

<https://doi.org/10.5281/zenodo.18794673>

Effect Of Feedback Integrated Reflection As Assessment Measure In Quality Assurance On Undergraduates' Self-Regulated Learning Of Health Professions' Education



Dr. Gul Muhammad
Shaikh

Ph.D Education Scholar Superior University, shaikhgul25@gmail.com

Dr. Muhammad Arif

Assistant Professor Education Superior University

Prof. Dr. Muhammad
Sarwer

Dean Superior University

Abstract: *Explore the effect of feedback integrated reflection as assessment measure in quality assurance on undergraduates' self-regulating learning of health professions' education was the purpose of this research. Population comprised all teachers who were teaching in health sciences universities in Punjab in 2023-2025 academic session. It was descriptive research by adopting cross-sectional survey design based on constructivist paradigm in nature. Data were gathered from 35 randomly selected teachers by administering pilot tested self-developed teacher feedback practices questionnaire. After gathering data, it was organized and coded. The coded data were entered in to computer for analysis descriptive and inferential statistics was employed for analysis. After analysis it was found that teachers were currently using goal oriented feedback, process level feedback, self-regulation focused feedback, dialogic feedback, formative feedback, differentiated feedback, and feedback integrated reflection techniques. Moreover, majority of the teachers were using self-regulation focused feedback strategy and feedback integrated reflection strategy was the least adopted technique by the teachers to teach the under graduates of health profession education. It was also found that the feedback integrated reflection approach proved more effective technique to develop self-regulated learning among graduates of health professions' education than the other traditional approaches of teaching. It was recommended that teacher of health profession education may adopt feedback integrated reflection approach of teaching to develop self-regulated learning in graduates.*

Keywords: *Effect, feedback integrated reflection, assessment measure, quality assurance, graduates, self-regulating learning, and health professions' education*

Introduction

Health Profession Education (HPE) refers to the field of expertise for the education of health care providers. Education of health care providers is a unique field of study, with a focus on students preparing for careers in the healing arts, which is centered in the principles of andragogy (adult learning theory) and life-long learning (Emma, 2023). Because of this, health professions'

education (HPE) developed as a specific field of higher education in the 1960s, and in the intervening decades, advanced training in HPE and the development of HPE offices at numerous institutions of healthcare and education worldwide (Heron & Marion, 2024).

Generally in any field of education, the feedback process is crucial for realizing undergraduates'

present capabilities, offering a chance to enhance their competencies (Fatima & Sahar, 2025). Students must utilize feedback to enhance their knowledge, abilities, and attitudes in practical learning environments, such as clinics, which is unique to health profession education (Grace, & Romly, 2024). According to Noor (2024), learners are expected to get feedback opportunistically in contexts (such as operating rooms and emergency rooms) that may not be as favorable to their appreciation and analysis. Additionally, health profession students do clinical rotations in various hospital departments, where they are exposed to temporary supervisors who may have varying feedback styles based on their expertise (Tuma, 2022). In the 1960s, (HPE) became a distinct area of higher education. The intermediate decades saw the establishment of HPE offices at several institutions and the advancement of advanced training in health professions education. In order to increase their expertise and ensure patient safety, these learners must ultimately assess and assimilate feedback. Feedback literacy can improve the effectiveness of the process and assist overcome the particular difficulties presented by health professions education methods (Ahmad, 2025).

Due to this lack of knowledge of what they need to learn and the lack of skills to assess their own progress, criticism and feedback from the trainer are necessary, especially at the beginning of learning (Medina & Melissa, 2023). Instructor feedback allows students to reference criteria for assessing their performance and compare their self-evaluations to that of their instructors (Medina & Melissa, 2023). Feedback is a purposeful, informed, and non-judgmental critique of the learners' performance to enhance clinical skills and is provided in two ways: reinforcing and correcting. In education and learning, feedback is a communication given to the learner by an agent (teacher, peer, book, and the person's own experiences and rethinking) about some aspect of performance. In education, feedback is an integral part of the teaching and learning process, not just a skill (Ashley, 2024). According to experts, a good coach should give regular,

ongoing feedback. Numerous studies have examined the function of feedback in higher education. According to certain research, instructors and students have different opinions about giving feedback in the classroom. Glover (2020) demonstrated that, when given promptly, feedback can improve students' performance and give them a sense of competence and self-confidence. Embo et al. (2024) assessed this novel tool to facilitate self-directed learning in clinical practice and looked into how midwifery students felt about feedback. They demonstrated that most students supported providing feedback and that it is a useful instrument for assessing students' clinical education performance (Adam & Pkarm, 2025).

Ahmad and Warwick (2023), reported that in medical education, feedback is traditionally provided post-assessment as a part of formative assessment, focusing on performance evaluation. However, integrating feedback into the learning process synchronously, combined with reflective practices enhances the self-regulated learning (Agricola, et. al., 2020). Few studies have examined the combined advantages of feedback and reflection, with the majority of educational research concentrating on them as distinct metacognitive processes (Heron et al., 2023). Self-regulated learning is an essential skill for deep learning as well as an issue of personal autonomy in decision-making. It includes the process by which students establish their own learning goals, select their own teaching strategies, track their development, and assess their results (Dunning & Heath, 2023). Self-regulated learning has a direct influence on students' academic achievement and greatly increases their engagement, according to research as, the U.K. Foundation Program shows increases in clinical reasoning and the formation of lifetime learning habits among trainees by combining structured feedback with reflective practice (Baumfeld, 2022). Similarly, in the United States, it has been demonstrated that reflective portfolios combined with tailored feedback improve medical students' capacity for self-regulated learning and critical evaluation

(Walsh, 2023).

Self-regulated learning is especially crucial for medical students since medicine is a sort of "hard science" that requires students to have higher self-regulated learning abilities due to its high obstacles, lengthy durations, heavy learning assignments, and quick knowledge updates. This skill has a long-term effect on medical students' careers after graduation in addition to having a direct impact on their academic performance. Medical students will be better prepared to adjust to the dynamic nature of their future professions and the ongoing evolution of medical knowledge if they can successfully engage in self-regulated learning. Medical students' evaluating abilities. In order to satisfy the needs of lifelong learning and tackle the obstacles of professional progression, medical schools often place a high value on encouraging students' self-regulated learning (Vasicheva & Zineldin, 2024).

There is a lot of material to study in the medical field. It is difficult to apply the knowledge gained to medical practice (Menard & Ratnapalan, 2023). Teachers and students evaluate and enhance self-directed learning via the use of the reflective method. Prior to future interactions, reflective practitioners considered and evaluated the effects of their acts (Murphy, 2020). The core of the reflective practice is this expectation. It takes more than just integrating information and abilities to achieve professional expertise (Koole & Roemer, 2021). When the ideas of reflection and reflective practice are included into education, teachers' conceptual learning processes and educational quality are improved (Scherpbier & Valcke, 2024).

To guarantee that all data or information is reliable and that the decision-making process is accountable, the quality assurance procedure is used. Carless and Winstone (2023) argued for the significance of feedback because high-stakes choices concerning students' performance in programmatic assessment are based on longitudinal data and ongoing feedback on students' development. The importance of feedback in the programmatic evaluation idea has been demonstrated by an integrative review by Schut et al. (2023). The review specifically

shows that a regular feedback process is part of the plan to maximize educational quality since it enables rich and significant triangulation and promotes student learning to improve educational quality (Ahmed, et al., 2024)

In medical education of Pakistan, there is need to reformulate assessment strategies which have been widely discussed, especially given the complexity of professional practice and the demands of contemporary higher education (Beeby & Waqas, 2023). Traditional assessment models, centered on grades and one-off exams, traditional motivational techniques, often do not provide students with sufficient opportunities to reflect on their self-learning and improve their quality performance in education (Mustard, 2021). On the other hand, continuous and structured feedback has been recognized as an essential resource to strengthen students' autonomy and facilitate the development of critical skills for medical practice (Lanka & Turke, 2022). Given this, structured feedback not only improves self-learning, but also contributes to the development of students' professional quality (Willms, 2020). Only few studies were conducted in this field in Pakistan that indicate that integrating feedback to reflection significantly enhance graduates self-learning for clinical skill development. Therefore, due to this importance, in hand study was designed to explore the effect of feedback integrating reflection as assessment measure in quality assurance on graduates' self-regulating learning of health professions' education. (Hui & Tian, 2025)

Statement of the Problem

It has seen that since many decades, globally in medical education, feedback combined with reflection is being used as a metacognitive learning strategy in medical education. It has found an effective strategy to develop self-regulated learning of undergraduates of health profession education. In Pakistan, the importance of these strategies generally in educational settings, especially in medical education remained underexplored in Pakistan. This gap in evidence necessitates an investigation to determine the combined effectiveness of reflection and feedback in

enhancing deep or meaningful learning. Such an evidence-based approach can provide critical insights for conducting study for improving health professions' education. Feedback serves as the cornerstone of growth and improvement in any educational setting and its significance is magnified when patient care is involved. Feedback is essential in shaping the future of healthcare professionals and only few studies were conducted to explore its importance. It was crucial to conduct study to explore the effect of feedback integrated reflection on health professional learners' self-regulated in Pakistan. Therefore, researcher selected the topic as effect of feedback integrated reflection as assessment measure in quality assurance on undergraduates' self-regulating learning of health professions' education.

Research Objective

- To evaluate the current feedback practices by medical education teachers to enhance self-regulating learning in Pakistan
- To assess the most effective practiced feedback technique for undergraduates' self-regulated learning

Research Hypothesis

H₀: There is no significant difference in the currently feedback practices by health profession education teachers to enhance self-regulating learning of undergraduates regarding their group of gender and teaching experience.

Research Question

- Which feedback practices is currently being used by medical education teachers to enhance self-regulating learning in Pakistan?
- Which one is the most effective practiced feedback technique for undergraduates' self-regulated learning?

Significance of the Study

The findings of present study may contribute in growing body of knowledge for supporting the integration of feedback into reflective practices

to enhance learning outcomes in health professions' education. The result of this study may be helpful for teachers of health professions' education by knowing that the use of one-size-fits-all curriculum generally of any subject of science especially pure sciences subject no longer fulfils the requirement of the most of the graduates. The use of a single-paced lesson delivered through a traditional or reflection alone method of teaching disregards the different learning styles of learners and interest that is present in all students in the classrooms. Therefore, the present study may open the eye of the teacher by knowing that lesson can be effective by understanding different learning style of the students. In addition, addressing students' differences and interests appears to enhance their motivation and enhance learning style in classrooms. It is careful to point out that every learner's benefits from an engaging learning experience differ. Every graduate deserves to be treated with respect and every learner should have an opportunity to reach his or her potential that occurred from the learning. In this regard, the present study may be helpful for teachers to adopt such instructional approach that trigger students' interest and learning. The current health education system does not adequately address these needs of the graduates.

Literature Review

Health Professions' Education

Health Professions' Education (HPE) focuses on improving the quality of healthcare by developing effective teachers, educators, and leaders within medical, nursing, pharmacy, and allied health fields through specialized training programs like Certificates, Diplomas, and Masters Degrees. It aims to equip health professionals with educational competencies in areas such as curriculum development, teaching-learning strategies, assessment, and educational leadership to foster quality and innovation in healthcare education and delivery (Beeby & Waqas, 2023).

Feedback: This is a formative assessment in which the student is given a report on how well they completed a task, usually in a one-way

dialogue. According to Black and Wilim (2019), feedback is one kind of activity in the field of formative assessment practice that is described in the literature as an activity to elicit, interpret, and use evidence of student achievement in order to decide on the next instructional step. The teachers, students, and their peers as well as the opportunity to start conversations are seen as crucial in these decision-making processes. Feedback can also be interpreted as a way to help students advance and as information given by a peer or teacher about a student's performance or comprehension (Hattie & Timperley, 2021).

Purpose of feedback: Feedback acts as a continuing part of the instructional process that supports and enhances learning (Fatima, 2023). It is part of an ongoing unit of instruction and assessment, rather than a separate educational entity. A core component of formative assessment feedback promotes learning in three ways (Nabil, 2022): as a. informs the student of their progress b. informs the student regarding observed learning needs for improvement, and c. motivates the student to engage in appropriate learning activities (Hibbatullah, 2024).

Environment for feedback: The focus is shifted from giving feedback to creating a learning environment that encourages feedback facilitation in order to meet the requirements for meaningful and sustainable feedback. Feedback should be seen as the encouragement of active learning rather than as a way to support individual acts of information provision and reception. Fostering interactions between students and staff as well as between students and their peers was the responsibility of teachers. Students should be able to see themselves as change agents in their learning environments, which will help them learn on their own and develop self-control. Fostering high levels of student engagement helps to develop the identity of students as proactive 'learners', who seek feedback and reflect on their own performance (Panadero, 2021).

Currently practicing feedback

- a. **Goal-Oriented Feedback:** Goal-oriented feedback refers to information provided to learners that is explicitly aligned with predefined learning objectives or performance standards. It helps students understand the gap between their current performance and expected outcomes, thereby directing attention toward goal attainment. In health professions education, such feedback enhances learners' ability to set realistic goals, monitor progress, and adjust strategies accordingly (Fulan, 2023). Goal-oriented feedback supports self-regulated learning by reinforcing purposeful learning behaviors and fostering accountability, which is central to quality assurance in assessment practices (Zhunjun, 2024).
- b. **Process-Level Feedback:** Process-level feedback focuses on the strategies, methods, and cognitive processes used by learners rather than solely on task outcomes. It provides guidance on *how* to improve performance, such as clinical reasoning steps, problem-solving approaches, or study strategies. Boud and Molloy (2022) indicated that process-level feedback is more effective than outcome-based feedback in promoting deep learning and transfer of knowledge. In health professions education, this form of feedback strengthens clinical competence and encourages reflective practice, thereby enhancing continuous improvement and quality learning outcomes (Higgin, 2025).
- c. **Self-Regulation-Focused Feedback:** Self-regulation-focused feedback aims to enhance learners' ability to plan, monitor, and evaluate their own learning. This feedback encourages metacognitive awareness by prompting learners to reflect on their motivation, effort, time management, and learning strategies. It supports autonomy and lifelong learning, which are critical competencies in health professions

education. By fostering learner independence, self-regulation-focused feedback contributes to sustainable quality assurance mechanisms within educational programs (Carless & Nicol, 2023).

d. Dialogic Feedback: Dialogic feedback is a two-way, interactive process involving ongoing dialogue between educators and learners. Rather than being a one-directional transmission of information, it promotes shared understanding, clarification of expectations, and learner engagement. Dialogic feedback enables learners to actively interpret and use feedback, thereby strengthening reflective thinking and self-regulation. In the context of quality assurance, dialogic feedback supports transparency, learner engagement, and continuous improvement in assessment practices (Black & Yang, 2022).

e. Formative Feedback: Formative feedback is provided during the learning process with the primary purpose of improving future performance rather than grading. It is integral to assessment for learning and supports early identification of learning gaps. In health professions education, formative feedback enhances skill acquisition, clinical competence, and reflective learning. Its ongoing nature ensures alignment with quality assurance principles by continuously monitoring and enhancing educational effectiveness (Batoool & Neupan, 2024).

f. Differentiated Feedback: Differentiated feedback is tailored to learners' individual needs, abilities, and levels of competence. It recognizes learner diversity and provides customized guidance to support optimal learning. In health professions education, differentiated feedback is particularly valuable due to varied prior knowledge, learning styles, and clinical experiences among students. This

approach promotes equity, learner engagement, and effective self-regulated learning, contributing to high-quality educational outcomes (Adams & Nicol, 2020).

g. Feedback Integrated Reflection: "Feedback integrated reflection" refers to a learning approach where feedback is intentionally combined with the process of self-reflection. This means learners not only receive feedback on their performance but also actively engage in reflecting on that feedback, analyzing its implications, and using it to improve their understanding, skills, or future actions. It's about making feedback a catalyst for deeper learning through deliberate self-assessment and strategic adjustment. (Lanka & Turke, 2022).

Feedback-integrated reflection is a valuable tool in health professions' education for quality assurance, fostering self-regulated learning and enhancing learning outcomes. By combining reflective practices with feedback, students can critically evaluate their performance, identify areas for improvement, and develop lifelong learning habits. This approach helps students connect theoretical knowledge with practical application, leading to deeper understanding and improved clinical reasoning. (Mustard, 2021).

Feedback-integrated reflection is a health professions' education method where students critically analyze their performance, incorporating personalized feedback from instructors or peers to deepen self-regulated learning, identify skill gaps, and improve clinical competency (Maqsood, 2022). This combined approach allows learners to effectively process external insights with their own critical self-evaluation, fostering meaningful learning and the development of strategies for future improvement (Soemantri, 2022).

Self-regulated Learning

Bandura's social cognitive theory was the initial source of self-regulation, which later gave rise to well-known theoretical models in the field

(Granvand, 2019). One of the issues that takes into account the individual's role in the learning process is self-regulation of learning. The fundamental tenet of self-regulated learning is that students learn more efficiently when they are in charge of their own education (Rasheed, 2021).

One plausible and significant perspective is that self-regulation is a practical process that aids in the development of academic skills like goal-setting, strategy selection and substitution, and self-efficacy control. Self-regulation of learning refers to students' active participation in their behavioral, cognitive, individual, and motivational learning endeavors in order to accomplish significant and worthwhile academic objectives (Kautz & Shamami, 2023).

Self-regulated learning (SRL), according to Lopez (2023: 78), is the deliberate and strategic modification of learning activities to meet learning objectives. Students self-regulate by using learning strategies they believe will be effective. They keep an eye on how well strategies accomplish objectives and make changes when discrepancies surpass a certain point. Learning processes and strategies, learning outcomes and products, and conditions like motivation or elements of the learning environment that influence learning activities can all be adjusted (Hui & Tian, 2025).

Effect of Feedback Strategy on Self-regulated Learning

Self-regulated learning is especially crucial for medical students because medicine is a kind of "hard science" that demands students to have stronger self-regulated learning abilities due to its rapid knowledge updates, demanding learning tasks, high challenges, and lengthy duration (Jing and Tian, 2019). This skill has a long-term effect on medical students' careers after graduation in addition to having a direct impact on their learning during their academic

years (Pang, 2020). Self-regulated learning is an essential skill for deep learning as well as a matter of personal autonomy in decision-making (Zimmerman, 2021). It includes the process by which students establish their own learning goals, select their own teaching strategies, track their development and assess track their development, and assess their results. Self-regulated learning has a direct impact on students' academic performance and greatly increases their engagement, according to research (Zahidan, 2021).

Research Methodology

Research design and Participants

It was descriptive research by adopting based on cross-sectional survey design based on constructivist paradigm. Participants of the present research were randomly selected 35 teachers who were teaching in health universities in Lahore in the 2023- 2025 academic session. The researcher employed pilot tested self-developed teacher feedback practices questionnaire to collect the rich picture (RP) of a feedback experience which they exercised for informal or formal feedback to put their undergraduates, resulting the improvement in their self-regulated learning aiming to make the change in their professional development. After collecting data, it was arranged, coded and entered into computer for analysis. Inferential and descriptive statistics were employed to analyze the data with the help of SPSS software version 29. Inferential statistics, including frequency, percentage, mean, and standard deviation, were calculated. Regression, Independent Sample t-test, ANOVA were used to find out the effective techniques and find out difference in currently feedback practices regarding teachers' group of gender, and teaching experience.

Results and Findings

Gender and experience wise variance in the use of feedback strategies by teachers to enhance undergraduates self-regulated learning

Table 1:

ANOVA and Independent sample t-test for the analysis to gender wise and experience wise difference in the use of feedback strategies

Demographic Variables		n	Mean	Std.D	<i>t</i>	<i>df</i>	Sig.
Gender	Male	18	3.67	1.471	-2.812	33	.067
	Female	14	3.91	1.721			
		SS	<i>df</i>	MS	F	sig	
Experience	Between Groups	9.216	3	5.871	7.873	.000	
	Within Groups	12.193	15	6.513			
	Total	21.409	18				

$\alpha = .05$ level

The above table reveals that the calculated t-values $-2.812 < \text{table value } 2.032$ at 33 *df* and calculated sig value $.067 > \alpha = .05$ level of significance. It indicated that gender wise male and female teachers were using same types of feedback strategies to improve undergraduates' self-regulated learning. The calculated F-values $7.873 > \text{table value } 3.16$ at 3, 18 *df* and calculated sig value $.000 < \alpha = .05$ level of

significance. It indicated that experience wise teachers were using different types of feedback strategies to improve undergraduates' self-regulated learning. So, concluding that gender wise teachers were using different feedback strategies while experience wise teachers were using different types of feedback strategies to improve undergraduates' self-regulated learning.

Descriptive Analysis to find out Difference in the use of Uses of Feedback Strategies to Improve Undergraduates' Self-regulated Learning

Table 2:

Descriptive Analysis to find out Difference in the use of Uses of Feedback Strategies to Improve Undergraduates' Self-regulated Learning (n = 35)

Sr.#	Feedback Strategies	f	%
01	Goal Oriented Feedback	7	20.0
02	Process Level Feedback	6	17.1
03	Self-regulation –focused Feedback	8	22.9
04	Dialogic Feedback	4	11.4
05	Formative Feedback	5	14.3
06	Differentiated Feedback	3	8.6
07	Feedback Integrated Reflection	2	5.7

The above table reveals that among the teachers, 20.0% (7) were using goal oriented feedback strategy to improve the undergraduates' self-regulated learning, 17.1% (6) were using process level feedback, 22.9% (8) were using self-regulation- focused feedback, 11.4% (4) were using dialogic feedback, 8.6% (3) were

using formative feedback, and 5.7% (2) were using feedback integrated reflection strategy to improve the undergraduates' self-regulated learning. So, concluding that most of the teachers were adopting self-regulation- focused feedback strategy to improve the undergraduates' self-regulated learning.

Stepwise analysis to find relationship between components of Emotional and job satisfaction of

Table 3:

Regression analysis to analyze the relationship between the component of emotional intelligence and job satisfaction of elementary school teachers

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.518(a)	.568	.111	15.497

a. Predictors: (Constant), Goal Oriented, Process Level, Self-regulation – focused, Dialogic, Formative, Differentiated, and Integrated Reflection

shows that there is moderate correlation between feedback strategies and undergraduates self-regulated learning. The computed R Square .568 shows that 56.8% of the variance in undergraduates' self-regulated learning occurred due to feedback strategies.

b. Dependent Variable: Self-regulated Learning

The above table reveals that computed R .518

Table 3a:

Model		SS	df	MS	F	Sig.
1	Regression	2464.850	7	410.808	3.711	.045(a)
	Residual	6724.122	28	240.147		
	Total	9188.971	34			

a. Predictors: (Constant), Goal Oriented, Process Level, Self-regulation – focused, Dialogic, Formative, Differentiated, and Integrated Reflection

The above table 3a reveals that computer F-value 3.711 and computed sig value .045 showed that regression model significantly predicting the dependent variable.

b. Dependent Variable: Self-regulated Learning

Table 3b:

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. E	Beta		
1	(Constant)	104.174	10.718		9.720	.000
	Goal Oriented feedback	.231	.474	.245	.287	.027
	Process Level feedback	.339	.494	.365	.386	.093
	Self-regulation – focused feedback	-.035	.464	-.008	-.045	.040
	Dialogic feedback	.590	.476	.571	-1.240	.016
	Formative feedback	.472	.421	.321	-.884	.021
	Integrated Reflection	.732	.421	.691	-.784	.021

a. Dependent Variable: Self-regulated Learning

The above regression table 3b reveals that the calculated unstandardized beta .231 for goal oriented feedback indicated that one unit increase in goal oriented feedback may increases

by 23.1% undergraduates' self-regulated learning. The calculated standardized beta .245 indicated that there is weak correlation between goal oriented feedback and undergraduates' self-

regulated learning.

The calculated unstandardized beta .339 for process level feedback indicated that one unit increase in this type feedback may increase by 33.9% undergraduates' self-regulated learning. The calculated standardized beta .365 indicated that there is weak correlation between process level feedback strategy and undergraduates' self-regulated learning.

The calculated unstandardized beta -.035 for self-regulation – focused feedback strategy indicated that one unit change in this type feedback may decrease by 3.5% undergraduates' self-regulated learning. The calculated standardized beta -.045 indicated that there is weak negative correlation between self-regulation – focused feedback strategy and undergraduates' self-regulated learning.

The calculated unstandardized beta .590 for dialogic feedback strategy indicated that one unit change in this type feedback may increase by 59.0% undergraduates' self-regulated learning. The calculated standardized beta .571 indicated that there is moderate correlation between dialogic feedback strategy and undergraduates' self-regulated learning.

The calculated unstandardized beta .472 for formative feedback strategy indicated that one unit change in this type feedback may increase by 47.2% undergraduates' self-regulated learning. The calculated standardized beta .321 indicated that there is weak correlation between formative feedback strategy and undergraduates' self-regulated learning.

The calculated unstandardized beta .732 for feedback integrated reflection strategy indicated that one unit change in this type feedback may increase by 73.2% undergraduates' self-regulated learning. The calculated standardized beta .691 indicated that there is strong correlation between feedback integrated reflection strategy and undergraduates' self-regulated learning.

Conclusion and Discussion

Present study was designed to explore the effect of feedback integrated reflection as assessment measure in quality assurance on undergraduates'

self-regulated learning of health professions' education. It was conducted in Lahore and information were gathered from 35 teachers who were teaching in universities of health sciences. So, conclusion was drawn from the findings that were arise from the analysis. It was found that goal oriented feedback, process level feedback, self-regulation – focused feedback, dialogic feedback, formative feedback, differentiated feedback, and feedback Integrated reflection were currently being practiced by medical education teachers in universities of health sciences to enhance self-regulating learning in Pakistan. It was also evaluated that most of the teachers were always adopting self-regulation – focused feedback approach to develop undergraduates' self-regulated learning, some of them were always using goal oriented feedback, a few of them were adopting process level feedback and formative feedback strategies to improves undergraduates self-regulated learning. Few of them were using differentiated feedback and feedback integrated reflection strategies to improve undergraduates' self-regulated learning. Moreover, it was also assessed feedback integrated reflection technique was the most effective practiced feedback technique that teachers were adopting to improve undergraduates' self-regulated learning. Gender wise no difference was found in the uses of these strategies but teaching experience wise teachers were using different feedback strategies to develop undergraduates' self-regulated learning. Melissa (2023) found that most of the teachers of health profession education adopted goal oriented feedback strategy while the present study found that most of the teachers were always adopting self-regulation – focused feedback approach to develop undergraduates' self-regulated learning. The present research also indicated that there is least correlation between self-regulation – focused feedback approach and undergraduates' self-regulated learning. Nouman and Saliha (2024) pointed out that there is strong relationship between undergraduates' self-regulated learning and self-regulation – focused feedback approach. Furthermore, in hand study found that feedback integrated reflection is the most effective strategy to improve

undergraduates' self-regulated learning in health profession education although it is least adopted approach. Adam and Rohail (2025) found that formative feedback is the most effective strategy to develop self-regulated learning of undergraduates of health profession education and most of the teachers used this approach in health profession education. On the bases of research finding it is recommended that teachers may adopt such technique/techniques that develop metacognitive awareness of undergraduates of health profession education. It was also found in the present research that feedback integrated reflection in the most effective strategy to improve self-regulated learning of undergraduates of health profession education but a few teacher adapt this approach. So, it is recommended that may adopt this approach to develop self-regulated learning of undergraduates of health profession education.

Delimitation, strength, and Further Direction

The present was conducted in Lahore city, the further researchers may be conducted this types of any in other cities in the Punjab and/or Pakistan. This study was design to explore the effect of feedback integration reflection on self-regulated learning of undergraduates. The same study may conduct for general educational areas to find out effect of feedback integration reflection on self-regulated learning and/or if such type of research will conduct in medical field, further the researcher may conduct same research by changing the independent variable (feedback integration reflection) rather than mentioned in this research. The present research was conducted in the perspective of professional undergraduates who were already employed of medical institutes and wants to improve their professional skills of teaching. Same research may conduct medical institutes in the perspective of fresh undergraduates to improve their learning skills. In medical education, feedback is growing approach. Health profession researchers can use this review as a timely guide to make well-informed decisions prior to evaluating student feedback literacy. As an assessment measure in quality assurance, the review was carried out and reported in accordance with commonly

accepted guidelines. Measurements from these tools could help institutions and stakeholders better understand how undergraduates are learning and getting feedback. However, because the researcher used validated feedback literacy instruments in particular contexts within health profession education, there is still a large gap in the measurement of feedback literacy. To create a valid and trustworthy student feedback literacy tool, future research should use a strict methodology. Subsequent researchers may carry out the same study by taking into account additional comprehensive investigations of modern assessment and learning metrics for health profession education undergraduates.

Reference

- Adam, D., & Pkarm, K. R. (2025). A conceptual framework for assessing motivation and self-regulated learning in college students. *Journal of Education Psychological Review*. 15(6): 33 – 48
- Adams, I. K., & Nicol, Q. (2020). A meta-analysis of two decades research of the association between self-regulation and academic performance. *Journal of Education and Psychology*. 9(11) 24 – 34
- Agricola, U., Prins, I. D., & Sluijsmans, K. (2020). Review Article on Research Methodology, *International journal of innovative research and development*, 3(7), 206 - 224.
- Ahmad, R., & Warwick, J. (2023). Designing feedback processes in the workplace-based learning of undergraduate health professions' education: a scoping review. *BMC Medical Education Journal*. 2(4): 440 - 455.
- Ahmad, T. (2025). Interpreting end-of-course evaluation results. Montreal, QC: Teaching and Learning Services. *Journal of Educational Research Review*. 2(9): 121- 139
- Ahmed, et al., (2024). Designing a framework to improve critical reflection writing in

- teacher education using action research. *International Journal of Educational Action Research*, 32(1), 43 – 59
- Ashley, O. B. (2024). Effect of feedback-integrated reflection, on deep learning of undergraduate medical students in a clinical setting. *Higher Education Research & Development Journal*, 6(11): 432 – 457
- Batool, L., & Neupan. S. (2024). The hidden dimension of personal competence: self-regulated learning and practice. In *Handbook of competence and motivation* 509, 522 – 526
- Baumfeld, V. A. (2022). Defining educational quality. Improving Educational Quality Project Publication 1: Biennial Report. Arlington, VA: *Institute for International Research*. 2(10), 542 – 567
- Beeby, B., & Waqas, M. (2023). An investigation of the effect of a continuous student-teacher feedback cycle on academic identity, agency, and school belonging at a continuation high school. San Diego State University; 20 - 23.
- Black, A., & Wilim, C. J. (2019). Influencing factors of self-regulated learning of medical-related students in a traditional Chinese medical university: A cross-sectional study. *Journal of BMC Medical Education*. 23(1):87 - 103
- Black, M. & Yang, J. L. (2022). When quantity is not enough: Disentangling the roles of practice time, self-regulation and deliberate practice in musical achievement. *Journal of Psychology and Education*, 43, 686 – 704
- Boud, A., & Molloy, T. (2022). Medical student experiences of equality, diversity, and inclusion: content analysis of student feedback using Bronfenbrenner's ecological systems theory. *BMC Medical Educational*. 24(1): 505 - 521.
- Carless, L. W., & Nicol, S. (2023). Self-regulated learning: beliefs, techniques, and illusions. *Annual Review of Psychology Journal*. 64(1): 417-444.
- Carless, R., & Winstone, D. (2023).). Reflective learning in higher education: A qualitative study on students' perceptions. *Journal for Studies in Higher Education*. 4(16), 988 – 1001.
- Dunning, L., & Heath, Q. (2023). Using reflection to influence practice: student perceptions of daily reflection in clinical education. *Journal of Perspective of Medical Education*. 3(11): 765 – 779
- Embo et al. (2024). How to facilitate motivational regulation strategies: Perspectives on teacher humility and teacher-student relationship. *Journal for Computer Education*. 7(10): 154 - 166.
- Emma, W. A. (2023). The active feedback program: bringing medical students out of the shadows. *Journal of Medical Education*. 6(1) 842 - 879. doi:10.1080/10872 981.2021.1939842.
- Fatima, H. & Sahar, L. (2025). Metacognitive strategies improve self-regulation skills in expert sports coaches, *International Journal of Education Vocational Guidance*. 2(12), 307–325
- Fatima, H. O. (2023). The theoretical basis, the questionnaire framework and the reliability and validity of the student survey of learning and development. *Journal of Research in Higher Education of Engineering*. 8(5) 644 – 661
- Fulan, W. A. (2023). The use of individualized pharmacist performance reports to reduce pharmacist-related medication order entry errors following electronic medical record implementation. *Hosp Pharm*. 47(10): 771 – 775
- Glover, R. (2020). Using reflection to influence practice: student perceptions of daily reflection in clinical education. *Journal of Perspective of Medical*

- Education*. 13(4): 176 – 196.
- Grace, D. H., & Romly, P. (2024). The role of self-efficacy and related beliefs in self-regulation of learning and performance. In Handbook of competence and motivation: Theory and application (eds Elliot, A. J. et al.), *Academic Journal of Medical Education*. 7(11): 313–333
- Granvand, W.E. (2019). Becoming a self-regulated learner: an overview. Theory into Practice. *Journal of Educational Research Review*. 1(2): 64 – 70.
- Hattie, H., & Timperley, K. (2021). Reflection literacy: A multilevel perspective on the challenges of using reflections in higher education through a comprehensive literature review. *Journal of Educational Research Review*. 3(2), 1003 – 1026
- Heron, G., & Marion, T. (2024). Reflecting on the process of teaching reflection in higher education. Reflective Practice, *Journal of health sciences*, 19(6), 1806 – 1817. <https://doi.org/10.1080/14623943.2018.1539655>
- Heron, R., Swadam, Q., & Warwick, J., (2023). Implementing Formative Assessment in Human Anatomy Practical Sessions: Medical Students' Perception and Effect on Final Exam Performance. *Journal of Advanced Medical Education Practices*. 1(5): 551– 563.
- Hibbatullah, D. (2024). Reflection in medical education: a review of concepts, models, principles, and methods of teaching reflection in medical education. *Medical Education Research Journal*. 6(8): 534 – 549.
- Higgin, D. E. (2025). An impediment to accurate probability estimation in clinicopathologic conferences. *Journal of Medical Education*; 8(4): 259-264.
- Hui, R. I., & Tian, M. (2025). Designing feedback processes in the workplace-based learning of undergraduate health professions's education: a scoping review. *BMC Medical Education Journal*. 2(4): 440 – 455
- Jing, U. T., & Tian, X. (2025). Exploring self-regulated learning through differentiated feedback. *Education Journal for Research & Development*. 10(1): 221 - 233
- Kautz, M. V., & Shamami, J. D. (2023). Factors associated with medical students' self-regulated learning and its relationship with clinical performance: a cross-sectional study. *Journal of BMC Medical Education*. 6(13): 542 -559
- Koole, M., & Roemer, H. (2021). Factors associated with medical students' self-regulated learning and its relationship with clinical performance: a cross-sectional study. *Journal of BMC Medical Education*. 1(22): 128, 341 - 356.
- Lanka, J. S., & Turke, B. N. (2022). Grade-level differences in teacher feedback and students' self-regulated learning. *Front Psychology education Journal*. 11(7) 213 – 228
- Maqsood, L. (2022). "Designing a Strategic Information Systems Planning Methodology for Malaysian Institutes of Higher Learning (ispipta), *Journal for Issues in Information System*, 1(12), 20- 45.
- Medina, L., & Melissa, T. N. (2023). Health Professionals for a new century for transforming education to strengthen health Education systems. *Lancet. Journal for Medical Education*. 11(5): 129 – 145
- Menard, D., & Ratnapalan, F. (2023). Reflecting on reflective practice: Issues, possibilities and guidance principles. *Journal of Higher Education Research & Development*. 1(9): 821 – 845
- Murphy, G. J. (2020). The use of reflection in medical education: AMEE Guide No.44 Medical Teaching; *Journal for Education and Psychology*. 31(8): 685 –

- Mustard, E. D. (2021). Quality of education and the demand for education: Evidence from developing countries. *International Review of Education*, 42(6): 58 - 64.
- Nabil, M. (2022). Evaluating and modifying covariance structure models: A Review and Recommendation. *Multivariate Behavioral Research*. *Research Medical Education Journal*. 16(9):809 – 827
- Noor, K. L. (2024). Children's metacognition about reading: issues in definition, measurement, and instruction. *Journal of Education & Psychology*, 22 (3):255 - 278.
- Panadero, D. R. (2021). Reflecting on reflective practice: Issues, possibilities and guidance principles. *Journal of Higher Education Research & Development*. 1(9): 821 - 845
- Pang, G. Z. (2020). The influence of teacher–student interaction on the effects of online learning: Based on a serial mediating model. *Front Psychology Journal of Medical Sciences*. 2(12):13 – 29
- Rasheed, R. B. (2021). The Role of Feedback and Self-Reflection in Enhancing Productivity and Performance. *Journal of Higher Education Research & Development*, 3(56); 542 – 567.
- Scherpbier, L., & Valcke, G. (2024). Reflection literacy: A multilevel perspective on the challenges of using reflections in higher education through a comprehensive literature review. *Journal of Educational Research Review*. 3(2), 98 - 116.
- Schut, Timperley, W. Q, & Walsh, A. (2023). Designing feedback processes in the workplace-based learning of undergraduate health professions' education: a scoping review. *Journal for BMC Medical Education*. 4(24): 1440 – 1456
- Soemantri, G. (2022). Factors associated with medical students' self-regulated learning and its relationship with clinical performance: a cross-sectional study. *Journal of BMC Medical Education*. 1(22): 128, 341 - 356.
- Tuma, W. Q. (2022). The use of individualized pharmacist performance reports to reduce pharmacist-related medication order entry errors following electronic medical record implementation. *Hosp Pharm*. 47(10): 771 - 775.
- Vasicheva, W., & Zineldin, R. (2024). Evaluating the impact of reflecting on curriculum-embedded skill development: The experience of science undergraduates. *Higher Education Journal for Research & Development*. 10(7), 367 – 381
- Walsh, A. Z. (2023). Shifting the delivery but keeping the focus: A reflection on ensuring quality teacher preparation during a pandemic. *Journal for Educational Sciences*. 11(8): 401 - 422.
- Willms, K. H. (2020). A pedagogy of uncomfortable reflexivity in Indigenous education. *Higher Education Research & Development*, 40(2), 301 – 325.
- Zahidan, W. (2021). Human metacognition across domains: insights from individual differences and neuroimaging. *Personal. Journal of Neuro-sciences*, 4(13): 432 – 444 E17. <https://doi.org/10.1017/18.16>
- Zhunjun, O. F. (2024). Academy of Medical Royal Colleges; Guidance in Standards for Candidate Feedback Academy of Medical Royal Colleges (2016) Guidance for Entering Information on e-Portfolios. 213 – 228
- Zimmerman, P. R. (2021). Self-regulated learning: A new concept embraced by researchers, policy makers, educators, teachers, and students. *American Journal of education*, 7(2): 161–186.