

Re-Imaging the B. Ed Curriculum for Online Teacher Education: Assessing Core and Interdisciplinary Course Integration at the Virtual University of Pakistan

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Abstract

This paper addresses the comparison of course learning Outcomes (CLOs) and the institutional Program Learning Outcomes (PLOs) of 272 in 34 minor and interdisciplinary courses of the B. Ed program at Virtual University of Pakistan. The study used the mixed- methods sequential explanatory design to construct CLOs as qualitative thematic content analysis compared to PLOs. Specific themes are pedagogy, assessment, ethics and digital literacy that were manually mapped through validated coding schemes through an excel/NVivo matrices. The quantitative phase used descriptive statistics to issue frequencies of alignment. The findings demonstrate that the core teaching areas are well aligned (PLO1-PLO5), but there is a lack of incorporation of the two PLOs: digital competence (PLO6) and innovation/social responsibility (PLO7). A Three-Level Curriculum Model is then suggested in response to improve virtual teacher training. The implications made by the study are focused on strategic restructuring of the curriculum, whereas its relevance is the ability to provide the replicable model of the outcome-based education quality assurance in the institutions of distance education.

Key words: *Program learning outcomes (PLOs), Course learning outcomes (CLOs), Digital literacy, Curriculum.*

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Introduction

Misalignment between Course Learning Outcomes (CLOs) and Program Learning Outcomes (PLOs) has now become one of the key issues of contemporary outcome-based education systems in various parts of the world. Such a connection will make sure that the components of a particular course build towards a larger set of competencies expected of those who graduate from the program (Biggs & Tang, 2011; Harden, 2007). With the growing use of virtual and distance education systems, especially in developing countries, it becomes quite necessary to consider whether online-based teacher education curriculum is consistent, coherent, and accountable in their course of preparing future educators (Ali et al., 2021; Malik & Zohair, 2020). In Pakistan, the Virtual University of Pakistan (VUP) is an early entrant into the provision of fully online programs up to undergraduate and graduate degree programs in the field of education. Nevertheless, although its role continues to become relevant, there are rare empirical evidence that focuses on the systematic integration of course-specific purposes with general program learning objectives in such a virtual design (Shah & Ud Din, 2018) . The VUP Bachelor of Education (B.Ed.) program has both major and interdisciplinary studies where every course has the aim of molding certain competency in future teachers. However, it is not well researched how much these courses are correlated and contribute to PLOs, including digital literacy, pedagogy, innovation, collaboration, and social responsibility. Thus, the given study seeks to criticize the PLO-CLO integration in the B.Ed. program of the Virtual University of Pakistan combining the mixed-methods sequential explanatory design of the research. This study bridges this disconnect in the virtual teacher education setting since it maps the thematic representation of CLOs in comparison to the institutional PLO and measures the degree of alignment between the two.

Problem Statement

Although the significance of curriculum alignment in higher education, and in teacher preparation programs is increasingly acknowledged (Harden, 2007; Mahajan & Singh, 2022), little research has been done on learning outcome alignment in virtual institutions. The assurance of teacher education program strength in online settings has become an urgent issue in Pakistan where both public and private universities adopt online modalities more (Malik & Zohair, 2020) . Unless there is empirical mapping of PLO integration in relation to the individual courses, these programs face a risk of inconsistency in the development of the

various skills, and this leaves gaps in the pedagogical, digital and ethical competence of graduates. Because of this misalignment, the accreditation process can be undermined. And the quality of teaching provided to future students by a new generation of teachers who previously attended these classes can also be compromised. That is why the present research was conducted.

Research Objectives

The objectives were to:

- Analyze alignment of Program Learning Outcomes across major and interdisciplinary courses in the B.Ed.
- Identify strengths and gaps in the curriculum, particularly in addressing higher-order skills such as innovation, digital pedagogy, and social responsibility
- Assess how well interdisciplinary courses support the holistic development of future teachers in an online learning environment
- Suggest an improved curriculum model that ensures balanced PLO integration suitable for virtual teacher preparation

Literature Review

Program Learning Outcomes (PLOs) are statements that specify those competencies that graduates of the academic program will have acquired by the time they have completed it. The alignment of curriculum with PLOs has been considered quite important in terms of providing quality education globally because it anchors the content written in the plan of instruction, instructional methods and evaluation approaches to desired learning outcomes (Biggs & Tang, 2011; Harden, 2001). Within educational background studies, particularly teacher education, which is commonly introduced at the Bachelor of Education (B.Ed.) level, there are recurrently fundamental competencies as a part of their core training, simply by the fact that they form a centrality related to effective teaching practices (Patrick & Smart, 1998). The present research would rely on constructive alignment theory that gives priority to the integrity between planned learning objectives, teaching and learning, as well as assessment tasks (Biggs & Tang, 2011). Moreover, digital competence can be integrated with the help of the Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006), which presents technological, pedagogical, and content knowledge as the main domains of teaching. Furthermore, the higher-order skills can also be incorporated, and Bloom taxonomy (Anderson & Krathwohl, 2001), the

revised version, can be applied to include such skills like innovation and social responsibility.

The study has used various theoretical concepts to form a well-developed analytical outlook. The overall direction of analyzing rigor in the relationship between the Course Learning Outcomes (CLOs) and the Program Learning Outcomes (PLOs) is the Constructive Alignment (Biggs and Tang, 2011). A Technological Pedagogical Content Knowledge (TPACK) model (Mishra and Koehler, 2006) is utilized in order to find and decode themes that can be related to digital competence (PLO6) and draw the distinction between a typical use of technologies and their effective inclusion in the teaching process and content. Furthermore, the Revised Bloom Taxonomy (Anderson and Krathwohl, 2001) is used to examine higher-order cognitive functions like creating and evaluating which help to become more innovative and socially responsible (PLO7). By means of this comprehensive framework, the study offers a comprehensive assessment of core and progressive competencies that are conceptualized in the framework of the curriculum.

Current research highlights the increasing need to incorporate digital pedagogy and innovation into teacher training with a touch of social responsibility. As an important skill, digital competence became one of the critical skills of any modern educator, especially in online and blended learning contexts, because it allows teachers to conceptualize, produce, and evaluate technology-enhanced learning experiences (Redecker, 2017). Similarly, innovation and social responsibility are becoming viewed as an important requirement of training educators to respond to the 21st-century challenges, facilitate inclusive classes, and make a meaningful contribution to community development (UNESCO, 2015). Based on various studies conducted in Pakistan, the curriculum on teacher education is reported to be considerably covering the conventional areas of competence and does not contain balanced coverage of emerging competencies including digital literacy and innovation (Khalid & Khan, 2021). This is even more unbalanced in virtual learning where use of technology is more than in others. Although courses taught in different disciplines tend to expand the range of skills, they are not integrated into the main curriculum, which means that results related to digital pedagogy and social responsibility have not been developed (Shah & Ud Din, 2020; Iqbal et al., 2019). Literature broadly identifies a gap in the curriculum when foundational competencies are the emphasis instead of higher skills that are fundamental aspects in contemporary teaching environment. The provision of interdisciplinary courses has the potential to fill this gap and evidence does indicate that the implementation of said interdisciplinary

courses in B.Ed. courses in Pakistan does not serve the development of teachers holistically. Contributions to research on curriculum design in teacher education are accumulating, but empirical studies of PLO alignment on online teacher preparation are very limited, especially those that focus on aspects of digital pedagogy, innovation, and social responsibility, in Pakistan. The given study will fill this gap as it will analyze the correspondence of PLOs in B.Ed. curriculum of the Virtual University of Pakistan, the coverage of both foundational and emerging competencies, the role of interdisciplinary courses, and explore the possible model of the curriculum to guarantee proportional representation of all PLOs on the virtual teacher education. Overall, in terms of foundational teaching competencies education core teaching competencies are represented relatively well in the B.Ed. curricula in Pakistan; however, the emerging competency comprised of digital literacy, innovation, and social responsibility was also sparsely researched. This disproportion serves as a reason to highlight the necessity of deliberate curriculum redistribution that is the subject of the current study.

Methodology

By utilizing a mixed-methods sequential explanatory design the present study set out to analyze the correlation between Course Learning Outcomes (CLOs), and Program Learning Outcomes (PLOs) of the B. Ed program of the Virtual University of Pakistan. The qualitative stage consisted of a thematic content analysis of all CLOs done in a systematic manner. A priori development of a codebook was done based on the seven institutional PLOs, and sub-themes were seen based on the theoretical frameworks (e.g., 'Use of ICT' under PLO6 based on TPACK and Reflective Practice under PLO7 based on the Taxonomy of Bloom). Each CLO was manually coded by two coders who were experts in teacher education. Cohen Kappa was used to determine inter-coder reliability which attained a value of 0.85, meaning that there was high level of agreement. Conflicts were solved by discussion. The mapping weight was then determined as the sum of all the times a CLO was coded to a particular PLO in all courses, and this offers the quantitative measure of thematic emphasis.

During the next quantitative step, the number of thematic correspondence of CLOs to PLOs was counted on every course. These findings were organized and presented in a matrix. A descriptive statistic including frequency counts and percentages was used to explain the level of alignment at the curriculum. All 34 courses in the B.Ed program were used in the study. Purposive sampling was used to make sure that all the core

and interdisciplinary courses were reviewed. A structured analysis sheet with course code, title, CLOs, and institutional PLOs was used as instruments to collect data. NVivo was used to code to ensure accuracy. To increase reliability, coded data was validated with course outlines in official documents, and coding scheme was checked independently by two experts in the field of education.

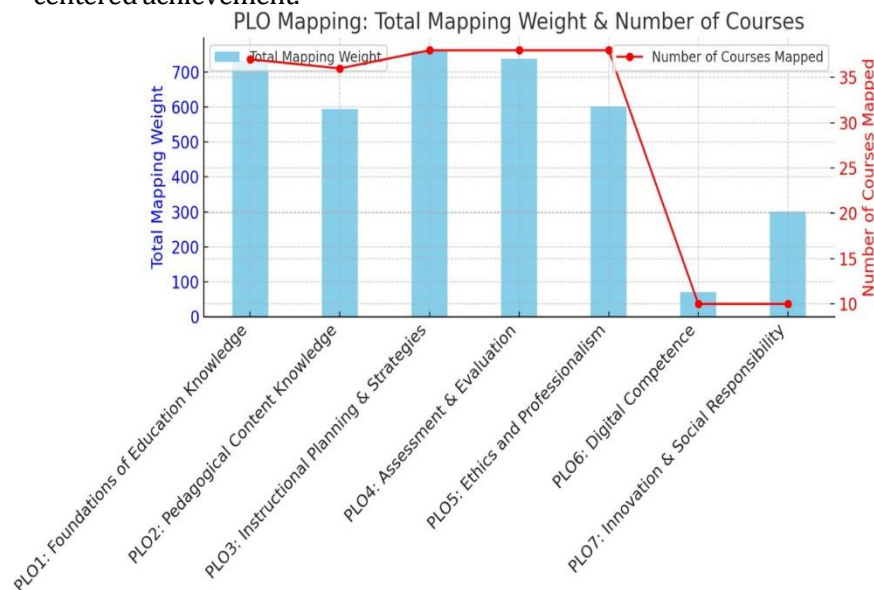
The sequential explanatory design was suggested to be mixed methods in order to obtain a detailed understanding. The first qualitative analysis was done to determine what themes were present in the CLOs and their alignment to the PLOs. The latter quantitative step quantified the degree of this correspondence in terms of frequencies and weights of mapping. This method enabled the explanations of the qualitative results to be extended to the whole curriculum, and the quantitative data to highlight the scale of the alignment and misalignment.

Result Phase-I Qualitative Analysis

PLO	Theme	Sub-Themes	Total Mapping Weight	Number of Courses Mapped
PLO1	Foundations of Education Knowledge	Educational philosophy, foundations developmental psychology	732	37
PLO2	Pedagogical Content Knowledge	Subject: specific pedagogy, teaching methods	595	36
PLO3	Instructional Planning & Strategies	Curriculum planning, instructional design, lesson preparation	761	38
PLO4	Assessment & Evaluation	Formative/summative assessment, test development, feedback methods	739	38
PLO5	Ethics and Professionalism	Values education, professional conduct, inclusive teaching, civic duties	602	38

PLO6	Digital Competence	Use of ICT, media tools, communication platforms	70	10
PLO7	Innovation & Social Responsibility	Reflective practice, social work, leadership, mass communication	301	10

There is a high level of focus on instructional planning (PLO3), assessment (PLO4), and foundational knowledge (PLO1) which means that the core teaching competences are well addressed. There is a moderate concern of ethics and pedagogy (PLO2 & PLO5) to guarantee professional and subject based skills. Nevertheless, digital competence (PLO6) and innovation/social responsibility (PLO7) are deficient, and it is stated that future teachers are not prepared to integrate technology and influence society completely. The B.Ed. program of the Virtual University of Pakistan closely matches the principles of teaching competence but does not sufficiently incorporate the concept of digital literacy and an innovation-centered achievement.



Graph shows that PLO3 (Instructional Planning & Strategies) has the highest total mapping weight, closely followed by PLO4 (Assessment & Evaluation) and PLO1 (Foundations of Education Knowledge). In contrast, PLO6 (Digital Competence) and PLO7 (Innovation & Social

Responsibility) have the lowest mapping weights and are associated with the fewest courses.

Results Phase-II

Quantitative Analysis

Course Code	Course Title	Category	PL O1	PL O2	PL O3	PL O4	PL O5	PL O6	PL O7
EDU101	Foundations of Education	Major	30	20	20	20	10	0	0
EDU301	General Method of Teaching	Major	25	15	25	20	15	0	0
EDU305	Classroom Management	Major	20	10	30	20	20	0	0
EDU405	Classroom Assessment	Major	25	15	25	20	15	0	0
EDU430	ICT in Education	Major	20	20	20	20	10	10	0
EDU403	Art, Crafts and Calligraphy	Major	10	30	20	20	20	0	0
EDU516	Teaching of English	Major	20	20	20	20	20	0	0
EDU510	Teaching of Mathematics	Major	25	15	25	20	15	0	0
EDU501	School, Community and Teacher	Major	20	20	20	20	20	0	0
GSC201	Teaching of General Science	Major	25	15	25	20	15	0	0
TPTA519	Teaching Practice – I	Major	10	20	30	20	20	0	0
EDU431	Test Development & Evaluation	Major	25	15	25	20	15	0	0
EDU411	Teaching of Urdu	Major	20	20	20	20	20	0	0
PSY406	Educational Psychology	Major	22	0	11	44	22	0	1

EDU303	Child Development	Major	25	15	25	20	15	0	0
EDU410	Teaching of Literacy Skills	Major	20	20	20	20	20	0	0
EDU601	Philosophy of Education	Major	30	20	20	20	10	0	0
EDU401	Contemporary Issues and Trends in Ed.	Major	25	15	25	20	15	0	0
EDU304	Introduction to Guidance and Counselling	Major	20	20	20	20	20	0	0
EDU512	Teaching of Islamic Studies	Major	20	20	20	20	20	0	0
EDU406	Critical Thinking and Reflective Practice	Major	20	20	20	20	20	0	0
EDU402	Curriculum Development	Major	25	15	25	20	15	0	0
EDU515	Teaching of Geography	Major	20	20	20	20	20	0	0
EDU433	Professionalism in Teaching	Major	20	20	20	20	20	0	0
EDU407	Research Methods in Education	Major	20	20	30	20	10	0	0
EDU604	Comparative Education	Major	25	15	25	20	15	0	0
EDU602	Educational Leadership and Management	Major	20	20	20	20	20	0	0
TPTB519	Teaching Practice – II	Major	10	20	30	20	20	0	0
EDUA630	Research Project	Major	0	0	30	30	40	0	0
SOC602	Sociology of Education	Interdisciplinary	15	10	10	20	10	10	25
MGT E 630	Knowledge Management	Interdisciplinary	10	15	10	15	10	10	30

MCM 1 01	Introduction to Mass Communication	Interdisc i plinary	15	1 0	10	1 0	10	5	40
PSC2 0 1	International Relations	Interdisc i plinary	15	1 0	10	1 5	10	10	30
PSY1 0 1	Introductio n to Psychology	Interdisc i plinary	20	1 0	10	1 5	10	5	30
SOC3 0 1	Introduction to Social Work	Interdisc i plinary	15	1 5	10	1 5	10	5	30
MGT50 3	Principles of Management	Interdisc i plinary	20	1 0	20	1 0	10	5	25
MCM 3 01	Communication Skills	Interdisc i plinary	10	1 0	5	1 0	5	5	55
SOC6 0 4	Community Development	Interdisc i plinary	15	1 0	10	1 5	10	5	35

According to the data, there is a significant connection between major courses and PLO1, PLO3 and PLO4 as they refer to knowledge, application and evaluation skills. The major courses, however, do not address PLO6 and PLO7 at all. This gap is bridged by interdisciplinary courses since they play a major role in PLO6 (innovation) and PLO7 (social responsibility). The total outcome indicates that the key courses are mostly consistent with PLO1 to PLO5 and PLO 6 or PLO7 are covered by interdisciplinary courses only.

Merged Results

The B.Ed. curriculum of the Virtual University of Pakistan is very much aligned with the foundational teaching competencies (PLO1 to PLO5) but the outcomes of the digital literacy, innovation and social responsibility (PLO6 and PLO7) are only covered through interdisciplinary courses.

Discussion

The findings were highly consistent with the basis of the teaching competencies (PLO1- PLO5 such as Pedagogy, lesson-planning, assessment and ethics). Nevertheless, the digital competence (PLO6) and innovation/ social responsibility (PLO7) were quite under-represented.

The underpinning competencies (PLO1-PLO5) may be subjected to a strong following, and the digital and innovative skills (PLO6-PLO7), in turn, may be neglected with a comparative degree as the reason. First of all, curriculum design may be a rather traditional, subject-centered vision of teacher training that is yet to adjust to the needs of digital pedagogy of the 21st century. Secondly, the faculty institutional knowledge base and professional development may be oriented to the conventional pedagogical areas of focus, which is a challenge to adopt better digital tools and principles of social innovation. The consequences of this mismatch are dangerous: the graduates who emerge out of the process might be well grounded in the traditional ways of teaching, but unequipped to teach in an inclusive, technology-intensive and future learning environment. This kind of detachment explicitly destroys the possibility of online education as a revolutionary phenomenon, instead of recreating the old inequalities and pedagogical limitations in the digital world.

The conclusion is that B.Ed. undergraduate curriculum at the Virtual University of Pakistan lays stress on basic teaching skills and does not give more emphasis on the concept of digital literacy, innovation and social responsibility but is facilitated by interdisciplinary courses. These results are consistent with previous studies by Rehmani (2006) and Khan and Azam (2020) that concluded schoolteachers in Pakistan are being trained to use key pedagogical approaches but lack training on the digital skills and innovativeness. Globally, the same trend was reported in the feeling of Korthagen (2010) who identified foundational competencies in teacher preparation programs as common. Nevertheless, the results are incompatible with the related international models, such as OECD Education 2030 and ISTE (2021), that places much emphasis on digital literacy and global citizenship. According to Ertmer & Ottenbreit-Leftwich (2013) and Banks et al. (2005), training of teachers should incorporate the aspect of ICT and social responsibility whereby the curriculum is weak. The gaps can be a result of the curriculum being out of place, insufficient training of the faculty with ICT, and absence of incorporating trends in the global. All 34 courses in the B. Ed program were used in the study. Purposive sampling was used to make sure that all the core and interdisciplinary courses were reviewed. Since the nature of the study was the use of published curriculum documents in the public domain which did not entail the study of human subjects, there was no formal need to use ethical approval and obtain the consent of the subjects.

Proposed Model of Curriculum Reform

Level 1: Strengthening the Teaching Foundation

Maintain such a focus on the core competencies (PLO1-PLO5) and turn them into digital- minded. As an illustration, the lesson planning (PLO3) assignments will need the implementation of at least one digital tool, and rating activities (PLO4) will also need the design of online quizzes or online portfolios.

Level 2: Making ICT Structural

Digital literacy (PLO 6) needs to be a thread-through course, as opposed to being a course based on a single course on ICT. This can be achieved by: a) revising course outlines with specific CLOs that relate to the design of digital content, online facilitation, and digital citizenship; b) adding modules that are related to the use of Learning Management System (LMS), educational applications, and artificial intelligence tools with each of the subject areas (e.g. virtual labs in teaching science).

Level 3: Intrinsically Innovative and Socially Responsible

Innovation and social responsibility (PLO7) should then be placed in the middle stage. These involve: a) the introduction of a mandatory project-based course, where students would define a problem in the community and create a technology-based solution to it; b) the introduction of reflective e-portfolios, wherein students would be asked to translate the ideas of social justice and global citizenship into practice; c) the use of the virtual community service projects in schools, where students would be challenged to put their leadership and teamwork concept into practice.

Conclusion

The analysis reveals that while the B.Ed. curriculum at the Virtual University of Pakistan strongly aligns with foundational teaching competencies (PLO1-PLO5) through its major courses, it lacks integration of digital literacy (PLO6) and innovation/social responsibility (PLO7) in core coursework, relying instead on interdisciplinary courses to address these gaps. This partial alignment meets the first objective by mapping PLO coverage across course types, identifies the second objective's focus on higher-order skill gaps, and confirms the third objective's finding that interdisciplinary courses supplement but do not fully compensate for core curricular deficiencies. The results underscore the need for the fourth objective's proposed curriculum model, which must systematically embed PLO6 and PLO7 into major courses to ensure comprehensive virtual teacher preparation.

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