓			✓

Table 1 shows the authors' interpretation of how the program learning outcomes relate to the pillars. The outcomes make knowledge, professional identity, practical design, and transformative intent visible, whereas Learning to Live Together is ticked for only one of the five outcomes. Learning to Transform is ticked for four of the five outcomes but is coded Yes in none of the 48 course descriptions (Table 2). The outcomes therefore express a transformative intent that the course descriptions do not make explicit. Because the program learning outcomes are broad statements, Table 1 shows conceptual alignment only, not student attainment.

Courses in the Curriculum

Table 2 gives the number and percentage of the 48 catalog courses in Annex I coded Yes, Possible, and No for each pillar.

Table 2. Number and percentage of the 48 catalog courses coded Yes, Possible, and No for each pillar (n = 48).

Pillar	Yes n (%)	Possible n (%)	No n (%)	Yes or Possible n (%)
Learning to Know	48 (100.0%)	0 (0.0%)	0 (0.0%)	48 (100.0%)
Learning to Be	30 (62.5%)	12 (25.0%)	6 (12.5%)	42 (87.5%)
Learning to Do	1 (2.1%)	13 (27.1%)	34 (70.8%)	14 (29.2%)
Learning to Live Together	2 (4.2%)	27 (56.3%)	19 (39.6%)	29 (60.4%)
Learning to Transform	0 (0.0%)	15 (31.3%)	33 (68.8%)	15 (31.3%)

All 48 courses were coded Yes for Learning to Know, so this pillar does not distinguish one course from another. Learning to Be was coded Yes in 30 courses (62.5%) and Possible in 12 (25.0%). In contrast, Learning to Do was coded Yes in only one course (SAS 1, a GE elective) and Possible in 13, and Learning to Transform was coded Possible in 15 courses and Yes in none. Learning to Live Together was coded Yes in only 2 courses (4.2%) and Possible in 27 (56.3%), so it is also rarely explicit. The large gap between the Yes and the combined figures shows that the conclusions depend heavily on the "Possible" category, which is why the codes need to be validated against syllabi.

Each course is counted once, whatever its credit value, contact hours, or compulsory status, so the percentages give the share of catalog courses in which a pillar is visible in the public description. They do not show how much of students' curricular exposure involves that pillar. This distinction matters most for the five elective GE courses, which not every student takes.

The strongest conclusions rest on the "Yes" category, because "Possible" is an interpretive judgment that needs confirmation from syllabi, learning activities, and assessment evidence. The combined "Yes or Possible" figures indicate visibility only and are not evidence of curricular integration.

These findings describe the intended curriculum as represented by brief public descriptions. They cannot establish how often collaborative, applied, or transformative pedagogies occur; how well students learn them; or whether graduates use them in professional settings. The evidence therefore cannot support claims about graduate readiness or program effectiveness.

Sensitivity Analysis: Required Courses Only

Five of the 48 catalog courses are GE electives, which not every student takes. As a robustness check, Table 3 repeats the analysis for the remaining 43 required courses (all courses other than the GE electives, as categorized in Annex I).

Table 3. Number and percentage of the 43 required courses coded Yes, Possible, and No for each pillar (sensitivity analysis).

Pillar	Yes n (%)	Possible n (%)	No n (%)	Yes or Possible n (%)
Learning to Know	43 (100.0%)	0 (0.0%)	0 (0.0%)	43 (100.0%)
Learning to Be	29 (67.4%)	12 (27.9%)	2 (4.7%)	41 (95.3%)
Learning to Do	0 (0.0%)	11 (25.6%)	32 (74.4%)	11 (25.6%)
Learning to Live Together	2 (4.7%)	22 (51.2%)	19 (44.2%)	24 (55.8%)
Learning to Transform	0 (0.0%)	15 (34.9%)	28 (65.1%)	15 (34.9%)

When only the 43 required courses are counted, the combined "Yes or Possible" figure rises for Learning to Be (from 87.5% to 95.3%) and Learning to Transform (from 31.3% to 34.9%) and falls for Learning to Live Together (from 60.4% to 55.8%). Learning to Know stays at 100.0%, and Learning to Do falls slightly (from 29.2% to 25.6%). The rise for Learning to Be reflects the fact that four of the six courses coded No for this pillar are GE electives.

These shifts are modest and leave the overall pattern unchanged: Learning to Know and Learning to Be remain the most visible pillars, and Learning to Do, Learning to Live Together, and Learning to Transform remain the least visible in explicit ("Yes") terms (0, 2, and 0 of 43 courses, respectively). Table 3 is a robustness check, not a corrected estimate.

Proposal for Revision of Curricular Design

The recommendations below respond to the gaps found in the mapping and draw on practices described in the cited literature. They are proposals for curriculum development, not interventions evaluated in this study.

A. The BES Program and ESD

The BES program acknowledges sustainable development, but its environmental and economic dimensions are less explicit than its social and educational concerns. Instead of adding isolated references to the SDGs, the program could strengthen constructive alignment by specifying ESD-related outcomes, learning activities, and assessment evidence in selected required courses.

Priority actions are (1) to validate the current mapping against syllabi; (2) to integrate sustainability cases into the courses on curriculum design, instructional design, education policy, and research; and (3) to develop community-based projects with schools, local government units, civil-society organizations, and relevant disciplinary programs. Service-learning and interdisciplinary collaboration can connect sustainability concepts with authentic community needs (Aramburuzabala & Cerrillo, 2023; Barth & Michelsen, 2013). Faculty development should focus on designing and assessing ESD learning and not only on attendance at events (UNESCO, 2024). The feasibility and effects of these actions still need to be evaluated.

B. The Five Pillars as a Means to ESD Integration

Table 4. Suggested explicit outcomes and possible assessment evidence for each pillar.

Pillar	Suggested explicit outcome	Possible assessment evidence
Learning to Know	Analyze educational problems as interconnected social, environmental, and economic systems.	Case analysis, concept map, policy brief.
Learning to Be	Demonstrate ethical reflection, professional agency, and responsibility.	Reflective portfolio with explicit rubric.
Learning to Do	Design and implement an education response to a documented sustainability need.	Prototype, field task, implementation report.
Learning to Live Together	Co-create educational work with diverse learners or community partners.	Peer/community assessment and collaboration evidence.
Learning to Transform	Evaluate and improve an educational practice, program, or local system.	Change project with baseline, action, and outcome indicators.

Table 4 links each pillar to an observable outcome and to the evidence that could demonstrate it, instead of inferring the pillar from broad course themes. Balanced assessment of knowledge, reflection, action, collaboration, and transformation is consistent with the literature on ESD competencies and on assessment in higher education (Kanbar, 2012; Montaudon-Tomás & Montaudon-Tomás, 2019; Yi-Chen & Li-Hsun, 2020).

C. Course Description Redesign

Table 5 lists eight courses in which explicit applied, collaborative, economic, environmental, or transformative elements could address the gaps found in the mapping. The proposed experiential and community-oriented activities draw on research on applied learning (Acut, 2024) and on restorative community-development frameworks (Hampton et al., 2024). General education courses also remain a potentially important site for broader intellectual and interpersonal learning outcomes (Laird et al., 2009). Final descriptions should be approved through the university's formal

curriculum process and supported by aligned syllabi and assessments.

Table 5. Priority revisions to selected course descriptions and the pillars they target.

Code	Course	Priority revision	Target pillars
EDUC 103	Principles and Processes in Curriculum Development	Add explicit design of inclusive curricula addressing linked social, environmental, and economic sustainability challenges.	Do; Transform
EDS 113	Principles and Methods of Assessment	Require valid, equitable assessment plans and rubrics for ESD competencies, including collaboration and transformative action.	Do; Live Together; Transform
EDS 134	Community Education	Include co-designed community projects with documented needs analysis, partner feedback, and outcome evaluation.	Live Together; Transform
EDS 142	Environmental Education	Connect environmental knowledge to locally relevant mitigation, adaptation, stewardship, and education-action projects.	Do; Transform
EDS 170	Introduction to Education Policy	Analyze distributional, environmental, and economic consequences of education policy options.	Know; Transform
EDS 157	Online Teaching and Learning	Design accessible online learning that addresses digital inequality, participation, and resource sustainability.	Do; Live Together
EDS 196	Educational Research Methods	Include reliability, validity, reflexivity, participatory inquiry, and evaluation of sustainability-related educational interventions.	Do; Transform
EDS 199	Special Project	Require an authentic education problem, stakeholder engagement, evidence-based intervention, and evaluation of intended and unintended effects.	All five pillars

CONCLUSION

This documentary study provides a baseline account of how the Five Pillars are represented in official BES curriculum language, with reference to ESD and selected SDG themes. All 48 catalog courses were coded Yes for Learning to Know, so this pillar did not distinguish among courses. Learning to Be was coded Yes in 30 courses (62.5%) and Possible in 12 more. Learning to Do, Learning to Live Together, and Learning to Transform were rarely explicit (Yes in 1, 2, and 0 of 48 courses, respectively), although each was coded Possible in a larger number of courses (13, 27, and 15, respectively). The program learning outcomes signal a transformative intent that the course descriptions do not make explicit. Restricting the analysis to the 43 required courses did not change this pattern. These patterns support a focused review of the program's learning outcomes and course descriptions, guided by the proposals in Tables 4 and 5. They do not show teaching quality, graduate competence, or any contribution to the SDGs.

LIMITATIONS

The study examined only the intended curriculum, not the enacted curriculum delivered by faculty or the attained curriculum shown by students and graduates. Its sources were public program documents and brief course descriptions, which may omit learning activities, assessment requirements, and partnerships. The course mapping was interpretive, and because independent coder ratings were not recorded, inter-rater reliability could not be calculated. In addition, all 48 courses were coded Yes for Learning to Know, so this pillar did not distinguish among courses. Counting every course equally did not fully account for compulsory status, elective choice, contact hours, credit weighting, or differences in educational importance. The design could not show graduates' competencies or professional practices, which are also shaped by employment settings, professional experience, institutional culture, and continuing development. Findings from a single institutional case are analytically transferable but not statistically generalizable.

Finally, the authors' familiarity with the program may have introduced confirmation bias. Explicit coding rules, disclosure of the authors' position, and publication of the complete mapping matrix were used as safeguards; external review and independent recoding are still needed.

FUTURE RESEARCH

Future research should validate the course-level codes against full syllabi and assessment tasks and should distinguish planned, implemented, and achieved ESD competencies. A multi-source design could combine independent curriculum coding, classroom or online-learning observations, faculty interviews, student work, alumni surveys, and employer evidence. Studies of graduate preparedness should link each cohort to the curriculum version it completed, report when the curriculum changed, and consider the influence of the workplace and of continuing professional development. Comparative studies across institutions may clarify which findings reflect the BES case and which are more broadly transferable.

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CONFLICT OF INTEREST

The authors are affiliated with the university whose program they evaluated; they declare no other conflict of interest.

CONTRIBUTIONS OF INDIVIDUAL AUTHORS

Emerson G. Cabudol, Cedrick John V. Alejandrino, Rupert Jeremiah A. Bustamante IV, and Kyle Russelle P. Paredes: Conceptualization, investigation, methodology, formal analysis, writing – original draft, and writing – review and editing.

REFERENCES

Acut, D. P. (2024). From classroom learning to real-world skills: An autoethnographic account of school field trips and STEM work immersion program management. Disciplinary and Interdisciplinary Science Education Research, 6(1), Article 20. https://doi.org/10.1186/s43031-024-00111-x

Aramburuzabala, P., & Cerrillo, R. (2023). Service-learning as an approach to educating for sustainable development. Sustainability, 15(14), Article 11231. https://doi.org/10.3390/su151411231

Barth, M., & Michelsen, G. (2013). Learning for change: An educational contribution to sustainability science. Sustainability Science, 8(1), 103–119. https://doi.org/10.1007/s11625-012-0181-5

Biseth, H., Svenkerud, S. W., Magerøy, S. M., & Rubilar, K. H. (2022). Relevant transformative teacher education for future generations. Frontiers in Education, 7, Article 806495. https://doi.org/10.3389/feduc.2022.806495

Bourn, D., & Soysal, N. (2021). Transformative learning and pedagogical approaches in education for sustainable development: Are initial teacher education programmes in England and Turkey ready for creating agents of change for sustainability? Sustainability, 13(16), Article 8973. https://doi.org/10.3390/su13168973

Cravero, A., Álvarez, D., Sepúlveda, S., Valdivieso, M.-I., & Muñoz, L. (2024). Meta4CBC: Metamodel for competency-based curriculum design in higher education. Applied Sciences, 14(22), Article 10110. https://doi.org/10.3390/app142210110

Dambudzo, I. I. (2015). Curriculum issues: Teaching and learning for sustainable development in developing countries—Zimbabwe case study. Journal of Education and Learning, 4(1), 11–24. https://doi.org/10.5539/jel.v4n1p11

Hampton, M., O'Hara, S., & Gearin, E. (2024). Assessing restorative community development frameworks—A meso-level and micro-level integrated approach. Sustainability, 16(5), Article 2061. https://doi.org/10.3390/su16052061

Hemani, S., & Punekar, R. M. (2015). Design education for sustainability: A case study for an inclusive approach to design in India. World Review of Science, Technology and Sustainable Development, 12(1), 29–44. https://doi.org/10.1504/WRSTSD.2015.068194

Hsieh, H. C. L. (2020). Integration of environmental sustainability issues into the "Game Design Theory and Practice" design course. Sustainability, 12(16), Article 6334. https://doi.org/10.3390/su12166334

Juraschka, R. (2021). Competency-based education: What it is and 6 main principles to use at school. Prodigy. https://www.prodigygame.com/main-en/blog/competency-based-education/

Kanbar, N. (2012). Can education for sustainable development address challenges in the Arab region? Examining business students' attitudes and competences on education for sustainable development: A case study. Discourse and Communication for Sustainable Education, 3(1), 41–62. https://doi.org/10.2478/v10230-012-0003-0

Laird, T. F. N., Niskode-Dossett, A. S., & Kuh, G. D. (2009). What general education courses contribute to essential learning outcomes. The Journal of General Education, 58(2), 65–84.

Liu, W., Huang, R., Wang, J., Chen, Y., Ohashi, T., Li, B., Liu, Y., Qiu, D., Yu, R., Zhang, J., Mahmud, A. A., & Leifer, L. (2024). Empathy design thinking: Cultivating creative minds in primary education. Frontiers in Education, 9, Article 1376305. https://doi.org/10.3389/feduc.2024.1376305

Macagno, T., Nguyen-Quoc, A., & Jarvis, S. (2024). Nurturing sustainability changemakers through transformative learning using design thinking: Evidence from an exploratory qualitative study. Sustainability, 16(3), Article 1243.

Melillán, A., Cravero, A., & Sepúlveda, S. (2023). Software development and tool support for curriculum design: A systematic mapping study. Applied Sciences, 13(13), Article 7711. https://doi.org/10.3390/app13137711

Montaudon-Tomás, C. M., & Montaudon-Tomás, I. M. (2019). Learning to transform: The pillar that reshapes education. In Proceedings INNODOCT/19: International Conference on Innovation, Documentation and Education (pp. 1–10). Universitat Politècnica de València. https://doi.org/10.4995/INN2019.2019.10141

United Nations. (n.d.). Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. https://sdgs.un.org/goals/goal4

UNESCO. (2024). Renewing education to transform the future. Retrieved March 25, 2025, from https://www.unesco.org/en/renewing-education-transform-future

University of the Philippines Diliman. (n.d.). College of Education catalogue. https://our.upd.edu.ph/files/catalogue/EDUC.pdf

University of the Philippines Open University. (n.d.-a). Bachelor of Education Studies program brochure. https://www.upou.edu.ph/wp-content/uploads/2023/04/BACHELOR-OF-EDUCATION-STUDIES.pdf

University of the Philippines Open University. (n.d.-b). Bachelor of Education Studies. https://www.upou.edu.ph/academics/undergraduate/bachelor-of-education-studies/

University of the Philippines Open University. (n.d.-c). About UPOU. https://www.upou.edu.ph/about/

Van Nguyen, L. T., Cleveland, D., Tran, M. N. C., & Joyce, C. (2024). Problem-based learning and the integration of sustainable development goals. Journal of Work-Applied Management, 16(2), 218–234. https://doi.org/10.1108/JWAM-12-2023-0142

Yi-Chen, L., & Li-Hsun, P. (2020). Effective teaching and activities of excellent teachers for the sustainable development of higher design education. Sustainability, 12(1), Article 28. https://doi.org/10.3390/su12010028

ANNEX I: COURSE EVALUATION

Annex I gives the code for each of the 48 catalog courses on each pillar. GE = general education. Yes = explicit contribution; Possible = plausible contribution requiring further evidence; No = insufficient evidence in the available public description.

Table A1. Course-level coding of the 48 BES catalog courses across the Five Pillars of Education.

Category	Code	Description	Units	Know	Be	Do	Live Together	Transform
Required GE	MATH 10	Mathematics, Culture and Society	3	Yes	Possible	No	Possible	No
Required GE	STS 1	Science, Technology and Society	3	Yes	Possible	No	Possible	No
Required GE	SCI 11	Living Systems: Concepts and Dynamics	3	Yes	Possible	No	No	No
Required GE	ARTS 1	Critical Perspectives in the Arts	3	Yes	Possible	Possible	No	No
Required GE	WIKA 1	Wika, Kultura at Lipunan	3	Yes	Possible	Possible	Possible	No
Required GE	KAS 1	Kasaysayan ng Pilipinas	3	Yes	Possible	Possible	Possible	No
Required GE	ETHICS 1	Ethics and Moral Reasoning in Everyday Life	3	Yes	Possible	Possible	Possible	Possible
Elective GE	SAS 1	Self and Society	3	Yes	No	Yes	Possible	No
Elective GE	COMM 10	Critical Perspectives in Communication	3	Yes	Yes	No	Possible	No
Elective GE	PHIL ARTS 1	Philippine Arts and Culture	3	Yes	No	Possible	Possible	No
Elective GE	ENG 11	Literature and Society	3	Yes	No	No	Possible	No
Elective GE	SOC SCI 2	Social, Political, and Economic Thought	3	Yes	No	Possible	Possible	No
Common	COMM 2	Communication Skills 2	3	Yes	Yes	No	Possible	No
Common	ENG 157	English for the Professional	3	Yes	Yes	No	Possible	No
Common	COMP ED 10	Critical Digital Literacies	3	Yes	Yes	Possible	No	No
Common	COMP ED 20	Introduction to Analytics	3	Yes	Yes	No	No	No
Mandated elective	PI 100	Philippine Institutions	3	Yes	No	Possible	Possible	No
Education Foundations	EDS 100	Psychological Foundations of Education	3	Yes	Yes	Possible	No	No

Category	Code	Description	Units	Know	Be	Do	Live Together	Transform
Education Foundations	EDS 101	Philosophy of Education	3	Yes	Possible	Possible	No	No
Education Foundations	EDS 102	Social Foundations of Education	3	Yes	Possible	No	Possible	No
Education Foundations	EDS 103	Theories of Learning	3	Yes	Possible	No	Possible	No
Education Foundations	EDS 106	Culture, Language, and Education	3	Yes	Possible	Possible	Possible	No
Education Foundations	EDS 107	Gender and Education	3	Yes	No	No	Yes	No
Education Foundations	EDS 110	Education Professions	3	Yes	Yes	Possible	No	No
Education Foundations	EDUC 101	Philippine Education Systems	3	Yes	Possible	No	Possible	No
Education Foundations	EDUC 103	Principles and Processes in Curriculum Development	3	Yes	Yes	No	Possible	No
Policy and Research	EDS 131	Foundations of Adult Education	3	Yes	Yes	No	Possible	No
Policy and Research	EDS 132	Indigenous Peoples Education	3	Yes	Yes	No	Possible	No
Policy and Research	EDS 133	Islamic Education	3	Yes	Yes	No	Possible	No
Policy and Research	EDS 134	Community Education	3	Yes	Yes	No	Possible	Possible
Policy and Research	EDS 136	Foundations of Distance Education	3	Yes	Yes	No	No	Possible
Policy and Research	EDS 140	Citizenship Education and Peace Education	3	Yes	Yes	No	Yes	Possible
Policy and Research	EDS 141	Vocational Education	3	Yes	Yes	No	Possible	Possible
Policy and Research	EDS 142	Environmental Education	3	Yes	Yes	No	Possible	Possible
Policy and Research	EDS 143	Health Education	3	Yes	Yes	No	Possible	Possible
Policy and Research	EDS 170	Introduction to Education Policy	3	Yes	Yes	No	Possible	Possible
Policy and Research	EDS 195	Introduction to Education Research	3	Yes	Yes	No	No	No
Policy and Research	EDS 196	Educational Research Methods	3	Yes	Yes	No	No	No

Category	Code	Description	Units	Know	Be	Do	Live Together	Transform
Instructional Design and Technology	EDS 112	Principles of Instructional Design	3	Yes	Yes	No	No	No
Instructional Design and Technology	EDS 113	Principles and Methods of Assessment	3	Yes	Yes	No	No	No
Instructional Design and Technology	EDS 151	Instructional Media Resources	3	Yes	Yes	No	No	No
Instructional Design and Technology	EDS 153	Design of Educational Multimedia Materials	3	Yes	Yes	No	No	Possible
Instructional Design and Technology	EDS 154	Assistive Learning Technologies	3	Yes	Yes	No	No	Possible
Instructional Design and Technology	EDS 155	Game-based Learning	3	Yes	Yes	No	No	Possible
Instructional Design and Technology	EDS 156	m-Learning	3	Yes	Yes	No	No	Possible
Instructional Design and Technology	EDS 157	Online Teaching and Learning	3	Yes	Yes	No	No	Possible
Instructional Design and Technology	EDS 160	Open Education	3	Yes	Yes	No	No	Possible
Capstone	EDS 199	Special Project	6	Yes	Yes	Possible	Possible	Possible