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Gap Analysis of Competence-related Learning Outcomes of PhD Graduates

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Abstract: *This research aimed to investigate the disparity between the levels of competence-related learning outcomes and those anticipated from PhD programmes at four public institutions in Punjab. The study was done in two parts using a mixed-methods confirmatory methodology. During the first phase, a self-designed questionnaire was used to gather electronic data from 269 PhD grads to measure their projected levels of competence-related learning outcomes. The purpose of this phase was to gather this data. Meanwhile, 72 teaching staff were questioned for confirmation of the results of the first phase of the research. PhD students predicted a high degree of knowledge gain, while faculty members believed that PhD holders displayed a moderate level of knowledge acquisition. A sample t-test demonstrated a statistically significant gap between the levels of competence-related learning outcomes realised by PhD graduates and those anticipated. According to the conclusions of the research, the HEC should include pertinent elements of the NQF in the curriculum designs for the PhD programme.*

Key Words: Gap Analysis, Competence-related, Learning Outcomes, PhD Graduates

Introduction

Learning outcomes describe what a learner ought to understand and be able to perform after completing a course, certification, or learning activity (Kennedy & McCarthy, 2016). Learning outcomes have been explored in the academic domain for 20 years, especially at the college level (Tam, 2014). The right and erroneous use of learning outcomes have also been discussed. Some instructors are thrilled with learning results, while others are horrified (Hussey & Smith, 2003). Learning outcomes support curriculum creation, learning evaluations, and quality assurance in educational institutions, according to Adam (2004) and Lawless et al. (2007). According to them, learning outcomes are a GPS for education. Learning outcomes assist students in comprehending the skills and information they should have after a programme. They also train instructors to choose effective instructional methods and assessment approaches to make classes plan-based and achieve programme goals (Mahajan & Singh, 2017). A program's effectiveness in modern education depends on how well it supports student learning. They provide a precise approximation of academic

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outcomes. Learning outcomes are considered the most critical part of a program's context, relevant teaching and learning activities, and proper assessment technique for assessing what students have learnt (Nusche, 2008). Learning outcomes have been essential to education reform since the 1999 Bologna process. People appreciate them because they give a methodical approach and may be utilised to improve mobility, competitiveness, recognition, and openness in European education systems. Aside from that, they have unique applications in education at three stages: the community level, for creating a learning plan, training, and modules; the state level, for creating a qualification structure and quality management for educational institutions; and the international level, for recognising higher degrees of education (NQF, 2015). Pakistan adopted a national qualifications framework in 2015. The Bologna process enabled this. The National Qualifications Framework (NQF) divided all eight education levels and the PhD into three categories: knowledge, skills, and competence (NQF, 2015).

Material and Methods

In this section, the methodologies and techniques used to conduct this study are dissected and analysed.

Study Procedure

A mixed-methods research design was chosen. It determines the selection of qualitative vs quantitative data and, for the sake of integration, identifies which analysis should go first or otherwise go in parallel (Creswell& Plano, 2012).

There are six distinct types of mixed methods designs, one of which, the convergent parallel design, involves simultaneously gathering quantitative and qualitative data. The explanatory sequential design has two phases of data collection. First, quantitative data are gathered, and then qualitative data are gathered to interpret the quantitative results (Creswell & Plano, 2011). Confirmatory mixed methods design is an alternative term for this topic (Tashakkori and Teddlie 1998). The fundamental purpose of the exploratory sequential design is to investigate phenomena, which is performed by collecting qualitative data first and then acquiring quantitative data to describe the connections identified in the qualitative data.

The embedded design describes the simultaneous collection of quantitative and qualitative data and their acquisition. Nonetheless, one form of data may support another type of data, and the supporting data may be quantitative or qualitative. The transformational design explains the study aims and tackles value-based and ideological problems, such as moral incapacity and racism (Greene, 2007). A multiphase design describes the sequence of steps a group of researchers will take to examine a subject. It is constructed using convergent, exploratory, explanatory, and embedded design as its pillars (Creswell & Plano, 2011).

The confirmatory mixed methods approach was used to verify the outcomes of the quantitative analysis with the qualitative findings. The objective of the present study is to undertake a quantitative analysis of the learning outcomes associated with competence for PhD graduates, which an investigation of qualitative data will confirm.

Population and Sample

All registered PhD grads from all Punjab public institutions participated in the survey (Pakistan). Multistage sampling was utilised for sample selection. The multistage sampling approach consists of at least two phases. These steps guide the researcher till sample availability for the study (Sedgwick, 2015). Sample selection comprised three phases in the present investigation. Therefore, multistage sampling methods were used to choose the sample. Four public institutions providing doctorate programmes in three fields (languages, social sciences, and natural sciences) were chosen systematically in the first phase. Six departments, two from each subject, including Chemistry and Physics from the natural sciences, Education and History from

the social sciences, and Urdu and English from the language department, were picked from each designated institution in the Punjab Province in the second stage. In the third stage, ten (10) PhD graduates and three faculty members from every department were conveniently selected (total PhD students = 240, total University faculty = 72).

The study's sample comprised total 312 students (PhD students = 240, university faculty = 72) from each chosen institution.

Delimitation of the Study

This study was delimited to PhD level programs offered in all public universities in Punjab, Pakistan.

Phases of the Study

This study was conducted in two parts. Phase one was quantitative, whereas phase two was qualitative.

Phase-I (Quantitative)

In phase one, quantitative evaluations of the competence linked with learning outcomes of PhD students were discussed.

Instrument

Using a self-designed questionnaire with a five-point scale as described in a Likert-type rating, we gathered the perspectives of PhD alums on the projected competence-related learning outcomes from Punjab universities. The scale is defined on an agreement (1 to 5) as strongly disagree, disagree, undecided, agree, and strongly agree in order. The national qualification framework inspired the development of the instrument, which was built based on competence-related learning outcomes. There were two components to it. The demographic information of PhD graduates was requested in the questionnaire's section a, denoted by the letter a., while the second half of the questionnaire, labelled "part b," had a total of thirteen questions that served as markers of various competence-related learning outcomes.

Data Collection Procedure for Phase-1

The universities remained closed during the period of the COVID-19 epidemic. As a result, the

researcher could not physically gather data from chosen colleges. As a result, the questionnaire was turned into a Google form. The researcher then went to the sampled universities and obtained permission from department heads (HODs) and the selected programs' class leaders (CRs) contacts. The link to the Google survey was circulated to WhatsApp groups to collect data. As a result, 269 completed surveys from PhD grads were received,

The breakdown of collected data from google Forms is: 1. From the University of the Punjab total filled forms are 81 (Ch=18, Ph=12, Ed=20, H=10, Ur=10, and Eng=11), 2. From Bahauddin Zakariya University total filled form are 76 (Ch=21, Ph=10, Ed=10, H=12, Ur=12, Eng=11), 3. From Government College University Faisalabad total filled form are 62 (Ch=10, Ph=10, Ed=12, H=10, Ur=10, Eng=10). Where Ch=chemistry, Ph=Physics, Ed=Education, H=History, Ur=Urdu, Eng=English

Results and Discussion Phase-I

quantitative findings and results are discussed here.

Table 1. Competence-related Achieved Level of Learning Outcomes

Statements	SA	A	SA +A	Und	DA	SDA	SDA +DA	Mean	Level
1. share novel ideas	15.2	59.1	74.3	10.5	10.5	4.7	15.2	3.71	High
2. bring creative abilities	17.5	58.4	75.9	10.1	8.9	5.1	14.0	3.93	High
3. demonstrate their expertise in their	18.3	65.4	83.7	10.9	3.5	1.9	5.4	3.96	High

Statements	SA	A	SA +A	Und	DA	SDA	SDA +DA	Mean	Level
speciality by publishing in national refereed journals.									
4. use their expertise by publishing in worldwide peer-reviewed publications.	0	63.4	63.4	8.9	5.8	21.4	27.2	3.67	High
5. display creative problem-solving abilities	17.5	64.6	82.1	7.8	7.4	2.7	10.1	3.91	High
6. show initiative in multidisciplinary problem solving	21.0	58.8	79.8	10.5	7.0	2.7	9.7	3.91	High
7. design research tasks using your creative abilities.	26.5	59.5	86.0	8.9	2.7	2.3	5.0	4.18	High
8. create research projects using critical thinking skills	25.7	56.4	82.1	9.7	5.8	2.3	8.1	3.96	High
9. develop research projects using technological talents	23.7	58.8	82.5	7.4	7.0	3.1	10.1	3.93	High
10. use your imagination to carry out research tasks.	25.3	57.6	82.9	7.4	5.1	4.7	9.8	4.09	High
11. apply critical thinking abilities to carry out research projects	25.3	57.6	82.9	7.4	5.8	3.9	9.7	4.16	High
12. employ technological abilities to carry out research initiatives	18.3	63.8	82.1	8.9	5.4	3.5	8.9	3.96	High
13. undertake independent research to find new skills	25.7	54.4	80.1	8.2	8.9	2.7	11.6	3.91	High
14. perform independent research to find new abilities	23.0	65.0	88.0	4.7	3.9	3.5	7.4	4.18	High
15. create fresh ideas via critical thinking	24.9	57.6	82.5	7.8	6.2	3.5	9.7	4.22	High
16. create new techniques via critical thinking	23.3	58.0	81.3	8.6	5.8	4.3	10.1	4.07	High
17. create fresh ideas via issue solving	24.1	63.0	87.1	5.4	3.9	3.5	7.4	4.09	High
18. create new techniques via the decision making	23.0	58.8	81.8	10.1	5.1	3.1	8.2	3.91	High
19. widen the field, participate in studying with senior academics	26.1	61.5	87.6	6.2	3.5	2.7	6.2	4.00	High
20. widen the field, participate in studying with younger scholars	21.8	58.8	80.6	8.6	7.4	3.5	10.9	3.84	High
21. having the capacity to share broadly with peers	21.8	61.9	83.7	7.8	5.1	3.5	8.6	3.89	High
22. possess the capacity to defend their research	27.2	58.0		14.8	7.4	3.9		4.09	High
23. analyse social relationships and make changes as needed.	17.9	61.5	79.4	10.1	7.0	3.5	10.5	3.84	High

Statements	SA	A	SA +A	Und	DA	SDA	SDA +DA	Mean	Level
24. investigate conducting norms and make changes as needed.	0	64.2	74.2	12.8	6.6	16.3	22.9	3.64	Medium
25. enhance social relationships to modify them when required	19.1	61.5	80.6	10.5	6.2	2.7	8.9	3.67	High
26. defend your original points of view while sharing ideas	21.4	60.7	82.1	8.9	5.8	3.1	8.9	4.02	High
27. use a foreign language to interact with peers (English)	17.5	54.9	72.4	10.1	12.5	5.1	14.6	3.60	Medium
28. exhibit multilingual academic discourse	13.2	54.5	67.6	14.8	13.6	3.9	20.2	3.47	Medium
29. help the sustainability process by offering scientific advancements	16.7	63.8	80.5	9.7	7.0	2.7	9.7	3.78	High
30. participate offers certainty by using technical advancements	19.8	62.3	82.1	9.7	5.1	3.1	8.2	4.02	High
31. help the sustainability process by bringing cultural changes	15.6	63.4	79.0	12.8	5.4	2.7	8.0	3.67	High
32. exhibit social connection via the problem-solving decision making	18.3	64.6	82.9	9.7	7.0	2.7	9.7	3.93	High
33. contributing to the resolution of ethical quandaries	15.6	63.4	79.0	7.8	5.4	3.9	8.8	3.93	High
34. contributes to the resolution of social issues	18.6	63.8	82.4	8.9	6.2	2.7	8.9	3.84	High
35. adhere to extensive academic ethics standards	14.8	61.1	75.9	12.5	8.6	3.1	11.7	3.78	High
36. follow legitimate research morality norms	20.6	56.4	82.0	14.0	5.1	3.9	9.0	3.82	High
Overall % of (competence)	18.9	60.5	79.32	9.53	6.5	4.22	10.7	3.91	High

The competency-related degree of the learning outcomes attained by PhD graduates is indicated in Table 1. According to the data in the table, PhD programme graduates achieved a high level of competence-related learning outcomes, and the question with high mean value is to "design research tasks using your creative abilities", "use your imagination to carry out research tasks", "apply critical thinking abilities to carry out research projects", "perform independent research to find new abilities", "create fresh ideas via critical thinking", "create new techniques via critical thinking", "create fresh ideas via issue solving", "widen the field, participate in studying with senior academics", "possess the capacity to defend their research", "defend your original points of view while sharing ideas", "participate to the offers certainty by using technological advancements. Altogether, it was discovered that a doctorate scholar confers a high

Table 2. The Gap between Expected and Achieved Level of Competence

Learning Outcomes	*Levels A= Achieved E= Expected*	*M*	*Dif.*	*SD*	*t*	*P*
1. share novel ideas	A E	3.71 5.00	-1.29	.869	-9.95	.000
2. bring creative abilities	A E	3.93 5.00	-1.07	.889	-8.05	.000
3. demonstrate their expertise in their speciality by publishing in national refereed journals.	A E	3.96 5.00	-1.04	.638	-10.98	.000
4. use their expertise by publishing in worldwide peer-reviewed publications.	A E	3.67 5.00	-1.33	.929	-9.63	.000
5. display creative problem-solving abilities	A E	3.91 5.00	-1.09	.820	-8.90	.000
6. show initiative in multidisciplinary problem solving	A E	3.91 5.00	-1.09	.792	-9.22	.000
7. design research tasks using your creative abilities.	A E	4.18 5.00	-.822	.683	-8.07	.000
8. create research projects using critical thinking skills	A E	3.96 5.00	-1.04	.903	-7.76	.000
9. develop research projects using technological talents	A E	3.93 5.00	-1.07	.836	-8.55	.000
10. use your imagination to carry out research tasks.	A E	4.09 5.00	-.91	.848	-7.21	.000
11. apply critical thinking abilities to carry out research projects	A E	4.16 5.00	-.84	.903	-6.27	.000
12. employ technological abilities to carry out research initiatives	A E	3.96 5.00	-1.04	.824	-8.50	.000
13. undertake independent research to find new skills	A E	3.91 5.00	-1.09	.996	-7.33	.000
14. perform independent research to find new abilities	A E	4.18 5.00	-.82	.649	-8.49	.000
15. create fresh ideas via critical thinking	A E	4.22 5.00	-.78	.559	-9.32	.000
16. create new techniques via critical thinking	A E	4.07 5.00	-.93	.653	-9.58	.000
17. create fresh ideas via issue solving	A E	4.09 5.00	-.91	.514	-11.88	.000
18. create new techniques via the decision making	A E	3.91 5.00	-1.88	.773	-9.96	.000
19. widen the field, participate in studying with senior academics	A E	4.00 5.00	-1.00	.825	-8.12	.000
20. widen the field, participate in studying with younger scholars	A E	3.84 5.00	-1.55	.903	-8.58	.000
21. having the capacity to share broadly with peers	A E	3.89 5.00	-1.11	.858	-8.68	.000
22. possess the capacity to defend their research	A E	4.09 5.00	-.911	.848	-7.21	.000
23. analyse social relationships and make changes as needed.	A E	3.84 5.00	-1.16	.796	-9.73	.000
24. investigate conducting norms and make changes as needed.	A E	3.64 5.00	-1.36	.830	-10.96	.000
25. enhance social relationships to modify them when required	A E	3.67 5.00	-1.33	.825	-10.83	.000

Learning Outcomes	Levels A= Achieved E= Expected	M	Dif.	SD	t	P
26. defend your original points of view while sharing ideas	A	4.02	-.98	.722	-9.08	.000
	E	5.00				
27. use a foreign language to interact with peers (English)	A	3.60	-1.40	.939	-10.00	.000
	E	5.00				
28. exhibit multilingual academic discourse	A	3.47	-1.53	.894	-11.50	.000
	E	5.00				
29. help the sustainability process by offering scientific advancements	A	3.78	-1.22	.765	-10.71	.000
	E	5.00				
30. participate offers certainty by using technical advancements	A	4.02	-.98	.656	-9.99	.000
	E	5.00				
31. help the sustainability process by bringing cultural changes	A	3.67	-1.33	.768	-11.35	.000
	E	5.00				
32. exhibit social connection via the problem-solving decision making	A	3.93	-1.07	.750	-9.53	.000
	E	5.00				
33. contributing to the resolution of ethical quandaries	A	3.93	-1.66	.653	-10.95	.000
	E	5.00				
34. contributes to the resolution of social issues	A	3.84	-1.55	.767	-10.10	.000
	E	5.00				
35. adhere to extensive academic ethics standards	A	3.78	-1.22	.901	-9.09	.000
	E	5.00				
36. follow legitimate research morality norms	A	3.82	-1.77	.886	-8.91	.000
	E	5.00				

Table 2 demonstrates a one-sample t-test used to assess the difference between PhD graduates' expected competence level and their actual level of competence. According to the statistics in the table, a significant gap between the actual and expected level of competence reached by PhD students. It is evident that although PhD graduates feel they have acquired a higher level of learning outcomes in terms of competence, their actual level of competence in each of the 36 categories is lower than necessary. It suggests that the actual level of competence attained by PhD graduates is lower than expected.

Table 3. Correlation of Perceived and Achieved Level of Learning Outcomes

Variable		Achievement
Competence	R	0.04
	p-value	0.579

P < 0.05

The correlation between real student success and perceived PhD graduate learning outcomes is shown in Table 3. (competence). There was no correlation between student performance and perceptions of learning outcomes.

Competence-related Achieved Learning outcomes: PhD Graduates' Perspective

It was found that graduates who had earned a PhD degree have a high level of expertise in their respective disciplines. It was also found that the PhD students had achieved a high competence based on assessing all the indicators.

Achievement Gaps of Learning Outcomes Involving Competence

It was discovered that the degree of competence-related learning outcomes that PhD graduates attained was lower than the level anticipated for them to acquire. It was discovered that there is no significant

association between the real success of PhD graduates and their attained level of learning outcomes after determining whether there is a correlation between PhD graduates' perceived and actual achievements.

Phase II (Qualitative Phase)

The results of phase 1 involving PhD graduates' assessed accomplishment level of competence-related outcomes were verified in this phase via university faculty views.

Instrument of the Study

The semi-structured interview was scheduled and created based on quantitative data conclusions. This evaluation consisted of four questions. Three of these addressed a result from phase one, while teachers were also asked to classify approaches to reduce the existing gap, which is between achieved and predicted learning outcomes like competence in question four of the questionnaire.

Faculty members were questioned to authenticate the results of phase one. Many faculty members disagreed with the assertion that PhD recipients are highly competent. Instead, they said that the degree of competence of PhD graduates was moderate. In addition, faculty members identified the underlying causes for graduates not obtaining a high level of competence and proposed specific solutions to close the achievement gap. The following table displays the comments of PhD graduates and faculty members on success level, its underlying causes, and faculty members' proposals for bridging this gap.

Table 4. Achievement Gap of Competence, its Reasons, and the Suggested Measures

Sub-theme	Response of PhD graduates	Response of Faculty members	Reasons Underlined by university faculty	Suggestions by faculty for achieving the highest level of learning outcomes	*f*
Achieved level of competence	PhD graduates claim that a doctoral degree gave them *a high* level of competence	University teachers claim that a doctoral degree imparted a Medium graduates level of competence	Teachers said that it is due to: No orientation or induction training was provided for new instructors when they were hired.	The practice of induction tanning should be mandated for new instructors. Existing faculty members may be awarded international scholarships to strengthen their skills at foreign institutions and bring those skills back to their parent departments.	(N=12, 18%)
			Students have a culture of cramming for their exams.	Students have a better chance of reaching high levels of competency if most of the course outline is devoted to activity-based learning objectives rather than theory-based learning outcomes (70 per cent practical, 30 per cent theory etc.) ... take advantage of interactive musical hands-on workshops.	(N=34, 47%)

	Because they cannot consistently devote a significant amount of time to their studies, employee students only reach a competency level considered middling.	The government must provide financial assistance at this level, and it ought to award the most significant number of scholarships to alleviate the monetary concerns of students.	(N=32, 44%)

Table 4 shows PhD graduates' perceptions of their competence-related achieved level of learning outcomes, faculty members' responses, reasons for discrepancies between PhD graduates' perceptions and faculty members' perceptions, and faculty members' suggestions for achieving high learning outcomes. According to the statistics in the table, PhD graduates report that their doctorate provided them with a maximum competence level; however, university faculty disagree and state that their doctoral degree provided them with a medium level of competence for various reasons. The members of the faculty defended their place by citing explanations such as "no initiation training for teachers at the time of their recruitment," "traditions of cramming among students," and "staff students have been unable to invest sufficient time regular basis in their research, resulting in their medium level competence achievement," and "culture of cramming among employees." The university faculty recommended actions to accomplish a maximum competence level, such as requiring induction training for new teachers, offering foreign scholarships to existing faculty so they can enhance their competence in foreign universities and share it with their parent departments, and basing most of the course outline on activity-based learning.

Findings of Phase II (Qualitative Data)

Achieved Learning Outcomes Related to Competence (Perspective of Faculty)

PhD alumni said that they conferred a high level of competence-related learning outcomes. However, university faculty members refuted this claim and stated that the doctoral degree conferred a medium level of competence for various reasons. The faculty members supported their position by citing reasons such as "no induction training for teachers at the time of their recruitment," "culture of cramming among students," and "employee students are unable to invest sufficient time regularly in their studies, resulting in their medium level competence achievement," and "employee students are unable to invest sufficient time regularly in their studies, resulting in their medium level competence achievement".

Measures to Bridge Achievement Gaps related to Competence

Faculty members suggested introductory training for new academics, abroad fellowships for current faculty to develop their competence at other institutions and share that knowledge with their home departments, and hands-on workshops. Moreover, students may attain high competency levels if the course design emphasises activity-based learning goals over theory (70 % practical, 30 % theory). The government should provide as many scholarships as possible to students experiencing financial hardship.

Discussion

Bologna Process (1999-2010) shifted from teacher-oriented to outcome-oriented learning. By 2015, around a hundred (100) nations had accepted the process defined by Bologna to standardise higher education in their countries. Pakistan has worked to improve teaching and learning since 2002, when the Higher Education Commission was established.

The HEC released the NQF document in 2015, which assesses learners' qualifications and prepares them for national and

international standards. The NQF emphasises innovative, comprehensive learning. It established learning outcomes, such as competence, skills, and knowledge, for the education system at up to eight (8) levels.

This research analysed the competence-related PhD learning outcomes. The research found that PhD graduates acquire competence-related skills well. On a five-point Likert scale, PhD grads self-assessed their learning results. The rating as self-assessment was infamous for the shortcoming of overrating respondents in results, which may explain why many PhD grads attained learning outcomes (Karnilowicz, 2012). Some studies demonstrate great satisfaction and performance in particular educational programmes. Gupta et al. (2007) backed this position. Researchers checked curricula for employee needs. MBA grads exhibited improved skills. Kelley (2002) studied faculty and students' perspectives on delivering and achieving professional skills. The statistics revealed that respondents were happy with the "educational atmosphere," or delivery and success. Comparing PhD graduates' actual and predicted competence-related learning outcomes found minimal achieved levels. The competence attainment gap threatens an organisation's performance. This accomplishment gap refers to insufficient workplace skills (McGuinness & Ortiz 2016). ASTD defines the gaps in competence as the difference between an institution's present skills and the skills needed to achieve its goals (Singh & Sharma, 2014). The gaps in competence may harm a company's efficiency (McGuinness & Ortiz, 2016). Literature on learning outcomes classifies competency gaps by three fundamental factors. First, it causes educational system flaws that fail to teach graduates fundamental skills (Hobson et al., 2014). Second, these gaps cause the company to lag behind technological changes (Chen et al., 2015). Third, they reduce training chances for new learners in firms (Oslon, 2015). Aryanti and Adhariani's research validates ours (2020). The study analysed accounting students' attitudes and employers' expectations of accounting graduates in Indonesia. The survey found a difference between students' and employers' perceptions of accounting graduates' competence and abilities. Alshare and Sewailem (2018) studied business students' 21st-century competencies.

Results showed a disparity between business students' perceived and required skills and competencies. While inadequacies in the educational system, rapid technological development, and declining training possibilities in corporations may be the issues' roots. Abbasi and Bibi (2018) studied business graduates' skills. Results showed that graduates' employability was below expectations. Listening, problem-solving, communication, leadership, interpersonal, and analytical abilities were lacking. Oczkowska and Winiewska (2017) analysed the smart specialisation' competency gap among Polish vocational school graduates. A parallel investigation of 'practical skills' revealed the competence disparity. The survey found a more significant difference in practical skills than academic ability. PhD graduates stated that a high degree of accomplished learning objectives was verified by their actual success (earned CGPA). No correlation was established between PhD graduates' actual success and learning outcomes.

In contrast, the literature study gives a different view of the problem. Studies show a modest-to-moderate link between perceived and actual accomplishment. Kamphorst et al. (2013) studied Dutch university graduates' assessed competence and earned credits in competency-based higher education. According to the research, perceived competence and acquired credit are unrelated. Baartman and Ruijs (2011) compared students' perceived and fundamental competency in Utrecht University's higher vocational education.

Students perceived and actual competency correlated somewhat, according to the research. The study results are very different. This discrepancy in results may have several causes. Both studies were undertaken outside Pakistan, in established European nations that followed the process of Bologna many years ago and created and applied the NQFs in the early 21st century. They changed from the

teacher as the focus to the outcome as their focus in education organisations. The NQFs of Pakistan was established in 2015 and are being implemented. Second, the research with different outcomes was done on students of graduation level, while the current study had conducted on PhD students. Moreover, the lack of a link between their perceived and actual accomplishment seems to have led PhD graduates to overrate themselves in self-asessments.

Conclusions of the Study

Graduates of PhD programmes indicated greater than anticipated levels of satisfaction with learning outcomes related to competence. However, when questioned about the learning outcomes associated with competence, faculty members usually believed that PhD graduates had acquired a reasonable level. Furthermore, no link was found between the graduates' self-reported levels of skill and their actual levels of success in their fields of study when they were surveyed (CGPA). Researchers found that PhD degree holders had not reached a maximum level of programme outcomes linked to competence.

The competence and learning outcomes of PhD graduates varied. The faculty suggested several ways of improving learning outcomes. They suggest that syllabus reconsideration is required to meet the requirements of today's students. Moreover, they also suggest that universities require an effective evaluation process. Universities need to promote reading books, research publications, video lectures, and regular library visits to enhance students' competence. At the same time, it was also suggested that the students should not remain limited to selective reading to pass exams or secure high grades/degrees. HEC should invest in teacher professional development, and syllabus plans must be updated to reflect international standards and market demand. Many suggestions for achieving high levels of skill were made as well, such as "course outline should align with market demands," "the ratio of activity-based courses should be increased," and "courses should be revised according to the needs of an ever-changing world," and "students should be allowed to choose their courses." They must make taped lectures available on YouTube for students to download and watch. Similarly, suggestions for achieving a high level of competence were made: "induction training should be made mandatory for novice teachers," and "foreign scholarships may be offered to existing faculty so they can enhance their competence in foreign universities and share it with their parent departments," "students may achieve a high level of competence if most of the course outline is activity-based learning," and so on.

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