IJEMD-SS, 5 (2) (2026) https://doi.org/10.54938/ijemdss.2026.05.2.706

International Journal of Emerging Multidisciplinaries: Social Science

Research Paper
Journal Homepage: www.ojs.ijemd.com
ISSN (Online): 2958-0277

From Objectives to Outcomes: A Theoretical Framework for Realigning Curriculum, Pedagogy, and Assessment with Industrial Revolution 5.0

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Abstract

The Higher Education sector globally is being challenged to produce students who will be equipped for the 21st Century and what has come to be known as Industrial Revolution 5.0 (IR 5.0), a new and emerging paradigm that combines: Artificial Intelligence, Automation, Advanced Manufacturing, Biotechnology, Climate Technology, and Human-centric, sustainability-driven values. In Pakistan, this pressure has been formalized by a directive from the "Higher Education Commission" (HEC) for universities to review and redesign their degree courses and curricula based on the IR 5.0, incorporating digital and specific to the disciplines competencies, critical thinking and entrepreneurship and strengthening industry linkages, to be implemented from Fall 2026. This paper contends that such policy-level calls for transformation cannot only be achieved by curriculum content changes, but also need to be accompanied by a consistent theory of how curriculum goals, pedagogy and assessment need to be aligned. Combining the latest pedagogical models, ranging from outcome-based education, competency-based education, project-based learning and problem-based learning, to blended and flipped learning, and AI-enhanced adaptive learning, the paper introduces an "all-in-one" framework for curriculum re-alignment based on Bloom's Revised Taxonomy of Educational Objectives and the accumulated evidence of how examinations in many educational systems fail to adequately represent higher-order cognitive demand compared to the stated objectives. The framework correlates cognitive process levels with the competency areas in IR 5.0 and with the pedagogical and assessment approaches, and is discussed in the context of the requirements of the current Undergraduate Education Policy of

Pakistan and the directive of the HEC for IR 5.0. Implications for assessment redesign, faculty development, and departmental curriculum review are discussed, as well as the restrictions of a purely theoretical synthesis, and the importance of empirical validation across disciplines.

Keywords: Industrial Revolution 5.0, Curriculum Alignment, Bloom's Revised Taxonomy, Outcomes Based Education, Competency Based Education, Pedagogy, Higher Education Reform, Pakistan

Introduction

Higher education is once more being called upon to reinvent itself in the light of a new industrial paradigm. The latest decade of curriculum reform, Industrial Revolution 4.0 (IR 4.0), focused on the automation of industry, cyber-physical systems and big data, while Industrial Revolution 5.0 (IR 5.0) shifts the focus to the convergence of artificial intelligence (AI), industry automation, digitalisation, advanced manufacturing, biotechnology, and climate technology, with a clear emphasis on the central role of humans, sustainability and resilience (**Pelaez-Sanchez et al., 2024**). In IR 5.0, the question is what should and can humans do, think, and create in conjunction with intelligent systems? For universities, the change is not just what they teach, but how they teach. The change is not just what is being taught, but how learning is designed, delivered and verified for universities.

This reframing has moved beyond conceptual literature. The Higher Education Commission (HEC) of Pakistan announced a national guideline in July 2026 to review and transform all degree programmes and curricula with an urgency by vice-chancellor or rectors of all public and private sector higher education institutions (HEIs) as part of IR 5.0 (Higher Education Commission of Pakistan, 2026). It asks to integrate AI and digital skills into dynamic learning cycles, where suitable, by means of stackable Microcredentials, and to enhance the industry connection by means of Micro-internships and live case studies with the local industry and Information and Communication Technology (ICT) companies and agri-tech start-ups. It also directs the Universities to start consultation with the departmental Board of Studies (BOS) to determine emerging disciplines and fields that need modernization, restructuring, consolidation or discontinuing, to be implemented from Fall 2026 with adherence to the existing Undergraduate Education Policy, Graduate Education Policy, Uniform Semester Guidelines and National Curriculum Review Committee (NCRC) approved programme structure.

These are the sorts of directives that are required but not enough in themselves. A call to action to integrate digital competencies and entrepreneurship skills into curricula is a statement of intent and does not in itself explain how this will be done in the design of the course, in pedagogy, and most importantly, in assessment. Over decades, researchers have found that the cognitive demands and outcomes specified in curriculum statements are not what is measured in exams; exams in highly diverse educational systems and subject areas have repeatedly been found to test

lower-order cognitive skills such as recall and comprehension rather than the higher order skills stated as cognitive outcomes in curriculum documents (Chandio et al., 2016; Cullinane & Liston, 2016; Muhayimana et al., 2022; Ravand et al., 2025). **U**nless this pattern is addressed, an IR 5.0 version of the course revision could easily turn into a rewording of the course content and terminology, thereby missing the most serious dimension of an education programme that Biggs (1996) has identified as being invalidated or undermined.

This paper addresses that risk by outlining a theoretical model to connect curriculum goals, pedagogy, and assessment elements specifically to the competency demands of IR 5.0. The framework combines four well-known theories and practices: (a) Bloom's Revised Taxonomy of Educational Objectives (Anderson & Krathwohl, 2001) as a diagnostic lens for cognitive alignment; (b) Biggs's (1996) constructive alignment and the outcome-based and competency-based education movement it inspires; (c) the empirical research available on the requirements for IR 5.0 and Industry 5.0 competencies, including recent research on forecasting changes in workers' skills (World Economic Forum, 2025); and (d) the synthesis of current pedagogical approaches that have been proposed as ways to overcome the competency-alignment gap, such as project- or problem-based learning, blended/modern instruction, AI integrated adaptive learning, Bloom's Digital Taxonomy, stackable micro credentials, and structured industry-academy linkage mechanisms. The paper is not empirical; it does not report new data or findings, but rather summarises and synthesises existing theory and evidence in a single applied context: it is conceptual and designed to be used as a planning guide for the curriculum committees, Boards of Studies (at departmental level) and policy makers who are now required to review curricula in line with the HEC's 2026 directive and similar national curriculum review processes around the world.

Theoretical Framework

Bloom's Revised Taxonomy as a Diagnostic lens for COGNITIVE Alignment

The Anderson and Krathwohl revised version of Bloom's original Taxonomy of Educational Objectives (Bloom et al., 1956) is still the most popular tool for categorizing the cognitive demand of learning objectives, instructional activities, and assessment items. The revision spans six levels of cognitive processing (Remember, Understand, Apply, Analyze, Evaluate, and Create) and four dimensions of knowledge (Factual, Conceptual, Procedural, and Metacognitive) to yield a two-dimensional matrix that can pinpoint an objective or assessment item with significantly greater accuracy than the earlier one-dimensional hierarchy (Krathwohl, 2002). This matrix is not meant to be applied to any particular set of data—it is merely a lens for asking, for any particular curriculum, whether all of the curriculum's stated goals, curriculum delivery models, and assessment practices are geared toward the same levels of thinking, and whether those levels include the Analyze, Evaluate, and Create categories that are explicitly called for by the competencies of IR 5.0 (critical thinking, complex problem-solving, innovation).

A large and diverse corpus of content-analytic research has been carried out in recent years, well after the publication of Bloom's Revised Taxonomy, that offers converging evidence that this alignment is not automatic. Research coding real exam papers against the taxonomy has revealed that the lower-order cognitive levels are predominant in the assessment of national school-leaving exams in Ireland (Cullinane & Liston, 2016), primary-leaving exams in Rwanda (Muhayimana et al., 2022), secondary exams in Pakistan (Chandio et al., 2016, 2021), university final exams in Indonesia (Ginting et al., 2021), and a national doctoral entrance exam in Iran (Ravand et al., 2025). This is because it is a pattern which appears in such a variety of systems, disciplines, and decades, and cannot be ignored in any curriculum revision, even one driven by IR 5.0, but needs to be actively managed and prevented from happening.

Constructive Alignment, Outcome Based Education and Competency Based Education

Biggs (1996) presented the principle of constructive alignment, which states that learning outcomes, teaching and learning activities, and assessment tasks should be deliberately designed as a coherent system, meaning that if one element of the system is misaligned with another, especially when the assessment task does not require the cognitive work the outcomes imply, then the validity of the entire instructional design is jeopardized. This principle forms the base of two related curriculum currents now popular in higher education policy. Outcome based education (OBE) involves a backward approach to curriculum planning, delivery and assessment, whereby all curriculum and assessment items are linked to a particular learning outcome, instead of a forward approach whereby the curriculum and assessment is planned, delivered and evaluated for a specific content (Aminah et al., 2025). Competency-based education (CBE), shares this orientation, but with less emphasis on the demonstrable and more on the relatively denotable mastery of discrete, often workplace-relevant competencies, and is closely related to flexible, non-time-based progression models (Harris et al., 1995, cited in the competency-based education literature). Both frameworks rely on the same underlying assessment diagnostic move that Bloom's Revised Taxonomy supports: ensuring that the assessment tasks are at the cognitive level the outcome/competency statement claims they are, rather than assuming alignment based on the similarity of the language of the objective and the assessment.

The IR 5.0 Competency Landscape

IR 5.0 differs from Industry 4.0 in its explicit focus of human ability alongside, and not in place of, intelligent automation, and is defined by three key elements: Human Centrality, Sustainability and Resilience (Pelaez-Sanchez et al., 2024). This perspective is supported by empirical studies of the skills of the workforce. The World Economic Forum's Future of Jobs Report 2025, based on a survey of employers representing more than 14 million workers, found that analytical thinking remains employers' single most sought-after core skill, followed by resilience, flexibility and agility, leadership and social influence, and creative thinking, while AI and big data, networks and cybersecurity, and technological literacy are the fastest-growing skills in demand through 2030,

alongside curiosity and lifelong learning (World Economic Forum, 2025). Other studies, specific to higher education, also point to a similar set of competencies, specifically digital competency, creativity, communication, collaboration, and critical thinking, as priority areas that need to be developed in higher education (Pelaez-Sanchez et al., 2024), along with the integration of digital competency and green competency (sustainability) in the redesign of the curricula (Trevisan et al., as cited in recent research on Industry 5.0 competencies in the workplace). Constitutions of this competency profile show a particular slant to the higher cognitive-process levels (Analyze, Evaluate, Create) and the Metacognitive and Procedural knowledge dimensions that have been consistently reported in the literature on exam-analysis as most poorly represented in current assessment practices. This is the gap this framework is designed to fill.

Pedagogical Models and Methodologies for IR 5.0 Alignment

It is far from simply rephrasing the language of the IR 5.0 competency demands to make them more ambitious; it's about the pedagogical models that enable the creation of higher-order and metacognitive performance and assessment methods that verify such performance. In this section, eight such models are synthesized, each of which is well known in the current higher education literature, and the cognitive and competency domain each is best suited to serve is described.

Backward-Designed Outcome-Based Education

Therefore, in OBE, the teaching and learning activities are designed to enable students to achieve the required competencies, learning outcomes, and objectives of a course; assessment tasks are developed to verify the course learning outcomes, and then the learning outcomes are reverse-engineered into the teaching and learning activities (as stated in the recent literature on OBE curriculum development by Aminah et al., 2025; Chien et al., 2025). Taken in the context of IR 5.0 alignment, this should be accompanied, from the beginning of the course, with an assessment task where students provide an assessment of the ethical implications of the AI-based solution, as opposed to a recall-based item that simply tests whether the concept of an AI-based solution was discussed in lecture. The application of the OBE curriculum can be done even in the subject areas traditionally tested through recall, whereby the learning outcomes, learning content, and even the evaluation system are designed and planned together (Baidowi et al., 2026).

Competency Based Education and Flexible Progression

In contrast, competency-based education (CBE) doesn't simply restructure how we assess—it restructures learning itself, paving the way for students to advance based on their demonstrated mastery of the competency, not on the end of a set amount of time (Bhatia & Kumar, 2025). CBE is especially appropriate for a number of technical and discipline-specific competencies that are embedded in the IR 5.0 curricula, and that are not easily assessed by a timed, norm-referenced test: AI literacy, data analysis, and proficiency in a specific software or platform are among these competencies. Institutions which have implemented CBE reported that being explicit about linking

each assessment task to an employer-recognized competency, instead of a more generic topic area, enhances transparency and the labour-market relevance of the resulting credential (Bhatia & Kumar, 2025).

Project-Based Learning (PBL), Problem Based Learning (PBL)

Project-based learning (PjBL) and problem-based learning (PBL) approach extended, often ill-structured, real-world problems and involve students in Analyze, Evaluate, and Create level thinking that is not easily nurtured by lecture and recall. The question is, as the outcome in PjBL/PBL is often a solution, prototype or recommendation, not a recall of facts, the assessment task and the cognitive demand of the objective are structurally hard to separate, which is exactly what constructive alignment requires. These models are also, in a natural way, linked to the experiential learning cycle (Kolb, 1984) that can be summarized as concrete experience, reflective observation, abstract conceptualization, and active experimentation, all reinforcing the other and strengthening learning in the metacognitive knowledge dimension defined in Bloom's Revised Taxonomy as the most consistently overlooked in traditional assessment.

Blended, Flipped, and Hybrid Instructional Models

Blended and flipped class models redistribute the assignment of lower order content delivery: reading, recorded lecture, and foundational explanation; to lower order asynchronously, self-paced study; to allow higher order activities: case discussion, applied problem-solving, peer critique, and structured debate in scheduled class time. This is a redistribution of not what is taught, but where cognitive effort is directed: the Remember and Understand levels are taught separately, and guided in-class activities and assessment tasks are built around the Apply, Analyze, and Evaluate levels, all of which are explicit rather than being presumed to be a learned component of Recall.

AI-Integrated and Adaptive Personalized Learning (AI-PAL).

AI-PAL is an acronym for AI-Integrated and Adaptive Personalized Learning. The tools students will learn to use with IR 5.0 curricula can be incorporated into the delivery of IR 5.0 curricula. There are tools for scaling individualized practice at a higher level that, without AI assistance, would be impossible without a teacher. These include adaptive learning platforms that tailor content sequencing and difficulty to each learner, AI-assisted formative feedback tools, and generative AI as a structured drafting, critique, or simulation partner. The grasp of intelligent systems in terms of effective, critical engagement with intelligent systems, which is identified as a core competency among graduates in the Industry 5.0 context, is AI-integrated pedagogy as an assessed competency as well as an instructional method (Pelaez-Sanchez et al., 2024). Institutions that choose to implement this model should consider implementing an explicit assessment strategy that examines students' evaluation and adaptation of the output of the AI tools, instead of their unaided recall, to ensure that the use of these tools does not diminish the utility of the assessment, but enhances it.

Digital Age Cognitive Skills from Bloom's Digital Taxonomy

Churches (2008) builds upon Anderson and Krathwohl's (2001) cognitive process categories by adding "digitally mediated" verbs and artifacts, such as creating a program, filming, animating, blogging or podcasting, instead of only written composition (Lidawan & Al Shlowiy, 2020). For IR 5.0 curricula, this extension is helpful because it preserves the logic of the cognitive alignment in Bloom's Revised Taxonomy while providing a set of vocabulary for curriculum designers to use when creating evaluation tasks that assess Analyze, Evaluate, and Create-level objectives, rather than using traditional written exam formats that are not suited to the digital and AI skills IR 5.0 demands.

Stackable Microcredentials

Based on international definitions, micro credentials are recognized as credentialed evidence of learning outcomes gained through a brief, concentrated learning experience, and can be a tool for integrating stand-alone IR 5.0 competencies, a specific AI tool, a sustainability framework, and a data-analysis technique without replacing the entire curriculum (UNESCO in recent literature on micro credential recognition). If these credentials are designed to be stackable, assessed, and verified at the level of the credential, but combined with others to achieve a larger qualification, then universities can adapt to rapidly changing technology by adapting to a single course module, instead of a multi-year cycle of curriculum revisions, while maintaining the rigor of the OBE and CBE models described above at the level of each individual credential (Ergin, 2024). This is exactly how the HEC's directive for 2026 suggests embedding AI, digital and business skills in the existing programme designs without changing the course and credit distribution approved by the HEC.

Establishment of structured linkage models between Industry and Academia

Classroom-based pedagogy, however, does not address the level of alignment that is conveyed by micro-internships, live case studies co-developed with local firms, structured industry mentorship, and work-integrated learning placements: the level of alignment that comes with demonstrating the transfer of classroom competencies to the real world, where the work is resource-constrained, ambiguous, and lived through by other people. The capability of industry-academic collaboration has been identified by industry 5.0 competency research over the years as a factor that determines whether a curriculum actually leads to work-ready graduates, as it is often believed that faculty members do not have up-to-date, tacit knowledge of the changing ways of working in practice (Arregi Lopez et al., 2026). Putting these connections in place as an assessed part of the industry engagement (not as an extra), makes industry engagement a structural component of the constructive-alignment sequence from objective to verified outcomes.

Pedagogy of the Entrepreneur and Sustainability-Integrated Pedagogy

Since IR 5.0 puts sustainability and human-centered value creation at the center, and not just as an optional extra, curricula based on IR 5.0 need to include entrepreneurship and environmental, social and governance (ESG) reasoning as assessed competencies, and not a choice of elective courses. AI application to sustainable business models and practice-oriented, ESG-focused education have been marked as an urgent curricular need in recent Industry 5.0 education research, which goes beyond mere technical digital competency development (Arregi Lopez et al., 2026). Assessment tasks that involve venture feasibility analysis, sustainability impact assessment or a social innovation proposal generally require the engagement at the Evaluate-level and/or Create-level, again bringing a specific IR 5.0 competency domain into closer linkage with the higher cognitive process levels that are most frequently lacking in existing assessment.

Illustrative Application: Compulsory Islamic Studies Courses

A good test of any course-alignment general curriculum framework is if it applies to a course that on its face seems unrelated to Industrial Revolution 5.0. Thus, compulsory Islamic Studies which is mandatory for all the undergraduate students of Pakistan is a productive case, because it is a values based and non-technical subject which may not be considered during the IR 5.0 curriculum review. There is already evidence of this not being a problem that is unique to such courses. Bhatti (2017, 2023) identified that the compulsory Islamic Studies content in Pakistan is repeated across successive levels of schooling, largely unconcerned with the cognitive readiness of the learners; Farooq (2021) argued that the compulsory Islamic studies course at the bachelor's level of schooling taught by HEC tends to be repetitive of the content taught in the preceding levels without engaging the learners in an analytical discourse on current issues; and a content analysis conducted on the secondary level Islamic studies textbook curriculum in the province of Sindh, which was coded directly against Bloom's Revised Taxonomy, revealed that the curriculum only develops four lower levels of cognitive abilities but not the evaluative and creative ones. The 2026 IR 5.0 is not an Islamic Studies course that is separate from technology, it is a test of an outcome-aligned requirement of that course.

Redistribution of the content of the subject in Table 1, below, is not necessary to abandon the traditional content, but is necessary to redistribute where it is assessed in the cognitive-process hierarchy. Content knowledge of foundational material, textual knowledge of specific verses, ahadith and historical events are still assessed at the Remember and Understand levels, and should be delivered efficiently and/or at a self-paced rate, so that time in class is not being used to teach material which is more appropriate for independent study. Within the subject matter, however, there are also opportunities for Apply, Analyze, Evaluate, and Create-level engagement: applying a Qur'anic ethical principle to a case in the present day (Apply), analyzing competing juristic interpretations of an issue of the day (Analyze), evaluating the ethical implications of an emerging technology, such as algorithms used for decision-making, or genetic engineering (Evaluate), and

creating an original piece of applied ethical reasoning, a position paper, a proposal to outreach into a community, or a comparative-religion project, aimed at a specific audience in a real-world context (Create). This new teaching and assessment architecture is feasible for implementation in Islamic education, as demonstrated by a case study of an Islamic Education Management degree programme, which showed that it is possible to systematically integrate the graduate learning outcomes in the programme's design and the continuous evaluation mechanisms into an existing Islamic higher education curriculum (Baidowi et al., 2026), and a study of the application of outcome-based education in the Islamic Religious Education curriculum in Indonesia, which revealed that there are real opportunities to make the Islamic Education curriculum more relevant and reachable, but there are also real challenges to overcome with regards to curriculum inertia, entrenched assessment habits, uneven familiarity with the concept of outcome-based design amongst faculty, and issues with curriculum implementation in its current structure (Haryadi & Baidi, 2026). Therefore, successful IR 5.0 aligned curriculum reform should not be limited to the subjects traditionally considered to be the most closely related to the technology being introduced by an institution into its degree programme, but should be applied to the other compulsory subjects too, because it is in these that assessment on the evidence presented above is most likely to be limited to recall and comprehension.

An Integrated IR 5.0 Curriculum Realignment Framework

The models presented above are not competitors; rather they represent different stages of the same continuum of cognitive processes which can be intentionally ordered in a given degree of programme. Table 1 will provide a synthesis of the framework, placing each level of Bloom's Revised Taxonomy within a competency from the IR 5.0, a pedagogical model most likely to support the development of the competency, and a sample assessment strategy that is capable of demonstrating competency, which will be translated into a planning tool curriculum committees can directly use.

Table 1: *An Integrated Framework for Aligning Cognitive Level, IR 5.0 Competency, Pedagogy, and Assessment*

Cognitive Process Level (Bloom's Revised Taxonomy)	**Representative IR 5.0 Competency**	**Primary Pedagogical Model**	**Illustrative Assessment Strategy**
Remember / Understand	Foundational digital & disciplinary literacy	Flipped pre-class content; adaptive AI-tutoring modules	Automated formative quizzes; concept-mapping tasks

Cognitive Process Level (Bloom's Revised Taxonomy)	Representative IR 5.0 Competency	Primary Pedagogical Model	Illustrative Assessment Strategy
Apply	Tool and platform proficiency (e.g., AI, data software)	Competency-based education; lab/studio practice	Direct demonstration of task completion; practical skills checklist
Analyze	Data literacy; systems thinking; analytical thinking	Problem-based learning; blended case discussion	Case analysis report; structured data-interpretation task
Evaluate	Critical thinking; ethical/AI-output evaluation; ESG reasoning	AI-integrated critique tasks; industry live case studies	Critique/peer-review assignment; sustainability impact assessment
Create	Innovation; entrepreneurship; digital content creation	Project-based learning; micro credentialed capstones	Prototype, venture proposal, or digital artifact (Bloom's Digital Taxonomy)

Note. The table represents only selected examples of how the competencies and assessment strategies can be mapped to each cognitive level, and the pedagogical and assessment options will be different in various disciplines and contexts.

Overall, the framework highlights two design principles. First, the lower two rows of the taxonomy (Remember and Understand) should be taught efficiently, frequently blended or AI-adaptive, in order to free up limited contact time and assessment time for the upper three rows of the taxonomy (Analyze, Evaluate, Create), where the IR 5.0 competencies are more centralized and where the literature demonstrated that assessment practice is lacking. Second, each row's assessment strategy is selected because it structurally demands the corresponding cognitive process, so a multiple-choice recall is not suitable to assess a Create level competency, no matter how the accompanying objective is worded, and this is in line with Biggs' (1996) constructive-alignment principle, which is a concrete design check instead of an abstract aspiration.

This approach at the programme level also provides curriculum committees with a direct pathway to address the specific asks of the directive in 2026 from the HEC. The four blocks of Apply through Create, and the emerging technology competencies tied to them, align with the rows of Table 1; the idea that these should be delivered through stackable micro credentials aligns with the ability to assess these as separate micro credential assessments within the existing HEC-approved course and credit system; and the suggestion of micro-internships and live case studies

with industry is supported by the lower rows of the table, which require authenticity and grounding in external contexts to ensure validity.

The policy and institutional implications are discussed. Policy and institutional implications are discussed.The implementation of this framework does not necessitate changing the structure which HEC has already prescribed for universities in 2026; it explicitly states that the curriculum changes should not deviate from the Undergraduate Education Policy, Graduate Education Policy, Uniform Semester Guidelines and NCRC-approved programme structures, which include the existing course and credit distribution (Higher Education Commission of Pakistan, 2026). The framework outlined here would complement rather than be in place of those structures.

Departmental Curriculum Review

There is a call in the directive for identification of emerging disciplines and disciplines that need to be modernised, restructured, consolidated, and/or discontinued at the departmental Board of Studies level, and this can be done by auditing courses against Table 1; for each course, mapping of current objectives, teaching methods, and assessment items with the objectives from Bloom's Revised Taxonomy will reveal that despite the course's stated objectives, assessment has migrated towards the lower cognitive levels as would be predicted by the existing literature on exam analysis. This audit process is similar to the empirical content-analysis studies reviewed above in that it does not necessitate that departments conduct their own formal research study but does require them to engage in an audit of their own institutional practice.

Faculty Development

There are no pedagogical models discussed above that are self-implementing, and all of them require faculty capability that many instructors, who have been trained under the more traditional lecture-and-recall pedagogical models, may not yet possess. It is important that faculty development programmes that accompany IR 5.0 curriculum reform focus at least as much on assessment design (developing valid Analyze-, Evaluate-, and Create-level items and rubrics) as on content. The evidence presented above indicates that content modernization without corresponding assessment redesign is the more prevalent and more impactful of the two failures.

Quality Assurance and Test Blueprinting

The inclusion of a compulsory table of specifications, a clear linkage of course learning outcomes to the percentage of assessment marks allocated at each cognitive level, achieved as a regular quality assurance process, rather than as one-off curriculum review, is one way to operationalise constructive alignment as a practice and is the type of mapping that the item writing literature most strongly advises as a safeguard against the default setting towards lower order assessment items (Rush et al., 2016).

Limitations

It is a conceptual synthesis and has not been empirically tested with any particular programme, discipline or institution, and its effectiveness in practice will vary with the different ways in which it can be adapted to the specific contexts of various disciplines. The pedagogical models reviewed are quite different in their resource needs, the models of PBL and industry linkage need faculty time, industry connections, and institutional support, which not all departments or institutions have, and PBL and industry linkage models give no resourcing or change-management plan for institutions with these limitations. The IR 5.0 competency literature compiled in this synthesis is itself a new and rapidly developing research field, which has been largely developed outside the context of Pakistan and outside the humanities and social sciences, and whose usefulness for any discipline and institutional setting is subject to the hypothesis of local validation rather than a finding. Lastly, the content decisions made in a particular subject area, such as the technologies in a particular field, are not included in the framework, and therefore will need to be made by departmental Boards of Studies on their own subject-matter expertise.

Conclusion

Such calls for curriculum transformation as that of the HEC in July 2026 (which was very circular) recognize a clear problem: Higher education content and competency expectations are changing more rapidly than most curriculum are being changed to reflect. Content revision only deals with one aspect of the constructive-alignment triad proposed by Biggs (1996). With a curve that remains unchanged in terms of pedagogy and assessment, there is a risk that curriculum reform will result in a new version of the same low-order assessment focus that the exam-analysis literature has identified in a wide variety of curriculum and assessment systems throughout history and around the world. This framework, combining Bloom's Revised Taxonomy, constructive alignment, outcome-based and competency-based education, and a set of synthesized contemporary pedagogical models, provides a concrete and theoretically-driven framework for curriculum committees and policy makers to ensure that the next generation of degree programmes will not only shape what is taught, but the what students will be required, and assessed, to do.

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