EFFECT OF METACOGNITIVE REGULARITIES ON WORK EFFICIENCY OF UNIVERSITY TEACHERS: A MIX METHODS STUDY

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NATIONAL UNIVERSITY OF MODERN LANGUAGES
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THESIS/DISSERTATION AND DEFENSE APPROVAL FORM

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Candidate of **Master of Philosophy** at the National University of Modern Languages do hereby declare that the thesis (Title) "Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study" submitted by me in partial fulfillment of M.Phil. degree, is my original work, and has not been submitted or published earlier. I also solemnly declare that it shall not, in future, be submitted by me for obtaining any other degree from this or any other university or institution.

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Signature of Candidate

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Name of Candidate

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Khadija Muhammad Hussain

Dedicated to

My grand parents

&

My sons

Hussain Aziz

And

Burhanuddin Aziz

ABSTRACT

Thesis Title: Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study

The major objectives of the study were to investigate the metacognitive regularities of university teachers; to determine the work efficiency of university teachers at the university and to assess the effect of metacognitive regularities on the work efficiency of university teachers. The study's conceptual framework was developed from the model of metacognitive regularities given by Julie, Amanda & John (2021) and the model of work efficiency given by Siti, Sharifah & Nik (2012). The research approach was mix methods. The research design was descriptive. The population of the study included teachers from 23 universities of Islamabad private sector as well as public sector. The total population was 10464 teachers. The proportionate stratified sampling technique was used for quantitative data collection (Gay, mill & Airasian, 2012). The sample size was 05% which was 524 consisted of the university teachers. Purposive sampling was utilized for qualitative data collection. It was 04% of the quantitative sample and 21 teachers were interviewed (Complete Dissertation, n.d.). The self-developed questionnaires were utilized as instruments to collect information. Validation of the tool was carried out by a panel of experts and before the final data collection. A pilot test confirmed the reliability of the instruments and it was conducted on 52 No. of respondent. The data was collected through two scales; the metacognitive regulatory assessment scale and the work efficiency assessment scale and the semi-structured interviews provided vigilant insights about findings. The quantitative data was collected mainly by visiting the universities and through Google Forms via sending emails and semi-structured interviews were conducted with teachers to support quantitative data. The quantitative analysis was conducted through statistical tests such as; mean score and regression, whereas the qualitative analysis was done through thematic data analysis. The statistical results showed that metacognitive regularity was present in university teachers' practices, the university teachers were well-versed in the work efficiency for the university and the study has proven the effect of metacognitive regularities on the work efficiency of university teachers was positively significant and thematic analysis supports the findings that the participants accepted the significance of metacognitive regularity for the work efficiency of university teachers. The recommendations were made based on the findings for teachers that metacognitive regularity three-month short-term courses for teachers, if required, be organized by the university, with a focus on teachers' future career development and secondly they plan their self-analysis reports to show their work efficiencies. The work efficiency report writing helps them to present their efforts in annual course evaluation of the university and lastly, it is recommended to maintain a daily reflection manual to keep an informal record for evaluation of daily activities.

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LIST OF ABBREVIATIONS

Abbreviation	Terms
BERA	British Educational Research Association
DL	Digital
ELER	Easily learnt, easily remembered
IT	Informational Technology
MRS	Metacognitive Regulatory Scale
MRAS	Metacognitive Regularities Assessment Scale
RMF	Retrieval-monitoring feedback
TMR	Teachers Metacognitive Regularities
SPSS	Statistical Package for Social Sciences
WES	Work Efficiency Scale
WEAS	Work Efficiency Assessment Scale

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

1.1. Background of the study

The Metacognitive regularity is a key component for the future of 2030 (Organization for Economic Co-operation and Development, 2019). Teachers can help universities out administrative bodies of the universities to establish students' future collectively. Teaching professionals such as; university teachers are best to utilize metacognitive regularities in their practices. The presence of work efficiency is one of the essentials for teachers' professional lives. Teaching is the academic practices of university teachers and metacognitive regularities establish excellence in their work. The metacognitive regulations must be implemented along with the rules governing the conduct of duties of teachers. Every era, a new generation learns information and skills through the teachings of the previous generation's knowledge and skills and the current generation ultimately passes on its experience to the next generation. According to Sergey et al. (2019) stated that practically, it is the practice of classroom management and years spent in teaching that are reflected in students' development and the effects of teachers' work are clearly seen inside the university system. Additionally, Siti, Sharifah, and Nik (2012) stated that modern teachers always focus on the cognitive ability to embrace and update new educational concepts through working procedures. Anne, Tara, and Linda (2019) stated that the 21st-

century teachers' work differs greatly from the past, they use a range of the latest technologies to practice the latest pedagogies and make lessons engaging and effective for learners. The teachers' inspiring personalities in the University for the Students make this possible.

Accomplishing responsibility and being careful of planning, evaluating, and monitoring along with being relevant to any intellectual struggles results in work efficiency. The responsibility in the work of university teachers is based on perfect monitoring, which supports remembering duties (Ilona & Sarka, 2014). According to personal responsibility, Jalal (2016) states that the work committed teachers are seen as highly efficient in fulfilling their responsibilities. Moreover, Valerie, Robert, and Julia (1991) stated that teachers focus on fundamental student learning and work efficacy but lack of regularity leads to low work efficiency but metacognitive regularities can establish the work efficiency.

The work efficiency evaluation is done when information and work are evaluated collectively, although they are different in terms of their purpose and content but a university teacher has to perform both at the same time. The university teachers' work efficiency can be more perfect through the evaluation of teachings (Gloria, 2005). Therefore, Fiona (2003) stated that the teacher can manage university work efficiently by planning university work before the time performed. Likewise, in the classroom, teachers who plan before teaching are more focused on the students and more attentive in their pedagogies. Teachers' effectiveness relates to the fact that planning takes time but accelerates work efficiency.

Metacognition was traditionally treated as a single cognitive component, in recent times, metacognitive regularities (activities that help regulate one's work) contribute to achieving work efficiency. It might help teachers bring about beneficial improvements in the areas they practice. Therefore states that teachers play a vital role in accomplishing university work efficiently to promote student and university sustainability (Tahseen et al., 2020).

Teachers face complex contests that demand not only subject expertise but also a high degree of excellence (Ana & Mihaela, 2018). The subject of the study, metacognitive regulation helps us to regulate teachers' works in order to efficiently work. The purpose was to investigate the metacognitive regularities of university teachers, determine the work efficiency of university teachers and assess the effect of metacognitive regularities on the work efficiency of university teachers.

Metacognitive regularities have been extensively studied in the context of student learning; however, their application to teaching practices remains underexplored (Julie, Amanda, & John, 2021). The understanding of metacognitive regularities is a novice concept for university teachers and it is discussed further in the next chapter to support the rationale and statement of the problem with theories and models to elaborate its importance, reflect on the quality of performance and analyze related research in this field.

1.2. Rationale of the Study

The concept of proficiency goes beyond simply gaining expertise and abilities. It also refers to the mobilization of regularities and work efficiency in order to face challenging demands to achieve it. Thenmozhi (2019) stated that metacognitive regularities were required steps for more and more association with teachers and students' collective well-being in the

twenty-first century in the all level of teaching and learning. Accessibility to material resources was only one aspect of well-being. Likewise, Fiona (2003) states that cognitive awareness is practical and teaching occupation is more typically practical than educational theoretical studies, which offer real value. The teachers are the soul of the university and for them, it was the main reason to be aware of metacognitive regularities. University structure has a direct impact on staff and students learning, as evidenced by organizations' and teachers' work happiness (Valerie et al., 1991).

The university teachers have to realize the metacognitive regularities for achieving their new competencies and for accomplishing their future achievements. Teachers can use metacognitive regularities to focus on current working efficiency in the workplace but this was lacking in the universities, and previous research did not focus on it. Tina and Mark (2012) states that commonly in classrooms teachers, administration and stakeholders do not regard mental planning for efficient work. The planning is important and has an impact on pedagogies and student development. The vital contribution of the university teachers was the university's achievements with their personal achievements, it cannot be possible without perfect balancing in the work schedule. Siti e al., (2012) stated the teacher-student relationship is essential for effective teaching, as it reflects in their personalities. Moreover, Sharul, Ruhanita, Amizawati, and Nor (2015) states that the university must gain autonomy through teaching, monitoring and evaluation.

Teachers might add metacognitive regularities in their routine work and manage university work with their teaching practices, for the university's betterment (Hope, 2001). Those are very common discussions but stay unattempt in research studies. Jalal (2016) state that teacher engagement was essential for industries to maintain competitive advantages, adjust

to change and future innovation in universities, because students serve in many industries of the nation after completing their education.

Jill, Maria, and Emmanuel (2017) states that the students' cognitive abilities was sparked by teachers in the university system and gradually encourage them to constantly expand their knowledge. Beginning with the gap between "efficiency" and "effectiveness," it was helpful work effectiveness refers to "doing the right things on right time," whereas work efficiency refers to doing things correctly. Ana and Mihaela (2018) state that the teacher who is a manager has to be aware of the importance of proficient interactions within the literate society and interactions between university and modern society. Additionally, Sergey et al. (2019) stated that the addition of metacognitive regulation in university working is what we can define as perfect work efficiency. Meanwhile teaching and efficient working can be possible by metacognitive regularities and if teachers are well versed by applying regularities they can guide students in a concrete way. Teachers have awareness but having the gap in their work review, there was a need to focus on regulatory aspects. This have identified flaws, enhanced enthusiasm and developed professional competencies for effective teaching. Furthermore, Lisa and Robert (2020) state that the effect of excellent teaching on student learning are measured by achievement gains on the efficacy of the teacher. The teacher as a human manager of university is always determined to develop the mental abilities of students and utilize cognitive ability for universities. Recently, Angelina, Thomas, and Brain (2022) state the key component is cognitive ability utilization which serve as the initial work planning.

The significant insight of studying university teachers' work efficiency was teachers have to be aware of metacognitive regularities in the modern workplace in the private and public

sectors universities. Paul (2010) stated that the metacognitive regularity was crucial to incorporate into their work for the benefit of the university and teachers. University teachers' work efficiency can be enhanced for successful professional performances through metacognitive regularities. The earlier research on metacognitive regularities in work efficiency was confined to a specific number of non-teaching groups, which was a reason for the need to conduct research with university teachers to check practices and be aware of using metacognitive regularities in university work to increase work efficiency.

Pakistani university teachers' had a great necessity to apply metacognitive regularities in their work to maximize work efficiency (Organization for Economic Co-operation and Development, 2019). The concept of this study was to organize cognitive abilities, personalities, classroom management, commitment and responsibility through metacognitive regularities. The university teachers were needed to contribute and take advantage of a sustainable and inclusive future. Although university teachers are already well-experienced in their field, metacognitive regulations can help teachers to be more proficient in setting clear and specific progress to finding multiple solutions to significant challenges for university students.

1.3. Statement of the Problem

University teachers play a crucial role in shaping the educational experiences of students, making it essential to understand the factors that contribute to their work efficiency. However, there is limited research on how these metacognitive regularities influence the overall efficiency of university teachers. The valuable insights into the practices of university teachers through investigating the metacognitive regularities of university

teachers and determining the work efficiency of university teachers is also very important so, there was investigate the metacognitive regularities of university teachers, determine the work efficiency of university teachers. Moreover, it is necessary to assess the effect of metacognitive regularities on the work efficiency of university teachers. The application of metacognitive regularities helps in teachers' overall work efficiency.

1.4. Research Objectives

1. To investigate the metacognitive regularities of university teachers.

2. To determine the work efficiency of university teachers.

3. To assess the effect of metacognitive regularities on work efficiency of university teachers.

    3a. To assess the effect of planning on work efficiency of university teachers.

    3b. To assess the effect of monitoring on work efficiency of university teachers.

    3c. To assess the effect of evaluation on work efficiency of university teachers.

1.5. Research Questions

1. What are the metacognitive regularities of university teachers?
2. What is the level of the work efficiency of university teachers?
3. How do university teachers consider the effect of their metacognitive regularities on their work efficiency?

1.6. Null Hypotheses

$H_0$1: There is statistically no significant effect of metacognitive regularities on work efficiency of university teachers.

$H_0$1a: There is statistically no significant effect of planning on work efficiency of university teachers.

$H_0$1b: There is statistically no significant effect of monitoring on work efficiency of university teachers.

$H_0$1c: There is statistically no significant effect of evaluation on work efficiency of university teachers.

1.7. Theoretical Base

A study's theoretical base is the collection of previous theories and concepts that serve as the foundation for and direction of the investigation. The theoretical base of metacognitive regularities in the provided report revolves around a framework that divides metacognition into two main components: metacognitive knowledge and metacognitive regulation. This structure is primarily informed by the work of Schraw and Moshman (1995) and Nelson and Narens (1990) (as cited in Julie et al., 2021) and is used throughout the report to investigate metacognitive regularities for university teachers. This relates, teachers regulates their thinking during work. It comprises: Planning, deciding what regularities to use. Monitoring, assessing one’s understanding and the effectiveness of work efficiency. Evaluation, reviewing and judging the effectiveness of regularities. These regulatory

processes enable teachers to adjust their work based on evaluation, a key marker of expert-like thinking.

Harris and Rutledge (2007)(as cited in Siti et al., 2012) Stated work efficiency model by visualize teacher quality based on their practices and Brown (2004) emphasized that effective classroom management includes the teachers' ability to respond appropriately to the emotional, social, cultural, and cognitive needs of the students. The theoretical base of the Teacher Work Efficiency model determine four dimensions of teachers. It reflects a complete view that quality teaching practices result from mental skills (cognition), personal traits (personality), and the ability to manage and engage students in the classroom. Therefore, cognitive and personal attributes must complement each other for comprehensive teacher effectiveness. The model offers a robust structure for evaluating teacher work efficiency beyond mere student outcomes, making it a valuable tool for universities. Commitment and responsibilities refer to a teacher's dedication to their professional duties and managed classroom obligations. The level of commitment also affects teachers' quality of work efficiency. According to Piaget (1936) theory of cognitive development, children fundamentally go through four different phases of cognitive development, such as; Sensorimotor, Pre operational, concrete operational and formal operational. Every stage has certain turning points at which an individual starts to understand a more complex awareness of their surroundings. In the meantime, another psychologist shared his opinions about the theory of cognitive growth was Vygotsky (1934) states the sociocultural theory of development, a child's capacity to learn through social interactions and their culture is facilitated by the social process of student learning. Piaget's theory of cognitive development differs greatly from Vygotsky's theory. The both

concept motivate to develop current study. People who regularly employ metacognitive strategies are guaranteed to be able to distribute cognitive resources as efficiently as possible, particularly in situations with high demands. Through the optimization of metacognitive regularities efficiency improves in the workplace or in the classroom.

Lastly, this study assessed the effect of metacognitive regularities on work efficiency of university teachers through the above-discussed theoretical base. Metacognitive regularities are fundamental at every stage, encouraging efficient working or task completion. Initially, Flavell's (1971) created the theory and came up with the name metacognition. Knowledge and cognition about cognitive phenomena, as he put it is the term he used to describe a learner's awareness and comprehension of their own cognitive processes. Knowledge how people think about their own thinking is a key idea for learning and cognitive growth and Flavell's study established the groundwork for this knowledge. Moreover, Sweller (1988) Cognitive load theory, he stated that as working memory has limited capabilities, regularities that are effective in reducing unnecessary cognitive burden can improve work efficiency.

The three characteristics of regulation learning are their interconnected motivational processes, teachers' employment of regulation teaching practices and their response to self-oriented feedback regarding the work efficacy of their University working. Teachers who engage in metacognitive practices can improve their work efficiency. The relevance of metacognitive regularities to work efficiency, particularly in the context of teaching practices, can be understood through the lens of continuous improvement. Furthermore, the study provided a rich description of metacognitive regularity, focused on the work efficiency of university teachers.

1.8. Conceptual Framework

This conceptual framework of the study was established to analyze the practices of teacher work efficiency. It can help in tracking metacognitive regularities teachers' practices. It can give progress in promoting effective university work and pedagogies. Separate investigations have been conducted on these two variables. The effect of metacognitive regularities on work efficiency has been studied with other subjects, but none of the research has studied the University teachers. The results of the present research study explore the effect of metacognitive regularities on university teachers' work efficiency in their practices, was adds to the text of knowledge. The conceptual framework of the study consisted of models, i.e. metacognitive regularities (Julie et al., 2021) and work efficiency (Siti et al., 2012).

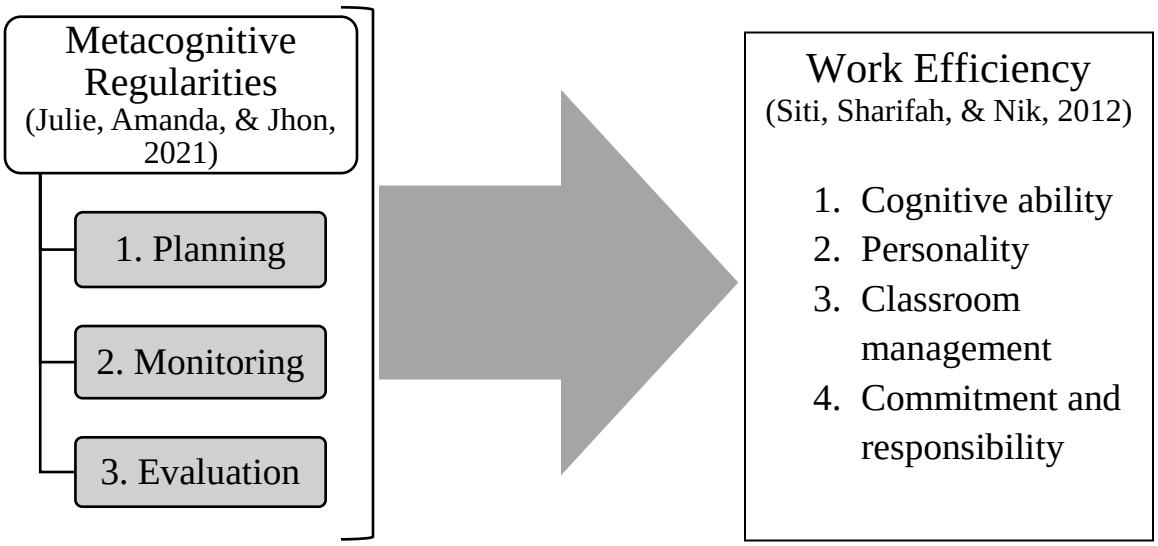

Figure No.1.1. Conceptual Framework of the Study

1.8.1. Metacognitive Regularities Model

Metacognitive regulation refers to learners' capacity to monitor and evaluate their knowledge and vice versa metacognitive knowledge is learners' knowledge or views about the elements that affect cognitive skills. It includes decision making ability to decide whether, when and where they can apply specific expertise for a specific reason. Teachers can take responsibility for their work in this context. (Julie et al., 2021). Metacognition depends on the consciousness of efficiency. The choice of appropriate planning and the controlling of resources that directly affect university teachers' practices.

1.8.1.1. Planning

Planning refers to a management procedure that is based on input from internal as well as external sources. It determines effectivity in every situation to move forward. (Julie et al., 2021).

1.8.1.2. Monitoring

The monitoring is the follow-up of abilities and techniques for the potential result. It can be learned by applying previous observations' results in new situations (Julie et al., 2021).

1.8.1.3. Evaluation

The method of evaluation usually involves connections between previous knowledge and new information. Organizing and structuring content, reorganizing one's cognitive processes, using schemes and focusing on

proof and reasoning, as well as making connections between self-experiences and realistic scenarios (Julie et al., 2021).

The procedure for identifying how teachers always reflect on their own intellectual and teaching practices is called a metacognitive regularities indicator. It benefits in recognizing changes in the way a teacher plans, monitors, and evaluates their practices over time.

1.8.2. Work Efficiency Model

Teacher effectiveness is a reflection of an individual's professional qualities, including expert practice, effective classroom management, student participation, and ongoing improvement. It is influenced by best practices, excellent teaching techniques, dedicated work and proper involvement in-class sessions (Siti et al., 2012). Cognitive skills are essential for comprehending data, remembering team objectives during work, and concentrating while performing tasks in an organization.

1.8.2.1. Cognitive Ability

The Intellect or cognitive ability is a broad mental capability encompassing logic, problem-solving, creative thinking, understanding complex concepts, quick learning, and insight (Siti et al., 2012).

1.8.2.2. Personality

Personality is the specific feature of humans that relates behaviors and illustrates traits of a competitive attitude in comparison to moderate individuals (Siti et al., 2012).

1.8.2.3. Classroom Management

Classroom management involves teachers' methods to maintain order in their classes and considers group dynamics and circumstances because management is a characteristic of sociological systems (Siti et al., 2012).

1.8.2.4. Commitment and Responsibility

Academic standing involves intellectual commitment to group goals, honesty in scholarly work, and responsibility for becoming knowledgeable about academic practices (Siti et al., 2012).

A Work Efficiency Indicator for teaching is a criteria or set of criteria used to evaluate how effectively a teacher performs their work, balancing the quality of practices and outcomes. These indicators help school administrators, students, the university teachers themselves to identify strengths and areas for improvement.

1.9. Significance of the Study

This research investigates the significance of work efficiency through the Effect of metacognitive regularities on university teachers work efficiency. The study's direct or indirect stakeholders will consist of the university teacher, the Students, the administration,

and the university. The stakeholders influence each other's successes and failures. The stakeholders play a crucial role in achieving university success which is reflected in teacher experiences.

The university teachers have their personal and university commitments which affect their practices and university responsibility but they can be completed through metacognitive regularities. University teachers are the source and resource for the university and students and they learn through teachers work reflection. Teachers are an asset to the university but without metacognitive regularity, teachers face difficulty in organizing the pedagogies and work in the universities. This study promotes continuous work efficiency in university teachers working.

University students deserve to get the best professional education. As an educational stakeholder, students observe and experience metacognitive practices in their teachers, they may also be encouraged to adopt these strategies in their own learning, creating a positive feedback loop that improves both teaching and learning in the university setting. This study can enhance university students' learning experiences and support better academic outcomes.

The university administration is another group of stakeholders. The administration expects achievements in organizational works through the efficient application of teachers' fundamental metacognitive regularities like other non-educational organizations. By promoting the significance of metacognition on work efficiency, university administration can enhance overall institutional effectiveness.

The university achievements of universities always give a lot of benefits to the teachers. The university always requires the best teaching staff, who monitor and evaluate the work progress of the university. The university wants social progress through teachers' efficient work. Encouraging metacognitive regularities is thus a strategic move for universities seeking to maximize their educational impact while improving overall faculty performance.

The university teachers and the other three stakeholders are interrelated depending on each other. Moreover, this mix methods research study was performed to attain reliable results and check university teachers' work efficiency.

1.10. Methodology

This study utilized a mix methods research approach, as per the following details;

1.10.1. Research Paradigm

The paradigm of the study was pragmatism. It can be understood through the combination of epistemology and reality. Metacognition is a cognitive process in human brains. It involves knowing about existing knowledge and various epistemological strategies practically. It is based on the vision of the work efficiency of university teachers through metacognitive regularities. Everybody has a different perspective of reality, so knowledge is constructed by mental creation through ongoing, individual perceptions of reality. Alejandro (2015) states that it was classified by Papaleontiou-Louca as a second-order thinking process. The study used mix methods and integrated qualitative data to support the quantitative outcomes.

1.10.2. Research Approach

The study utilized mix methods research approach. The phenomena are described through insights into research objectives, hypotheses and research questions. This mix methods was analyzed through the constructed instruments.

1.10.3. Research Design

This study had the descriptive correlational design. The data was explained to see the relationship of variables; the effect of metacognitive regularities on the work efficiency of university teachers.

1.10.4. Population

The population of this study was taken from Islamabad's private and public sector universities. There were 10464 university teachers in total. HEC's recognized, 7743 teachers from public universities and 2721 private university teachers' data were taken.

1.10.5. Sampling Techniques

1.10.5.1 Quantitative Sampling Technique

Proportionate stratified sampling technique were used to collect the quantitative data. The university teachers' population was divided into two strata. There was not an equal number of teachers in the public and private sector universities so, 05% of the population was taken from the public sector and 05% from the private sector universities.

1.10.5.2 Qualitative Sampling Technique

Purposive sampling was used to select samples for the qualitative data. So here total twenty one university teachers sample was selected and it was approximately 04 %. Therefore, 04% from both statra were used in this mix methods investigation.

1.10.6. Sample Size

1.10.6.1 Quantitative Sample Size

Quantitative sample of this study. Such as, 136 teachers were chosen from private universities out of 2721 participants. The 388 teachers were selected from public universities out of 7743 candidates. Moreover, the 05% of the total population were included out of 10464. It was 524 teachers. Initially, 10% of the sample size was taken, which was 52 university teachers (38 from public sector universities and 14 from private sector universities), who filled out questionnaires for the pilot testing (Appendix I).

1.10.6.2. Qualitative Sample Size

The 23 universities had 10,464 university teachers. The qualitative sampling was taken 04% of the quantitative sample 524. The 15 teachers from public sector universities and 6 from the private sector were selected.

1.10.7. Instrumentation

This mix-methods study had two types of instruments. The questionnaire for quantitative data collection and a semi-structured interview sheet for qualitative

data collection. The quantitative instruments were based on two scales, the metacognitive regulatory assessment scale and the work efficiency assessment scale (Appendix J).

1.10.7.1. The Metacognitive Regulatory Assessment Scale

The metacognitive regularities assessment scale based on sub-variables of metacognitive regularities that was stated by (Julie et al., 2021). The created scale was evaluated on five points Likert scale.

The following were the sub-domains of metacognitive regularities;

a. Planning
b. Monitoring
c. Evaluation

1.10.7.2. The Work Efficiency Assessment Scale

This scale was based on four sub-variables of work efficiency (Siti et al., 2012). The work efficiency scale was evaluated with a 5-point Likert scale. The sub-domains were listed below;

a. Cognitive ability
b. Personality
c. Classroom management
d. Commitment and Responsibility.

1.10.7.3. Semi-Structured Interview Sheet

The qualitative views supported the quantitative findings emerged through university teachers' interviews, for the purpose Semi-structured interview sheet was developed. The instrument had 27 open-ended questions that showed in-depth insights in this study (Appendix K).

1.10.7.4. Instrument Validity

This investigation had two instruments for data collection and analysis and the validity was carried out for both instruments. The Validity of the instruments was done by the four experts, two Assistant Professors and two Lecturers of Allama Iqbal Open University Islamabad, they commented and advised on the improvement of the questionnaires and structured interview in the view of the objectives (Appendix F and G).

1.10.7.4.1. The Questionnaire

The close-ended questionnaire before validity and reliability consisted of two scales, MRAS had 43 and WEAS had 47 closed-ended items with a total of 90 items.

1.10.7.4.2. Semi-Structured Interview Sheet

The Semi-structured interview sheet had 27 open-ended questions. 17 open-ended questions were included in section one metacognitive regularities and 10 questions were included in section two work efficiency.

1.10.8. Data Collection

The data was collected by visiting both sector universities and via sending a Google document form to the university teachers with their permission. Semi-structured interviews were done by the teacher who agreed to give quality time from their schedule.

1.10.9. Data Analysis

Data analysis was done by descriptive analysis and inferential statistical techniques such as; Mean and regression to analyze the one-way effect of metacognitive regularities on the work efficiency of university teachers. The descriptive study explains effect were analyzed in the light of quantitative findings and deep insights from semi-structured interviews.

1.11. Delimitations

The delimitation of the study is mentioned below;

1. The study included universities in Islamabad that were recognized by the HEC.
2. This study was delimited to investigate a one-way effect.
3. The only used the concept of metacognitive regularity from the main theory of metacognition.
4. This research exclusively based on university teachers at the universities of Islamabad.
5. The investigation doesn't look at inverse relationships between the variables.
6. The data used to gather information about teachers include questionnaires and Semi-structured interviews.

1.12. Operational Definitions

Below are the operational definitions for this research study;

1.12.1. Metacognitive Regularities

Metacognitive regulation is referred to as a part of metacognition regulated by the process made up of three sub-components: planning, monitoring, and evaluation.

1.12.1.1. Planning

Organize work outcomes, align all areas with the institution's shared goals, and implement suitable approaches.

1.12.1.2. Monitoring

Monitoring involves evaluating progress and effectiveness of current procedures in completing responsibilities promptly.

1.12.1.3. Evaluation

Evaluation is a procedure for applicability, development, effectiveness, and impact. Control tactics simply analyze how successful instructional objectives are.

1.12.2. Work Efficiency

Efficiency in work saves time and money by planning and understanding tasks, working harder within a limited timeframe, and achieving goals.

1.12.2.1. Cognitive Ability

Cognitive ability refers to a person's ability to organize, recall, and gather information from their environment, including attention, memory, and reasoning, which is crucial for task completion.

1.12.2.2. Personality

Individuality is a distinct style of understanding, acting, and experiencing, characterized by natural and developed character patterns in interactions with others.

1.12.2.3. Classroom Management

Classroom management involves teaching strategies to create a conducive learning environment where performance standards are set for students.

1.13.2.4. Commitment and Responsibility

Work commitment is indicated by the employee's interest in assigned tasks, which are completed responsibly and on time.

CHAPTER 2

REVIEW OF THE RELATED LITRATURE

2.1. The Background for the Relevant Literature

Academic quality is mostly influenced by the performance of teachers. Universities develop their talented employees to be effective and eventually achieve world standards. Workplace professionalism has an impact on both work output and an institution's dimensions to sustain. There are two categories of areas of expertise: particular and general. The intellectual requirements needed by people to perform their jobs are referred to as qualifications. Waltor (2005) states that effective classroom management and organization by teachers lead to improved academic results. Students are actively pursuing knowledge in a participant, knowledge-centered community of inquiry. Thanks to a combination of constructivist-based improvements to the teaching methods. Furthermore, Siti et al. (2012) state that the effective classroom management requires teachers to maintain order in the classroom and control student conduct.

The expertise, abilities, moral principles, and character traits that each teacher of an institution is referred to known as generic proficiency (Sharul et al., 2015). In the domain of education, a resource is efficiently used when the visible results from education are produced at the lowest level of resource (Jill et al., 2017). The institution’s goal is to support each university teacher to become a contributing member of the institution and to

continuously enhance the delivery of education in a manner that is both ethical and consistent with regulatory requirements (Ana & Mihaela, 2018). The major point can be "solid, stable but fallible, of the late forming," retaining a high degree of consistency amongst people. On the other hand, regulation can be "very unstable and age-independent," swiftly altering depending on the circumstance. Teaching methods that emphasize problem-solving contend that thinking is fundamentally incomplete. It is not about knowing something that lies after being known; it is an ongoing activity. Knowledge is a flexible and open-ended tool for action, and the idea of using those thoughts forms the basis of metacognition regulations (Thenmozhi, 2019).

Effective use of resources guarantees that the multitude of educational results intended by culture is attained. Di (2021) states that dedicated teachers may have profound connections to their institution, their students, or their fields of study. The declarative, administrative, and regulatory information comprises the three initial types of metacognitive understanding, whereas active learning strategies like; planning, monitoring, and evaluating are known as metacognitive regulation (Angelina et al., 2022). Efficiency ideas are easy to understand. Resources are utilized as fully as possible to achieve culture's goals when they are few, which they always are. An evaluation of inputs and the corresponding outcomes is meant by efficiency. The given set of input resources and system that is more effective produces more.

Section 1. General Introduction of the Area of Research

2.2. An Overview

The combination of three terms mention the term as well is known as metacognitive regularities. Cognition, regulation, and meta-mean are the self-centered actions or processes of the mind. Respectively, we can manage our thinking to speed up learning through metacognitive regulation. Furthermore, metacognition can frequently be broken down into three parts, metacognitive knowledge, regularities and instruction (Mehrdad, 2016).

The focus of this investigation is on metacognitive regularities. The metacognitive regularity joined with the work efficiency of university teachers helps them to achieve what a certain approach may accomplish. It depends on its range of applicability, the advantages of utilizing it frequently and the amount of work needed to apply it. (Thenmozhi 2019). Implementing metacognitive regularities doesn't need for expensive, significant segment or alterations to the existing education systems. Unlike many other educational initiatives. The cost of professional growth is the sole expense associated with using metacognitive regularities. An efficient method of obtaining that fundamental insight is by using a metacognitive tool like thinking styles. Furthermore, they move toward becoming effective thinking performers is recognizing that other people think the same or differ from them and then learning to grasp the implications of their thought processes and conduct.

Although several authors use different definitions but here Margaret (2022) states that the second component of metacognition in this case is metacognitive regulation. Metacognitive regulation in contrast to metacognitive knowledge applies to the users'

capacity for keeping track of monitoring. They are the elements that influence cognition and evaluative abilities of their learning or understanding. Their capacity to determine how, where and why to apply a specific ability for a specific task. They can take charge of their education in this way.

2.2.1. Metacognition

Metacognition is necessary for both successful instruction and self-regulated performance (Georgia & Maria, 2017). Planning what and how will teach, checking in or monitoring how the lesson is going while teachers are teaching, making adjustments as needed, and evaluating how a lesson went once it is finished, are all examples of executive management of metacognition in teaching. An executive management cycle is completed by determining ways to enhance performance going forward in similar situations according to both internal and external input. Therefore under metacognition, teachers start considering how their lesson will encourage and enhance students' awareness of their reasoning as scholars. Metacognition is also referred to as Metaconscious, self-awareness, self-cognizance and self-perception by intellectuals.

2.2.1.1. Metaconscious

Meta-consciousness is merely a type of cognitive content, it enters consciousness in a way that is comparable with the manner in which other mental contents do (Jonathan, Michael, Benjamin, & Piotr, 2015).

2.2.1.2. Self-Awareness

According to Julia, Rebecca, and Jonathan (2021) that Self" is the societal behaviorist perspective, which holds that when the self is compared to social processes, communication and awareness are most closely related to the self-adopted position.

2.2.1.3. Self-Cognizance

Understanding cognitive processes is known as cognizance. Here, it is defined as willingly being conscious of perception and inference in knowledge and problem-solving (Smaragda, Elena, Nikolaos, George, & Andreas, 2019).

2.2.1.4. Self-Perception

According to self-perception speculation, people view their conduct in the same way they examine others' actions, therefore any individual's conduct is impacted by their social context rather than their own free choice (Laila & Fatima, 2020).

2.2.2. Regulatory

The second is regulatory and it is the suffix of metacognitive regulatory. According to Georgia and Maria (2017) the affective, intellectual, and social functioning are influenced by regulatory teaching styles. In particular, independent motivation and independent types of regulation (intrinsic motivation and identified regulation) are linked to several advantageous learning outcomes. It includes effective cognitive

processing, greater effort in the face of challenges, more effective time management and focused attention. Moreover, it is a satisfying experience during the exercise being actively engaged in deeper understanding. The several regulatory terminologies include managerial and governing. According to Margaret (2022) teachers are better able to meet the requirements of their students by providing solutions if they are aware of their metacognitive thinking. While performing a task, providing support to individuals helps them improve their method of reasoning and studying. They become aware of their work advantages and disadvantages. They can better organize, keep track of and assess their thinking the next time they participate in metacognitive activities.

2.2.2.1. Administrative

Despite the progress made in administration considerable work needs to be done. The foundations of the administration depend on several valuable fields giving the upcoming agendas remarkable support (Bruce, Jeremy, Janine, & Sandra, 2022).

2.2.2.1.1. Managerial

Managerial effects appear to be more significant than worker impacts. Hence, management practices are vital for programs that aim to strengthen or build up clusters around university (Anna, 2021).

2.2.2.1.2. Governing

The Shaoning (2018) states that the governance approach leads education advancing the formation of vocational institutions through effective governance. Governance is the process of shared administration of the public affairs of higher learning that provides a new type of representative structure.

2.3. History

The necessity for evaluation serves as the foundation of the regulatory idea. The word "metamemory" was initially developed by John (1970) in the early, he continued to develop the study and present a concept known as metacognition as learners' awareness of their cognition. He defined it as "knowledge and understanding about cognitive phenomena.

2.3.1. Development of Metacognitive Regularities in 1989-1990s’

Almost forty years earlier, Ruth and Practicia (1989) stated the idea of metacognitive regularities and introduced the concept of the metacognitive thinker. They believed that meta-cognitive thinkers can detect, evaluate and when necessary rebuild current ideas. Later, Paris and Winograd (1990) highlighted "self-appraisal" and "self-management of cognition as two crucial characteristics in their concept of metacognition. Although Petros (2004) stated the self-management refers to "metacognition in action," or cognitive processes that arrange or score aspects of problem-solving, self-appraisal of cognitions includes observations on individuals' comprehension, capacities, and psychological states during the academic process.

2.3.2. Metacognitive Regularity Progress in 1994- 2006

The conclusion shows that if faults arise at the objective level, procedures for monitoring will alert the meta-level to them and activate control processes to fix the issue. This seems to be a classy basic approach by Janete and Arthur (1994) that incorporates both metacognitive abilities and knowledge. However, Katherine (1996) the majority of theory-based research has focused on meta-memory and the phenomenon of judgments of learning and feelings of knowing. Later on, after two years of a Katherine's comprehensive theory received its initial push from david claimed in 1998. David (1998) that "meta-affection," which focuses on the passionate dimension of instruction, sits very similar to the idea of metacognition. Petros (2004) defined this as "the conscious awareness, monitoring, regulation, and evaluation of intra-personal and communal influencing activity". Next, Marcel, Bernadette, and Peter (2006) stated that an "object and level," where cognitive activity occurs at meta-level. He regulates the object and level through general informational exchanges between both. It is communicated to that information on the object level's condition. The meta-level monitoring procedures and directives are transferred by control mechanisms to the object. Continuing this, Paul (1995) defined that it is necessary self-regulation as the "active, goal-directed self-control of actions, motivation, and cognition by an individual person for academic tasks". Then, Randy and Frank (2006) stated that students that adept at academic self-regulation are aware of both their own learning styles and the requirements of the particular activities.

Furthermore the two main elements are referred to as knowledge of cognition and regulation of cognition. Three sub-components make up cognitive knowledge: Declarative knowledge is an understanding of one's learning style and the variables affecting the performance. Procedural knowledge: the understanding of techniques and methods such as interleaving, reviewing, organizing, using analogies to elaborate and choosing the key concepts. Conditional knowledge: knowing when and why to employ a specific tactic. Planning, monitoring, and assessing at least three of the fundamental aspects of cognitive regulation.

- Setting goals, using pertinent past knowledge, choosing suitable techniques, and allocating resources are all aspects of planning.
- Self-testing activities required for control are part of monitoring.
- The monitoring of these activities' success is when metacognition recurs (Daniel & Christian, 2020; Schraw et al. (2006)).

2.4. Brief History of Metacognitive Regularities

The speculative model of metacognition and what it covers are still highly debated topics in the field of education. Planning is the process of choosing the steps that will be taken in order to complete a job, forecasting the results of learning, and planning the methods utilized to discover as a teacher, plan for the best techniques to apply in order to accomplish a specific objective.

The monitoring tasks could involve analyzing an entire work and identifying any confusing passages, or solving a problem and reviewing if the stages of the solution are recognized. Monitoring can also involve evaluating and improving another person's or group's

productivity. Afterwards, teaching work proceeds, and the teacher will evaluate their performance and decide a new strategy to be developed to accomplish the task. The continuous on-task evaluation of task performance and observation of the process of analyzing and reviewing information and techniques, as well as one's degree of knowledge used to complete a task (Whitebread & Pino-Pastermark, 2013). The sequence is the way metacognitive regulatory techniques are used over the course of an activity (Nilson, 2013).

According to Rachel (2014); Veenman, Van, and Afflerbach (2006) the techniques they utilized in their methods are most frequently addressed by professionals in the industry involve planning, monitoring, evaluating, and control.

2.5. Why Teacher Need to Use Metacognitive Regularities

The performance management have four pillars; planning for performance, increasing efficiency, evaluating progress, and goal achievement. It effectively takes a systematic and integrated approach to help the university achieve long-term success by enhancing the efficiency of every employee and growing the capacities of both teams and individuals. It's important here to clarify the dynamics between the team and the individual. Performance management is largely focused on achieving results. The steps taken to get these results help teams and people to grow in their knowledge, skills, and competences. Recognizing, measuring, and comprehending the vast variations in performance is necessary (Harry, 2004). The two different types of strategies can be activated by metacognitive experience. Regularities in intellect and metacognition. Although researchers have frequently divided metacognition into the three interrelated elements of metacognitive awareness, cognitive strategies perception, and regulation of cognition monitoring and control, the idea of

metacognition is seen as being hazy with ill-defined limits. Teaching is increasingly viewed as a career requiring a critical investigation of each situation, identification of priorities, establishment, and monitoring of appropriate opportunities to learn, analysis the effects on pupil's accomplishment, responding to students' learning requirements, and a personal or group reflection on the entire process (Judit, 2016). A person's subjective assessment of the simplicity or complexity of particular cognitive functions is known as metacognitive experience.

2.5.1. Planning for Performance

Planning is the activity of looking forward and developing or outlining a strategy to accomplish specific goals and objectives. It entails figuring out in broad strokes what has to be done and how to go about doing it in order to achieve a specified goal. It involves the process of making technical and logical decisions. Planning is the methodical, deliberate, and intentional process of making decisions in advance. Planning is an integral aspect of every man's social efforts (Charles, 2018). The performance management of work in universities is a new method to evaluate the caliber of education provided by universities as well as a fusion of contemporary methods for handling human resources in education. The evaluation of the universities work will be regularly deepened and improved with planning in the process of ongoing inquiry and study (Qiao, 2019).

2.5.2. Increasing Efficiency

The way efficiency is utilized in professional capital for instructional purposes consists of three components: human capital, which is an investment in a teacher's knowledge. Abilities and social capital which is an investment in the connections between teachers and the type and amount of interactions that enable them to work effectively as a team. The decisional capital is the understanding and expertise necessary to form accurate evaluations of students and is developed over a long period. However, in team environments, their increased expertise may boost not just their performance but also that of less experienced coworkers gain insight from them (Anne et al., 2019). Moreover, effective instructors can have a constant, significant and beneficial effect on their students' ways of existence. Being a teacher is a career that lasts a lifetime (Weilin, 2023).

2.5.3. Evaluating Progress

Supporting students in achieving a set of focused goals for learning is the primary goal of education or teaching in the classroom. These educational goals or outcomes cover changes in the mind, heart, and body. Monitoring is necessary to see, have the students undergone the intended adjustments. In this sense, investigations and additional indicators are used to continually evaluate the development of the learners. Similar to this, supervisors and teachers annually evaluate the academic development and effectiveness of the students at many different levels (Nelson, 2018).

2.5.4. Goal Achievement

Teachers who pursue mastery goals mainly have to do with the educational process, enhancement, and advancement of their skills, whereas people who seek targets for performance are mostly self-focused, goal-oriented, and curious about how they compare to others. The definition of performance is based on acceptable societal judgments. The standard and the visual aspects are experimentally separate and affect educational achievement differentially (Martin, Oliver, & Markus, 2018). Moreover, Stanislav, Donatas, Nele, and Tomas (2025) states that metacognitive abilities are necessary for effective experience reflection and are thought to be essential for the development of responsive competence.

2.6. Self-Monitoring Used for Higher-Order Metacognitive Regularities

People may choose, assess and rectify cognitive regularities with the help of metacognitive knowledge. It is crucial for creative thinking. Empirically numerous studies have demonstrated that people's metacognitive knowledge supports knowledge innovation. Even though making decisions is a fundamental teaching ability and a component of an instructor's work career (Tina & Mark, 2012).

The higher cognitive cue of processing fluency can be used to suggest metacognitive experience. Xiaoyu, weijian, and Liren (2019) states that using metacognition to keep track of other processes, the creative thought process "self-monitored" itself is the interaction of systematic review and element information. Learning in the classroom is substantially influenced by planning, whether it is mental, written or a combination of the two. The preparation and reflection help teachers become more adept at dealing with the many facets

of teaching because many decisions are made in the classroom without adequate time for contemplation or planning. In the classroom making decisions is assisted after evaluation. Decisions being made during instruction are different from those made during planning because they are made quickly and without the chance to think or consult fresh information.

2.7. Teacher Work Efficiency

The consciousness regarding one's own reasoning and metacognitive evaluation is important. Teachers at university build a thinking graph through the memory of objects. The deliberate inclusion of this knowledge into team procedures and personnel management tasks work a lot (Fiona, 2003). Gloria (2005) states that although participants like being exposed to fresh teaching concepts and methods, the curriculum does not customize and encourage a toolkit for college teachers. The association requires between the student, the teacher and the knowledge being learned. Metacognitive evaluation involves statistical techniques in problem-solving skills, structuring and creating meaningful information about problems. The teachers' working lives and working hours are affected by their positions and duties (Siti et al., 2012). University teachers are also instructors and managers. Therefore, they understand the academic component which assists in decision-making and modifying changeable components as per the situation. Workplace efficiency has to increase through monitoring a wide range of cognitive activities. The actions and associations within classes of concepts, metacognitive information, metacognitive situations, objectives, and approaches that maintain and facilitate efficient performance.

2.8. The Concept of Work Efficiency

Teaching is not solely a technical/rational, mastery profession. It is highly challenging to define standards of professional performance. It is believed that teaching is 50% scientific and 50% the craftsmanship of educating (Elena, 2014). A teacher's productivity is evaluated in comparison to the standard for teachers performing comparable tasks. The tenure of the job determines the intellectual and efficient working of the teachers. This suggests that teacher's productivity and performance affect the enhancement of an institution.

2.9. The Importance of Teacher Work Efficiency

The most essential component of success and responsibility is work efficiency which gives potential to future tasks. It assesses one's present level of knowledge while performing a cognitive task. It's essential to keep a record of own experiences and failures and update metacognitive knowledge regarding the efficacy of the work. (Roger & Vincent, 2013). Additionally, Khoirotun, Aslamiyah, Noorhafizah, and Novitawati (2025) states that teachers play a significant role in academic standards because they can use their teaching skills, and instructors must be effective at their jobs.

2.9.1. In Current Era

In this recent era, individuals engaged in work assess several aspects of their employment, it including their employer, institutional leaders, the actual work they do, and the work atmosphere. Energy levels, emotional satisfaction, effectiveness, and participation are indicators of job involvement (Jalal, 2016). The educational

environments and teaching commitment were established by teachers' attitude of engagement. The years invested in teaching determine the amount of effort teachers put into advancing learners' education and well-being. Dedicated and competent university teachers are obligated to upgrade their power to manage learners' unique needs, to further build their skills (Di, 2021). Additionally, Turgut, David, Tijen, and Sedat (2025) states that two of the most important elements affecting student outcomes are leadership and professional development for teachers.

Section 2.

2.10. Key Theories and Models

Several frameworks that are important to metacognitive regularities have been introduced by various authors and every theory has its characteristics. It is useful for pedagogies and teachers' effectiveness. The details of the models and theories mentioned are given below.

2.10.1. Metacognition & Social Metacognition Theory

Social metacognition enhances cognitive abilities, promotes social guidance, and enhances interpersonal interactions by promoting shared thinking, task sharing, and visibility of each other's metacognition (Ming & Sze, 2009). They worked on given theory of metacognition was described as individual and social metacognition was analyzed for the group with the same dimension. Social metacognition is an extension of metacognition into group interactions. In parallel with metacognition social metacognition is group members' monitoring and control of one another's knowledge, emotions and actions. The benefits of metacognition and social

metacognition checked through dimensions for the difficulties, the implications for student learning of metacognition and how to teach metacognition in school.

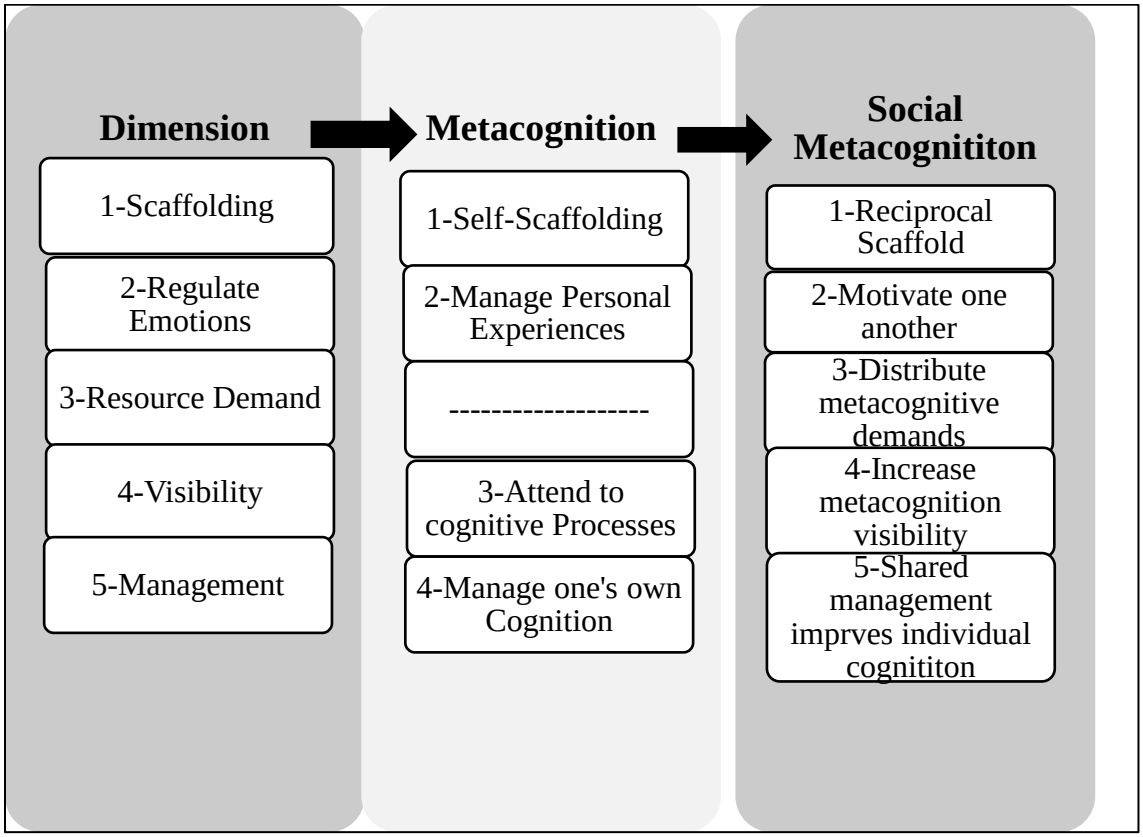

Figure No. 2.1. Benefits of Metacognition & Social Metacognition Theory (Ming & Sze, 2009)

2.10.1.1. Dimension

The dimension emphasizes the interplay between individual and group dynamics in cognitive regulation (Ming & Sze, 2009).

2.10.1.1.1. Scaffolding

Scaffolding involves providing temporary support to individuals or group to enhance metacognitive skills (Ming & Sze, 2009).

2.10.1.1.2. Regulate Emotions

Emotions play a crucial role in metacognitive processes by influencing motivation and cognitive control (Ming & Sze, 2009).

2.10.1.1.3. Resource Demand

It refers to the cognitive and emotional resources required to engage in metacognitive processes (Ming & Sze, 2009).

2.10.1.1.4. Visibility

It is often less visible since it occurs internally and more visible due to group interactions (Ming & Sze, 2009).

2.10.1.1.5. Management

The effective management of metacognitive processes ensures successful regulation of thoughts, emotions and actions (Ming & Sze, 2009).

2.10.1.2. Metacognition

The metacognition refers to the awareness and regulation of ones' own though processes (Ming & Sze, 2009).

2.10.1.2.1. Self- Scaffolding

This is focusses on how individuals create internal structures by actively organizing and guiding their own thinking (Ming & Sze, 2009).

2.10.1.2.2. Manage Personal Experiences

This involves reflecting on past experiences to improve current and future decision making by analyzing personal successes (Ming & Sze, 2009).

2.10.1.2.3. Attend to Cognitive Processes

This involves actively monitoring and evaluating cognitive activities to ensure that cognitive resources are allocated efficiently and effectively for the task at hand (Ming & Sze, 2009).

2.10.1.2.4. Manage One's Own Cognition

It is regulating thinking processes to underscores the importance of being proactive in controlling one's mental activities to achieve desired outcomes (Ming & Sze, 2009).

2.10.1.3. Social Metacognition

It is refers to the shared process of thinking about one's thinking in a social context to focuses on collaborative environments to enhances individual cognition through group interactions (Ming & Sze, 2009).

2.10.1.3.1. Reciprocal Scaffold

Being a member of a group support and build each other understanding (Ming & Sze, 2009).

2.10.1.3.2. Motivate One Another

It is social interaction which fosters motivation by promoting accountability and shared goals (Ming & Sze, 2009).

2.10.1.3.3. Distribute Metacognition Demands

In group settings, Individuals share the cognitive load by divided complex task and encourages efficient use of resources (Ming & Sze, 2009).

2.10.1.3.4. Increase Metacognition Visibility

This visibility enables group members to learn from each other's approaches (Ming & Sze, 2009).

2.10.1.3.5. Shared Management Improves Individual Cognition

A collective focus on metacognition ultimately improves personal cognitive abilities (Ming & Sze, 2009).

The theory concludes that metacognition can help students learn and solve problems by promoting self-scaffolding and managing personal experiences. Similarly, social metacognition distributes metacognitive demands among group members, increases the visibility of one another's metacognition, and improves individual cognition, resulting in reciprocal scaffolding and greater motivation.

2.10.2. Metacognition Framework Theory

According to Rachel (2014) stated in his research work that metacognition has two domains knowledge and regulation the previous idea of metacognition was divided into two frameworks based on the earlier models. The process a learner goes through to implement and maintain cognitive functioning, behaviors, and metacognitive processing

to achieve a specific goal or set of goals involves knowledge, which is an essential element.

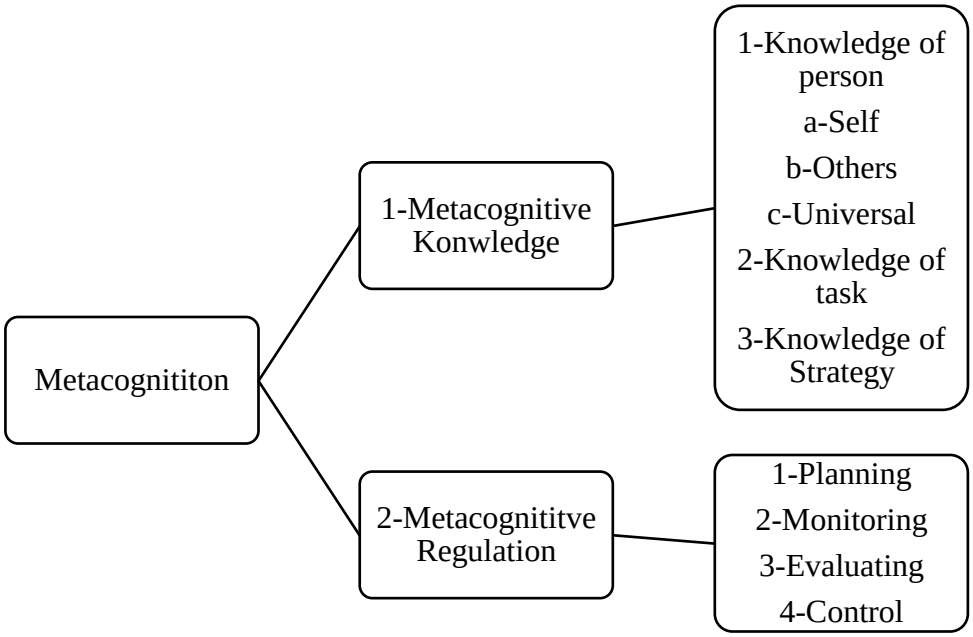

Figure No. 2.2. Metacognition Framework Theory (Rachel, 2014)

2.10.2.1. Metacognition

The metacognition as a structured way of understanding how individuals think about and regulate their thinking processes (Rachel, 2014).

2.10.2.1.1. Metacognitive Knowledge

It refers to the awareness and understanding of one's own cognitive processes (Rachel, 2014).

- **Knowledge of person:** This refers to an individual's awareness of their own cognitive abilities and limitations.

- **Knowledge of task:** This involves understanding the nature of the task at hand and the cognitive demands it places.
- **Knowledge of strategy:** This pertains to knowing which strategies to apply to achieve goals effectively.

2.10.2.1.2. Metacognitive Regulation

It refers to the active processes individuals use to control and direct their cognitive activities (Rachel, 2014).

- **Planning:** Setting goals and selecting strategies for approaching tasks.
- **Monitoring:** Checking progress and assessing the effectiveness of strategies during the task.
- **Evaluating:** Reflecting on the outcomes and determining whether goals were achieved.
- **Control:** It is the decision making mechanism that enables individuals to adapt their behavior, allocate resources and employ strategies to optimize task performance.

This theory aimed to describe the metacognition of engineering students in the naturalistic setting of study groups and the contextual factors that supported this engagement. Analysis of the observational field notes found that undergraduate engineering students engage in metacognitive engagement through metacognitive knowledge and metacognitive regulation at a higher rate.

2.10.3. Model of Metacognition

The second model presented Markeya (2016). In this, he explains why it is crucial for teachers to actively encourage students' metacognition. The brief description of "thinking about thinking" or "cognition about cognition" is frequently used to describe metacognition. Markeya (2016) created a conceptual framework for a commonly occurring component of metacognition after analyzing work by Flawell et al., 1979-2011). It is more accurate to say that it also includes understanding, consciousness, and control of one's own cognition as well as cognitive processes in general. Two main elements of metacognition are the presentation and description of the regulation of cognition, the situations of learning. In addition, he asserts that training at all levels of institutions can improve metacognition, which develops as a component of cognitive development. He creates metacognition conceptual framework composed of the knowledge of cognition and regulation of cognition as its two fundamental categories. Declarative, procedural, and conditional knowledge of cognition comprises three categories while planning, monitoring, controlling, and evaluating knowledge of cognition contains four more. These subcategories specifics are listed below.

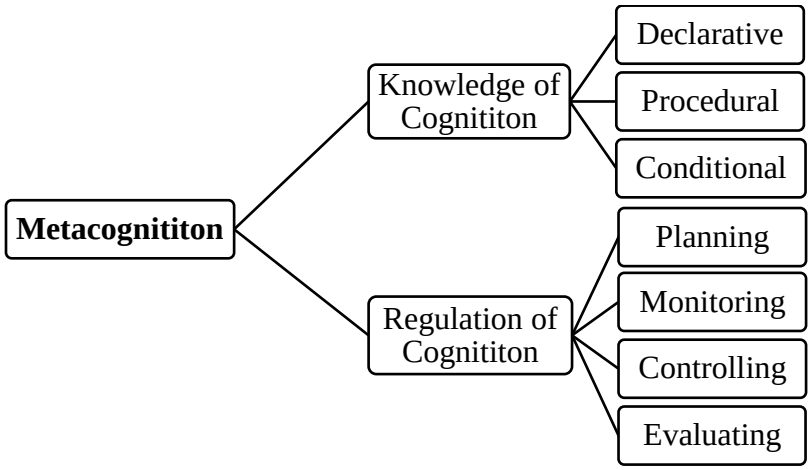

Figure No. 2.3. Model of Metacognition (Markeya, 2016)

2.10.3.1. Knowledge of Cognition

A person's knowledge of cognition involves his or her understanding of tactics, his or her own ways of thinking, and humans overall as cognitive beings (Markeya, 2016).

2.10.3.1.1. Declarative

Declarative knowledge comprises information regarding one's own cognitive capabilities and variables affecting one's demonstration and education (Markeya, 2016).

2.10.3.1.2. Procedural

University scholars with procedural expertise can take notes during lectures and write a successful introduction prior to drafting an assignment (Markeya, 2016).

2.10.3.1.3. Conditional

Understanding when and why to utilize a specific approach is referred to as conditional knowledge (Markeya, 2016).

2.10.3.2. Regulation of Cognition

The “proactive “component of metacognition is the regulation of cognition. This category of abilities encompasses cognitive planning, monitoring, control, and evaluation processes (Markeya, 2016).

2.10.3.2.1. Planning

Establishing targets, choosing solutions in advance, and deciding the sequence of the tasks that will be done are all examples of planning cognition (Markeya, 2016).

2.10.3.2.2. Monitoring

Monitoring cognition means being conscious of one's understanding mental processes, and tactics used to complete a task (Markeya, 2016).

2.10.3.2.3. Controlling

Administration of memory, blocking undesirable responses, and limiting thoughts are some examples of cognitive control approaches (Markeya, 2016).

2.10.3.2.4. Evaluation

Identifying and fixing mistakes, comparing results to objectives, reporting on performance, and assessing the effectiveness of one's learning are all parts of evaluating cognition (Markeya, 2016).

2.10.3.3. Suggestions for Promoting Metacognition Instruction

After doing the study, Markeya (2016) discovered that adding extended metacognitive training to a college course caused students' metacognition to rise risings that weren't observed in students attending a course similar to this one without the metacognitive training. Furthermore, he addresses the metacognitive teaching of teachers, which was also necessary to foster metacognition in students, in their systematic review of their work. He states metacognition is linked to a variety of achievement outcomes and those who are building their mental ability will benefit most from metacognitive training. It is divided into two categories: implicit instruction and explicit instruction. One of the teaching methods may be used by the teacher; however, neither may be used together. Implicit instruction happens when the nature of a lesson or associated activities contributes to the likelihood that students engage in metacognition without explicitly addressing the "how" or "why" of doing so. The teacher will typically do this by stating, describing, or explaining the advantages of metacognition. Such as instruction about using "how" or "why" called metacognition explicitly.

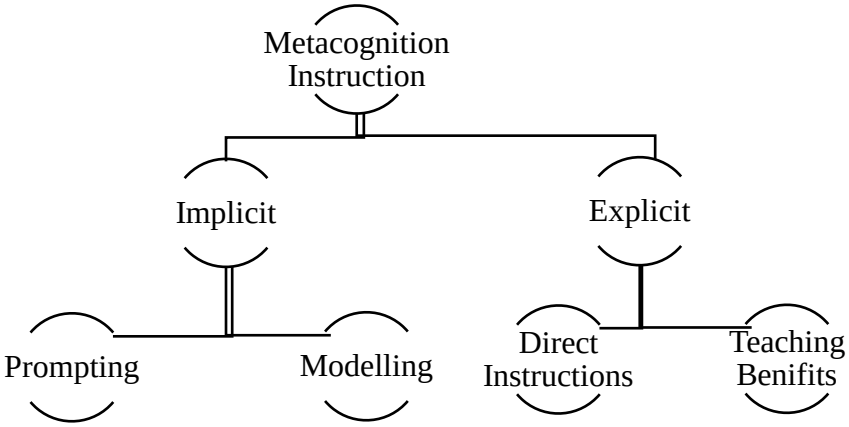

Figure No. 2.4. Suggestions for Promoting Metacognition Instruction (Markeya, 2016)

2.10.3.3.1. Metacognition Instruction

It is Emphasize strategies to help students develop their ability to think about their own thinking (Markeya, 2016).

2.10.3.3.1.1. Implicit

If is refers to delicately encouraging students to develop their metacognitive skills (Markeya, 2016).

- **Prompting:** the teacher embeds questions and tasks that prompt students to think about their thinking processes.
- **Modelling:** It refers to the teacher demonstrates metacognitive strategies during their teaching process.

2.10.3.3.1.2. Explicit

It refers to teaching students about metacognition to clearly explaining applications (Markeya, 2016).

- **Direct instruction:** It refers to explicitly teaching students the skills and strategies associated with metacognition.
- **Teaching benefits:** It is Enhancing retention and developing skills that will serve students beyond the classroom.

It is believed that both explicit and implicit cognitive processing education are significant. Strategic instruction is the term used to describe metacognition teaching, which frequently entails teaching pupil's strategies. Strategies are actions that help speed up learning or task completion. The five steps of Embedding Metacognition Teaching and three basic guidelines for conducting efficient metacognition training give teachers a place to start when adding more metacognition coaching to their lessons.

2.10.4. Promoting Socially Shared Metacognition Regulation

The Dongho and Cheolil (2017) states that participants' interactions with regard to collective preparation and understanding development were positively impacted by the collaboration programs applied to enhance socially shared metacognitive control. Furthermore, ability and reflection on job performance are covered by metacognition regulation.

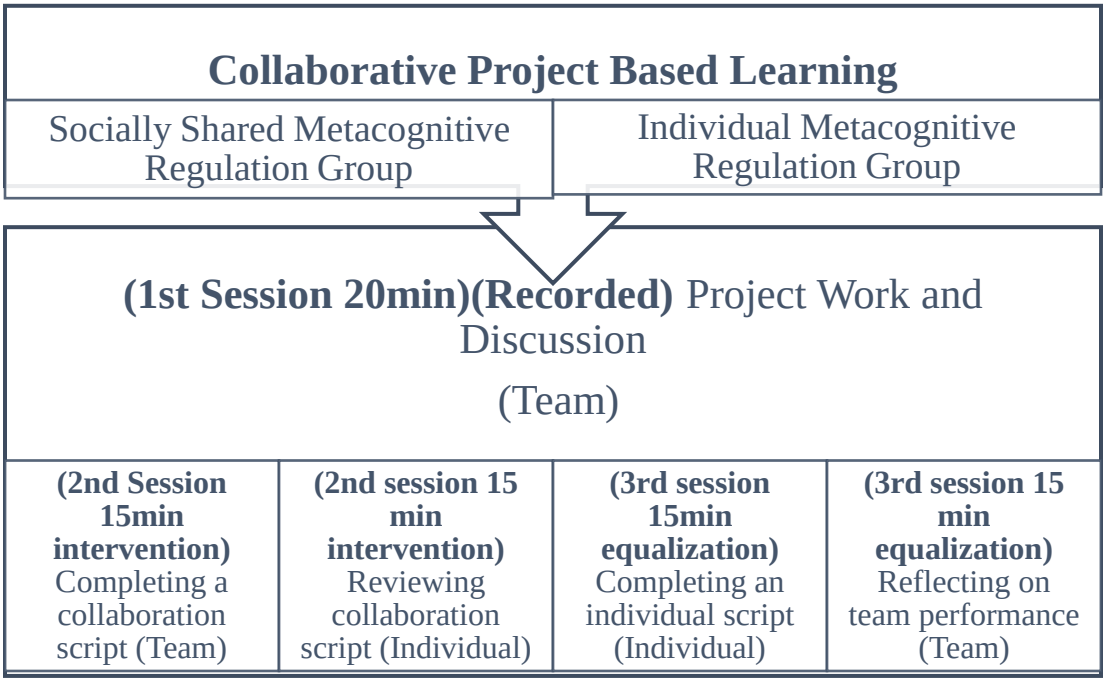

Figure No. 2.5. Promoting Socially Shared Metacognition Regulation (Dongho & Cheolil, 2017)

2.10.4.1. Socially Shared Metacognitive Regulation Group

It refers to highlights collaboration can enhance the overall cognitive and metacognitive development of a group and more adaptive approaches to complex tasks (Dongho & Cheolil, 2017).

2.10.4.2. Individually Metacognitive Regulation Group

It refers to the processes where an individual reflects on and regulates their own thinking and learning (Dongho & Cheolil, 2017).

Collaborative project-based learning is a pedagogical process that aims to facilitate students' investigation and knowledge gain for intellectual goals. Although the

empirical study revealed the process of team knowledge construction. The results showed that an important difference existed between the two conditions in terms of trends in intellectual and planning interactions. The socially shared metacognitive regulation teams revealed an increasing engagement with the project content. Their collaboration with the content implied that the socially shared metacognitive regulation teams made a successful shift from managerial connections to intellectual interactions toward knowledge construction. The existence of intellectual dealings is a key indicator of a high-level, socially shared metacognitive regulation process. Unlike low-level, socially shared metacognitive regulation confined to exploring task demands. Our finding from the interaction analysis indicated that the individual metacognitive regulation teams exhibited more confusion in amending lists and allocating tasks, which continued till the last discussion. In the last parts of the project required substantial commitment to constructing a deeper understanding of content, they should have prepared for collaboration at an initial phase.

2.10.5. Metacognitive Self

Hanna, Roman, Pawel, and Rex (2019) state that Meta-cognitive self performs crucial self-regulatory tasks. It appears that researchers may now effectively evaluate each person with respect to metacognitive self. Despite the writers mentioned above and others, who came before them describing that control affects several other cognitive processes, there is currently an interest in an era in doing additional research on this area of study.

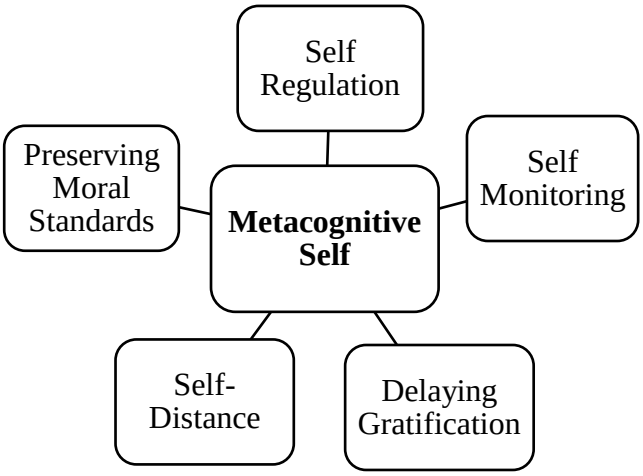

Figure No. 2.6. Metacognitive Self Theory (Hanna, Roman, Pawel, & Rex, 2019)

2.10.5.1. Metacognitive- Self

It refers to individuals can enhance their capacity for learning personal development and overall functioning (Hanna et al., 2019).

2.10.5.1.1. Self-Regulation

Adjusting ones cognitive strategies, behaviors and emotional responses in response to challenges or changing contexts (Hanna, et al., 2019).

2.10.5.1.2. Self-Monitoring

It refers to the process by which individuals actively observe and regulate their thoughts, emotions and behaviors (Hanna et al., 2019).

2.10.5.1.3. Delaying Gratification

Delaying gratification refers to the ability to resist the temptation of immediate rewards in favor of achieving larger, more valuable and meaningful outcomes in the future (Hanna et al., 2019).

2.10.5.1.4. Self-Distance

Self-distance is a vital metacognition skill that contributes to self-regulation and adaptive coping align with the broader goals of metacognitive self-theory (Hanna et al., 2019).

2.10.5.1.5. Preserving Moral Standards

This ensures individuals maintain their moral integrity, negative ethical complexities and respond adaptively to moral challenges (Hanna at al., 2019).

The metacognitive self-theory in this framework used the components; including self-regulation, self-monitoring, delaying gratification, self-distance and preserving moral standards. Every components collectively judge the personality of an individual metacognitions.

2.10.6. Temporal Regularity

Additionally, competent performance is evaluated based on proficiency, which is operationally referred to as a steady rhythm or time-based regularity rather than speediness (Lisa & Richard, 2020).

Figure No. 2.7. Temporal Regularity (Lisa & Richard, 2020)

2.10.6.1. Self-Initiate Irregular Timing

It begin to engage in an action or activity but the intervals between these actions are irregular and not predefined (Lisa & Richard, 2020).

- **Metacognitive Monitoring:** It is refers to the process by which individuals track assess and reflect on their own cognitive processes over time.
- **Reduce Error in Performance:** Individuals or system can careful review their performance, avoid repetitive mistakes and optimize decision making processes over time.

2.10.6.2. Self-Initiate Irregularity

It refers to the Phenomenon where irregular patterns or behavior emerge independently with in a given system without external influence (Lisa & Richard, 2020).

2.10.6.3. Temporal Regularity

It is refers to the predictable patterns of events or stimuli over time (Lisa & Richard, 2020).

The concept examined performance as monitored based on fluency, which is operationally defined as temporal regularity rather than speed. Since error is regularly associated with flexible timing, it tested the possibility that people use various timing as a metacognitive cue. Using a sequential counting task, which may be representative of the broader class of skilled and multi-step tasks, it found that flowing between irregular and regular timing led to greater assurance ratings when the timing associated with the task was regular. The regular, consistent timing, when compared directly to irregular timing, produced feelings of fluent task performance, leading to increased confidence that found a split between perfection and belief, support the argument that individuals relied on monitoring of fluency to support their metacognitive decisions.

2.10.7. Model of Metacognitive Process by Damien, Bert, and Wouter (2021)

Damien, Bert, and Wouter (2021) define meta-knowledge as an upward progression from object-level to meta-level. The downward progression from the meta-level to the object-level is referred to as meta-control. Therefore, starting from the bottom-up monitoring and top-down management of object-level processes is the way metacognition is understood. Metacognition has mostly been studied by educational academics using the Self-Regulated Learning theory as a framework. Setting objectives, planning, organizing, self-monitoring, and self-evaluation "at multiple times during the training" are all examples of metacognition.

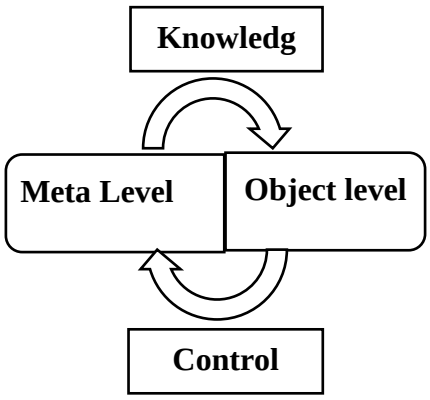

Figure No. 2.8. Model of Meta Cognitive Process (Damien, Bert, & Wouter, 2021)

2.10.7.1 Meta Level

A contrast amongst levels of conceptualization is called a Meta level. General concepts, "arguments about arguments," or "thinking about thinking" are the topics covered (Damien et al., 2021).

2.10.7.2. Meta Objective

The object level typically focuses on the current problem at hand. The method of interpreting imagination by making use of people or circumstances from the outside world (Damien et al., 2021).

2.10.7.3. Control

A command over concerning a control, for instance, a control that describes how to handle the required information want or existing status of information for another control (Damien et al., 2021).

2.10.7.4. Knowledge

Meta-knowledge is knowledge regarding information. Meta-knowledge also refers to understanding what other people know, what information

> other people require, and the way one's knowledge can be used appropriately. It includes knowledge required understanding, its source, practicality, and trustworthiness (Damien et al., 2021).

There is not a clear description of the difference between meta-knowledge and meta-control, although the term "self-oriented feedback loop" is frequently used to describe the interaction between reflective and regulatory processes. As protocols operationalize self-awareness and strategy knowledge, they also operationalize meta-control when they operationalize the choice, application, and planning of learning strategies in educational sciences.

2.10.8. Metacognitive Regularities with Three Layers

Metacognition was first described (Flavell, 1979) further develop the concept were Julie et al (2021). This proceeds concentration on the methods users choose, the factors that influence those strategies and the solution to those issues through the application of metacognitive regulation. It improves productivity in the educational sector, such as when taking classes, and tests or working as a team member with institutions. Social cognition is often referred to as socially shared metacognition. It is a relatively recent topic of research. The science of metacognition that is covered by working with teachers and learning organization.

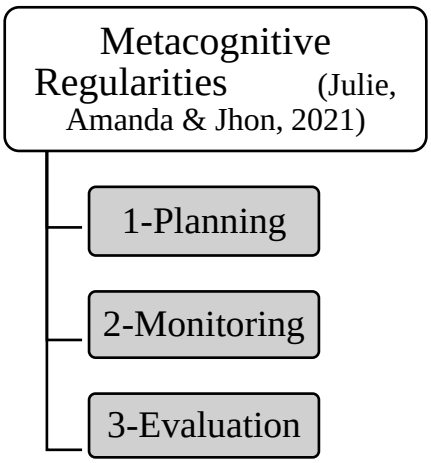

Figure No. 2.9 Metacognitive Regularities with Three Layers

This concept offers an impressive categorization based on an accurate structure. A substantial amount of cognitive regularity usage for work effectiveness is also explained by this concept. Additionally, this theory has value for lifelong applications that affect pedagogical and organizational effectiveness. The specifics of all the layers of this framework are listed below:

2.10.8.1. Planning

The planning is concerned with activating metacognitive understanding, which comprises expertise in cognitive tasks and cognitive techniques. Emmy, Sjef, and Theo (2017) stated that time management is a crucial part of planning, as creating calendars for teaching and allotting plans for various tasks. Then Indra (2023) states the process of selecting one of the multiple possibilities for the objectives that an organization wants to attain through a sequence of interconnected actions is known as planning. All are to be prepared through educational scheduling.

2.10.8.2. Monitoring

Monitoring is an entire structure that carries out numerous tasks. The monitoring's repeatedly gathers of information. The analytical nature set it from related instructional and mental operations (Gylmira, Altynay, Sholpan, Aitzhanova, & Marat, 2016).

2.10.8.3. Evaluation

The evaluation analyzes a wide range of specific abilities and behaviors, including preparation, managing the classroom, directions, and material knowledge. Eric and John (2012) stated that a scoring rubric that describes the way every skill and practice is performed is used by evaluation professionals. Teachers are evaluated in terms of how to support, collaborate, improve teaching skills and engage in leading professional development. Consequently teachers provide collegiate evaluation for the purpose of building professional capacity and practice improvement. Moreover, John and Mary (2019) stated that as a leaders, faculty and staff create and maintain an atmosphere of dedication to a common vision to set the targets and aims.

2.10.9. The 9-Layered Model of Meta-Learning – Meta-Intelligence

In this model Athanasios, Eleni, and Charalabos (2023) state that through the use of metacognition. The current model seeks to explore the idea of meta-learning and outline the meta-levels of learning. Additionally, smart technologies can serve as a favorable environment. The meta-learning is investigated for training methodologies. Innovative tools are prepared to be used, modifying the environment of learning, offering chances for revolutionary experiences in education and promising more awareness, self-directed and self-motivated learning. The term "meta-learning" describes a collection of mental meta-processes used by learners to intentionally develop and maintain their own particular learning models. It ensure the transfer to the greatest level. Meta-learning entails a group of meta-skills to be gradually and systematically modified.

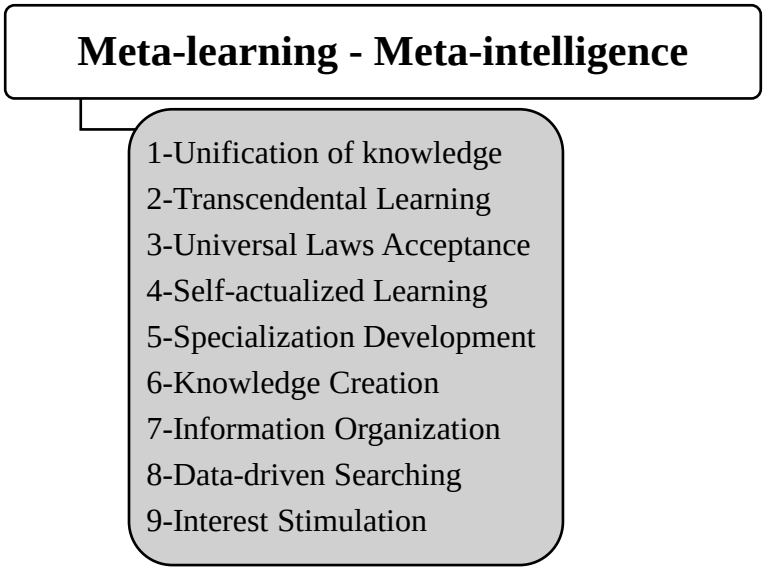

Figure No. 2.10. The 9-Layered Model of Meta-Learning – Meta-Intelligence

(Athanasios, Eleni, & Charalabos, 2023)

2.10.9.1 Ideas of Metacognition by Athanasios, Eleni, and Charalabos (2023)

The concept is that driving change in education will unavoidably result from events that are about to change modern society forever. In order to receive, decode, retain, and retrieve information, teacher engage in a variety of internal brain processes known as cognitive learning. Looking for meaning and comprehension is how constructivism views learning. Therefore, active and self-directed learning is necessary for people to learn more effectively. According to recent research, regular or unpredictable brain activity holds a great deal of promise for providing fresh perspectives on self-directed learning (Athanasios et al., 2023). After investigation, they found the meta-level of the educational hierarchy's issue being related to the conversion of data into information that is both meaningful and useful. The top meta-level, learners will use a variety of meta-strategic manipulations to organize, build, and extract meaning from information in the form of knowledge. Athanasios et al. (2023) realized that in order to make education greater independent, autonomous, and self- regulated. It is necessary to have skilled trainers and teachers who perform at a high level in a particular field of knowledge. Purifying abilities explain the meta-capacity to be selective and discover the variables that ensure success. In scientific study, for example, it is related to the ability to recognize the boundaries of knowledge. Facilitator as a mentor, helps Meta-learners distinguish between cognitive and emotional environments. Select the ones that are most

beneficial through support of their goals, success, completion and personal growth. Knowledge-restructuring approaches and instructor control over discipline networks can both considerably help in establishing areas of study. The start of the stage for fundamental sustainability author develops an eight-layer model based on the regulatory, meta- abilities and meta-skills that students deliberately utilize to regulate their cognitive processes and produce the best learning outcomes. It encompasses the capacity for learners to strategically employ their mental faculties to accomplish higher goals. The meta-ability to monitor, regulate, and adjust cognitive functions for individuals' awareness that make concern in their capabilities and approaches.

2.10.9.2. Meta Learning

The student can advance beyond their current understanding and reach the next stage of comprehension, they are said to be meta-learners (Athanasios et al., 2023).

2.10.9.2.1. Unification of Knowledge

A logical theoretical framework of science known as a theory of everything, the final theory, the ultimate theory, unified field theory, or master theory explains and connects every aspect of the universe (Athanasios et al., 2023).

2.10.9.2.2. Transcendental Learning

As soon as the students are able to progress beyond their current understanding and reach the next phase of understanding, they are considered to be a meta-learners or more specifically meta-thinkers (Athanasios et al., 2023).

2.10.9.2.3. Universal Laws Acceptance

We develop the subjective idea that we know everything there is to know. As learners we frequently presume that we already know everything. At the same time, we tend to disregard any new information that conflicts with what has already been established (Athanasios et al., 2023).

2.10.9.2.4. Self-Actualized Learning

The inherent motivation of students to deepen their comprehension and maximize their learning capacity is referred to as self-actualization (Athanasios et al., 2023).

2.10.9.2.5. Specialization Development

Outstanding efficiency in a certain field of knowledge that characterizes expertise, which increases the independence, autonomy and self-regulation of teach (Athanasios et al., 2023).

2.10.9.2.6.. Knowledge Creation

The beginning of mental processes related to knowledge generation is initiated by experience, reflection, and more thorough information processing (Athanasios et al., 2023).

2.10.9.2.7. Information Organization

This meta-level of the instructional structure presents a problem in that it requires the data to be transformed into knowledge that is both meaningful and useful (Athanasios et al., 2023).

2.10.9.2.8. Data Driven Searching

As long as they are fresh and unorganized, data is characterized as discrete and factual investigations, facts, or characters with no meaning (Athanasios et al., 2023).

2.10.9.2.9. Concern Inspiration

The innate impulses that stimulate and fuel our drive to know and learn are thought to be enthusiasm and exploration. Interest encourages goal-setting, draws attention to events, and evaluates whether or not learners are ready to begin moving up the meta-levels of learning (Athanasios et al., 2023).

It is the initial stage of metacognitive regularities to establish and achieve sustained success for oneself and for the next generation. Teachers and scholars in all educational settings need to develop intellectual-learning skills. Furthermore,

teachers might encourage students to become more independent and strategic learners by regulating their cognition.

2.11. Key Theory and Model of Teachers Work Efficiency

The success of the educational career, the work presentation, the school, and the learner all depend on the teachers work efficiency.

2.11.1. The Theory of Social Organization

Social organization theory is often associated with several prominent sociologists, including; Émile Durkheim, Max Weber, and George P. Murdock, but authors Valerie et al. (1991) states that cognitive process entails setting goals, evaluating the effort and skills needed to accomplish those priorities, and projecting the results. Extrinsic and intrinsic performance information sources have both been found by social psychology as significant predictors of professional efficacy and satisfaction. Extrinsic sources come from beyond the restricted work environment, but intrinsic sources are drawn directly from the ongoing task.

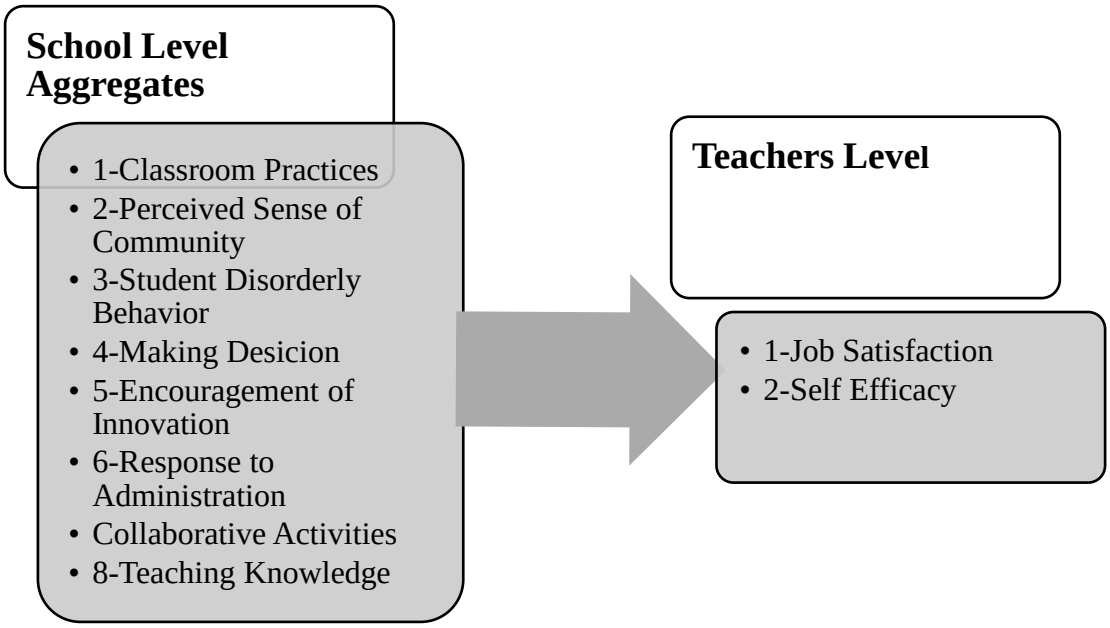

Figure No. 2.11. Social Organization Theory (Valerie, Robert, & Julia, 1991)

2.11.1.1. School level aggregates

The school-level aggregates is the collective data or performance indicators that are compiled from various classrooms or departments within a school (Valerie et al., 1991).

2.11.1.1.1. Classroom Practices

Classroom practices at the school level aggregates refer to enhanced learning within individual classrooms. These practices are often evaluated collectively across the school to improve educational outcomes and ensure consistency in quality education (Valerie et al., 1991).

2.11.1.1.2. Perceived Sense of Community

Perceived sense of community at the school level aggregates refers to the collective feelings of connection among students, teachers, and staff within the school. It reflects the overall atmosphere of trust, inclusivity, and collaboration across the school environment (Valerie et al., 1991).

2.11.1.1.3. Student Disorderly Behavior

The Student disorderly behavior at the school level aggregates is the collective instances of disruptive actions, misbehavior, or violations of school rules observed across classrooms. It identifies areas that need attention for improving student behavior (Valerie, et al., 1991).

2.11.1.1.4. Making Decision

The making decisions at the school level aggregates is the collective processes through which school leaders, staff, and stakeholders make choices and resource allocation. These decisions improve overall school performance and student outcomes (Valerie et al., 1991).

2.11.1.1.5. Encouragement of Innovation

The encouragement of innovation at the school level aggregates refers to the collective efforts and practices within the school to foster teaching methods. It reflects the school's overall support

enhance learning, teaching, and organizational practices (Valerie, et al., 1991).

2.11.1.1.6. Response to Administration

The response to administration at the school level aggregates refers to the overall level of support between the administration and the school community (Valerie et al., 1991).

2.11.1.1.7. Collaborative Activities

The collaborative activities at the school level aggregates refer to the collective efforts of students, teachers, and staff working together on projects and promote a positive school culture (Valerie et al., 1991).

2.11.1.1.8. Teaching Knowledge

The teaching knowledge at the school level aggregates refers to the overall proficiency and effectiveness of teaching practices in supporting student learning and development (Valerie et al., 1991).

2.11.1.2. Teacher level

Teacher level mentions to the individual proficiency, expertise, and performance of a teacher in the classroom and ability to engage and support student learning (Valerie et al., 1991).

2.11.1.2.1. Job Satisfaction

The job satisfaction at the teacher level denotes to the overall contentment and fulfillment teachers feel regarding their work and career opportunities (Valerie et al., 1991).

2.11.1.2.2. Self-Efficacy

The self-efficacy at the teacher level denotes to a teacher's belief in their own ability to effectively manage classrooms and command on teaching challenges (Valerie1991).

The investigation recommends that the social organization of schools has an important influence on both teachers and students through using hierarchical linear modeling techniques, the authors explore the links between school organization and the self-efficacy and job satisfaction of secondary school teachers. They also study the relationship between a teacher's sense of control over classroom practice and self-efficacy. Drawn from the Administrator and Teacher Survey from High School and beyond.

2.11.2. Organizational Commitment Theory

The commitment is the total internalized normative pressure, to act in a way that serves organizational goals and interests (Muhammad, Samina, Basharat, & Rizwan, 2010). They utilized the Organizational commitment theory, primarily attendant with John, Meyer, and Natalie (1997) they states organizational commitment as a multidimensional concept that has been understood in different ways.

Figure No. 2.12. Organizational Commitment Theory (Muhammad, Samina, Basharat, & Rizwan, 2010)

2.11.2.1. Organizational Commitment

The organization commitment is the employee's emotional attachment to, identification with, and involvement in the organization (Muhammad, et al., 2010).

2.11.2.2. Job Satisfaction

The job satisfaction for teachers is a critical factor in their well-being, performance and retention in the profession with their roles, responsibilities (Muhammad et al., 2010).

The job satisfaction in higher education institutions is influenced by factors and recognition of achievements. Organizational commitment, which reflects employees' loyalty and attachment to their institutions is closely linked to job satisfaction. Faculty and staff who are satisfied with their work environment are more likely to be committed to the institution's goals. Higher levels of organizational commitment lead to increased job performance. Job satisfaction and

organizational commitment are essential for maintaining high-quality education and fostering a productive academic environment.

2.11.3. Teacher Cognition Theory

Gage (1964) developed the Toward a Cognitive Theory of Teaching in. This work aimed to integrate cognitive psychology into teaching practices and the school of cognitive psychology influenced Borg (1998) theory and he defines the store of beliefs, knowledge, assumptions, theories, and attitudes about all aspects of their work as the concept of language teacher cognition. Further, Tina and Mark (2012) stated that the capabilities organized by metacognitive regularities have lines seen between the three are misty and they are interdependent in practice. Teacher cognition takes an integrated approach to the processes of planning, instruction, and reflection.

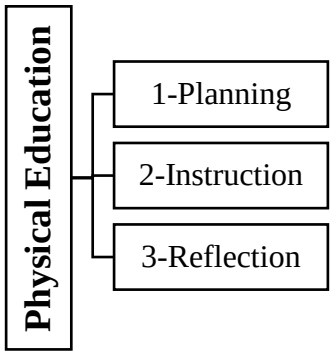

Figure No. 2.13. Teacher Cognition Theory (Tina & Mark, 2012)

2.11.3.1. Physical Education

The physical education refers to how teachers' beliefs, knowledge and experiences shape their teaching practices and develop students' physical literacy (Tina & Mark, 2012).

2.11.3.1.1. Planning

The planning refers to the mental processes by which teachers organize their knowledge and prior experiences. Planning in cognitive frameworks influence their decisions in designing effectivity and responsiveness (Tina & Mark, 2012).

2.11.3.1.2. Instruction

The role of personal and professional experiences in shaping instructional decisions and classroom behavior (Tina & Mark, 2012).

2.11.3.1.3. Reflection

The reflection refers to teachers' process of critically analyzing their beliefs, experiences, and teaching practices to improve classroom instruction and student outcomes (Tina & Mark, 2012).

The teaching is a multifaceted and complex process. The teacher's cognitive choices before and after instruction influence their teaching behaviors and actions. This article addresses teacher cognition in the context of physical education in teachers’ preparation, instruction, and reflection, as well as in the broader area of

education. Planning, instruction, and reflection have all been the subject of controlled studies up to the point.

2.11.4. Model of Work Efficiency by Siti, Sharifah, and Nik (2012)

Siti et al. (2012) state that effectiveness of the teacher is derived from projecting their professional attributes onto the performances of their teachers.

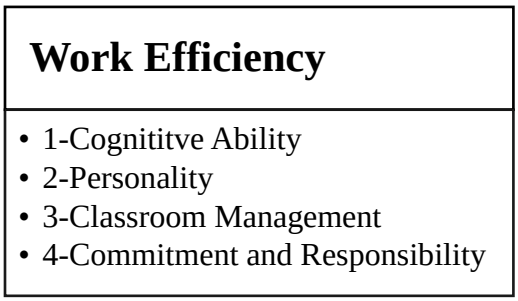

Figure No. 2.14. Model of Work Efficiency (Siti et al., 2012)

2.11.4.1. Cognitive Ability

The way control processes regulate the various actions the brain engages in is one contentious issue in cognitive attitude. Those intellectual regulating processes setup the cognitive system to process information in a given approach, then reorganize the ability to reason when such events inform the observational participant to handle perceptions in a different way (Alejandro, 2015). Intellectual development, the ability to rationally assess two or more concepts at once and to identify when it may be beneficial to modify one's thinking and actions in response to new knowledge, is a critical attribute in self-monitoring (Donna & Marcus, 2016).

2.11.4.2. Personality

The university teachers' continuance performance includes not only taking part in educational events but also actively participating in research activities. Sometimes they lead to an unbalance between their individual and organizational commitments (Arifa, Mohammad, & Nazrul, 2019). The pedagogical communication, it is complex, multiphase, and multiple channels of information between two entities, individuals or groups who all at the same. They progressively conceptualized the roles of transmitters or receiver that is desirable contents in the context of the informative procedure.

2.11.4.3. Classroom Management

Three factors, teaching quality, interpersonal performance, and expertise can be used to describe classroom practices (Xu, Yu, Pang, Dou, & Li, 2022). Only once this initial, more fundamental distinction between correct and illusory knowledge has been made. A person's subjective expectation of accomplishing a goal or achieving a desired result through personal efforts is known as efficacy in psychology.

2.11.4.4. Commitment and Responsibilities

Teachers who are devoted to their educational units are more likely to do better than disinterested teachers because they are more likely to work harder on behalf of the organization and help it succeed in the process staying with the university longer (Aamir & Sohil, 2006). A good education

include it as a vital component. Teachers there are committed have the love, desire, and energy they require to work harder. It is possible to confirm their commitment to the faculty by observing their propensity to meet academic goals. The roles of managers can be characterized as centers of interaction, indicating that they are responsible for facilitating communication inside an institution. It holds a few key information exchange characteristics in order to promote collaboration at the greatest level and make it more successful (Ana & Mihaela, 2018).

The appearances of cognitive ability, personality, classroom management, commitment and responsibility in participation, and continuous improvement subsequently result to good knowledge and best practices. The excellent methods of instruction enhances teacher work efficiency and devotion.

2.11.5. Organizing the Activities of a Teacher

Sergey et al. (2019) state that establishing the appropriate professional capabilities, universities and colleges will restructure the teaching process and use efficient techniques for identifying the action patterns teachers adopt during the exchange of information and abilities.

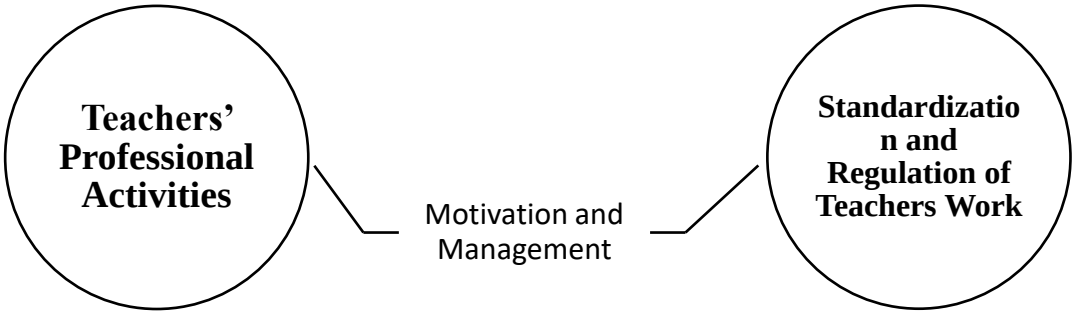

Figure No. 2.15. Organizing the Activities of a Teacher (Sergey et al., 2019)

2.11.5.1. Teachers Professional Activities

The teachers' professional activities in organizing their work involve planning and classroom management techniques. These activities also include ongoing professional development and reflection on teaching practices to ensure continuous improvement (Sergey et al., 2019).

2.11.5.2. Motivation and Management

Motivation drives teachers' enthusiasm and commitment, while management ensures smooth implementation of teaching strategies and maintains a positive learning environment (Sergey et al., 2019).

2.11.5.3. Standardization and Regulation of Teachers Work

The standardization and regulation of teachers' work in organizing activities involve the establishment of uniform guidelines and performance expectations to ensure consistency and quality across educational settings. This process align with educational standards (Sergey et al., 2019).

The researchers investigated local regulations put in place by educational institutions as well as regulations pertaining to the activities of university teachers in order to study their professional activity and identify the extent of their work. Teachers' roles in the higher education system include stimulating students' cognitive processes and encouraging them to expand their knowledge continuously. In order to carry out this duty, instructors must also be driven, which will enable them to implement their ideas and implant them in their students. Above all, this motivation should be demonstrated by the development of professional competencies.

2.11.6. Theory of Teacher Commitment

A key factor attracting teachers' attention to learners' needs is teacher commitment. At the same time, these teachers are skilled in encouraging students to engage with the learning process (Di, 2021).

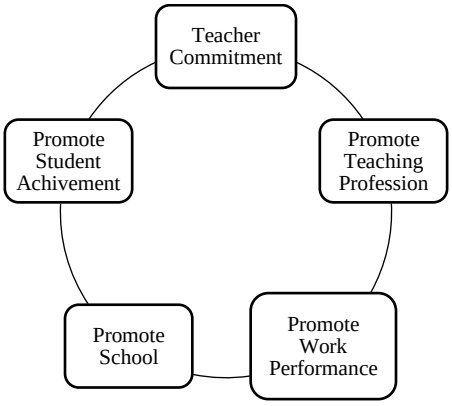

Figure No. 2.16. Teacher Commitment (Di, 2021)

2.11.6.1. Teacher Commitment

Regarding the direction of their work, teachers' expressive security is known as teacher commitment. It has been thought of as maybe the most fundamental element of effective teaching (Di, 2021).

2.11.6.2. Promote Teaching Profession

The professional development, equitable pay, and a supportive work environment, we can acknowledge and encourage educators' devotion. This cultivates a positive, focused teaching staff that is equipped to have a long-lasting effect on students' lives (Di, 2021).

2.11.6.3. Promote work Performance

It is defined as delivering high-quality instruction, positively influencing student outcomes and school success (Di, 2021).

2.11.6.4. Promote School

The promoting a school involves creating a culture where teachers feel valued, supported and empowered in their roles. This commitment leads to a positive, engaging learning environment that enhances the school's reputation and student achievement (Di, 2021).

2.11.6.5. Promote Student Achievement

The promoting student achievement involves fostering and dedicated teaching environment where educators are fully invested in their students' success. Committed teachers inspire, guide, and support students to reach their full academic potential (Di, 2021).

2.12. An Overview of the Concept of Teachers' Work Efficiency's Past Evolution

Studies concerning teachers' cognitive processes since the 1970s, have emerged as a potential area of study. Richard (1973) directed an important research project on teachers' thinking, asserted that one of the fundamental abilities in any instructional act is the outcome of a decision, whether conscious or not. The Teachers' decision-making is divided into two categories based on the arrangement and participatory phases of instruction.

The teachers establish long-term judgments throughout the phase of analyzing and planning. The teacher decides in the curriculum planning as per the needs of each students as well as according to the classroom environment. Decision-making in teaching and organizational roles professionally and individually, are deliberate judgments made in the classroom based knowledge (Rasmussen, 1985). Then Killion and Todnem (1991) they expanded Schön's stages in a manner similar to these phases. Afterward, James and Peter (1993) investigated the pre-active interactive and post-active phases that teachers go through in relation to their intellectual process with its temporally related link to their classroom action. Moreover, Magdalene and Deborah (1999) added a comment mentioning to teachers as dilemma managers, who will be making decisions throughout every step of the teaching-learning process. The importance and difficulty of teachers' decisions is highly recognized since they cannot be distinguished from elements of the instructional environment.

Later on after starting of 21st century, John, Sharon, David, Karen, and Kelly (2005) argue that teachers compress their reaction to the multiple components of managing groups and

education into just one move. Teachers are unable to control the multifaceted dynamic of classroom happenings. This argument is based on previous inquiry, Brown and McIntyre (1993) stated that consider problems carefully; as a result, selections in the participatory phase is fast, usual and typically unconscious. Additionally conceptualized by Koster and Dengerink (2008) the mixture of expertise, abilities, viewpoints, standards, and unique features, enabling the teacher to put into practice were. Afterward, Judit (2016) extends concept and define teacher's competence, efficiency and efficacy in certain circumstances, using them logically in European education commission.

2.13. Teacher Work Efficiency Social Theory v/s Social Cognitive Theory

A pair of associated educational beliefs, Rotter (1960) contributed to the growth of teacher efficacy. Moreover, Jeffrey, Pamela, and Donetta (2009) state that optimism refers to one's perception of their ability to execute a specific activity in a specific environment. In comparison to less effective teachers, he believes that effective teachers put in more efforts, utilize more problem-solving techniques, gain higher abilities, become more competent teachers, and show greater courage in the face of setbacks.

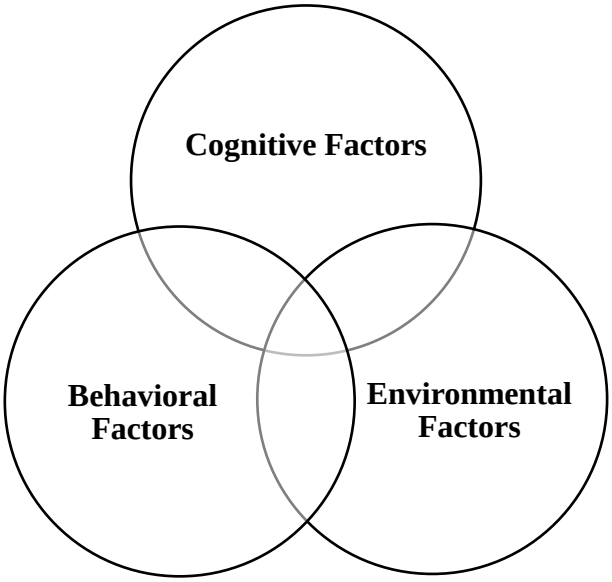

Figure No. 2.17. Social Cognitive Theory (Bandura, 1989)

Bandura (1989) model of social cognition help us understand how metacognitive regularities work with both fundamental ideas because planning, monitoring, and evaluation all require judgments and also help individuals appear more courageous when faced with challenges. Lalu and Eny (2021) define teacher effectiveness through Vigor, dedication, and absorption are qualities that define commitment to work. It stands for an upbeat and mentally satisfying state of mind. The provision of physical, emotional, informational, and instrumental support that a person experiences from his or her social circle is known as social encouragement, and social support serves a teacher's effectiveness as well.

2.14. The Social Cognitive Effect on Teachers Work Efficiency

There are two cognitive presumptions in the human cognitive architecture. First, it's critical to emphasize that this concept has two dimensions: educational effectiveness and

individual effectiveness. The initial considerations are related to the teacher's capacity and competency to produce favorable work outcomes. The confidence in one's capacity to instruct successfully is the second dimension (Ana, Maely, Simone, Karla, & Fernando, 2016). Long- and short-term memory can be used for social context, reflection, and dealing with stored knowledge when engaging in meta-regularities in instructional environments. The capacity and duration of working memory are constrained. Small amounts of information are temporarily kept in systems with this type of memory. Another long-term memory is a type of memory that holds enormous amounts of information for a brief period of time known as cognitive loops, as opposed to working memory (Houichi & Sarnou, 2020). It is believed that people can control their individual actions through motivation, influencing situations, acts, and obstacles from the context that reflects their efficacy beliefs. The theory of social cognition established one of the few theories associated with human control that establishes a gap between ability and possibility.

2.15. Work Efficiency Reflects in Quality of Performance

The term efficiency is a dynamic and complex socioeconomic term that is covered by a variety of intellectual areas that serve as a foundation for conducting a multidisciplinary study of this phenomenon. The broader objective of these is the creation of practical tools for university performance management. The teacher's capacity to work in the most recent university atmosphere is an essential requirement for advancement (Sergey, Olga, & Victor, 2015). Further more numerous teaching-oriented approaches to teaching might not be sufficient. It makes sure that our learning and instruction processes increase our efficacy

as teachers and are similarly beneficial when establishing curriculum and evaluations (Afzal & Md, 2021).

2.16. Source of Teachers Work Efficiency

Metacognition refers to a teacher's capacity to take the necessary actions to develop efficient approaches for solving the challenges they experience, determine results and implications and adjust the way they teach according to the need based on their prior expertise. Khoirotun et al. (2025) states that connection with the effectiveness is the capacity of a program, organization, or activity to accomplish its objectives. Teachers select the appropriate intellectual resource for this reason. Metacognition promotes teachers in effectively achieving a personal goal in order to increase the productivity of university teachers. Here, the sources to regulate metacognition in order to work more effectively.

2.16.1. Metacognitive Intervention

The metacognitive intervention increases the efficacy and long-term sustainability of students' acquisition of important concepts, which frequently serve as the foundational understanding for mastering more complex material. The system we use, which we call the Retrieval-Monitoring-Feedback (RMF) strategy, is based on the following two ideas: a) teacher can increase learning's resilience by practicing inquiries that are spread apart and (b) effectiveness if the timing of learning activities is well managed, instruction is based on precise performance monitoring, which includes useful feedback (Katherine & John, 2013).

2.16.2. Control and Evaluation

Katherine and John (2013) state, identifying errors, paying attention, and retrieving memories are all part of the coordination process known as metacognitive regulation. It requires interaction at the object and meta-levels of analysis. While control controls attention and employs cognitive methods, metacognitive monitoring checks teaching evaluations and feelings.

2.16.3. Knowledge-Based Beliefs

The epistemic views are conceptual frameworks that allow learners to interpret information through their own lens with more complex views permitting more adaptable comprehension. Teachers' personal conceptions of knowledge and understanding, or epistemic beliefs, have a big impact on the way they go about their metacognitive work. Teachers build more complex epistemologies as they examine the beginnings, ecosystems, boundaries, and approaches of human knowledge (Stephanie, Elmar, & Rainer, 2013).

2.16.4. Implementation of a Regulatory Process for Efficient Work

Teachers will be motivated to effectively apply if there is a thorough investigation of the issue and a more intentional formulation of their curriculum, instruction, or career goals. The adoption of MR classroom methods is seen as an example of educational inventiveness, but it was first stated as a specific goal (Jeltsen et al., 2014).

2.16.5. Motivations behind the Regulatory Process

According to Rasha (2020) states that university teachers are focused by their pupils' academic success and their own personal performance goals. Teacher-led metacognition regulation exercises including monitoring, planning, and evaluation are used to improve memory and teaching for performance. Advanced thinking that exerts direct influence over the thought processes used in the work procedure is also referred to as metacognition. Intrinsic motivation refers to behavior that is done for institutional fulfilment rather than for an independent outcome, which has a beneficial impact on academic performance. To attain the finest pedagogical results, a teacher's performance is critically dependent on their own intrinsic motivation.

Section 3.

2.17. Analysis of Researches Done in the Related Fields

Numerous studies have looked into how metacognitive regularities affect various aspects of academic work efficiencies. Developing a concept for Memory Training by John (1971) stated in pioneered studies on memory that was lately attempted from the perspectives of education as well as other areas of study.

Next, Flavell and Wellman (1975) stated the enhancement of cognitive procedures presented a cognitive procedure for monitoring and regulation. This model focuses what occurs during the process of knowing and gives people control over their own cognitive procedures, allowing them to manage and enhance these processes. This approach includes

an understanding of metacognitive incidents, knowledge of objectives or tasks, techniques, and knowledge.

The categories of metacognitive knowledge: first is declarative reasoning awareness of the subject, the task, and the approach; and second is operational knowledge of the regulation of cognitive operations as manifested in their planning, management, and evaluation. Later, the declarative Reasoning and operational knowledge explained by Sonia and Sandra (2008) the metacognitive techniques are actions intended to know our activities and cognitive procedures, knowing to use them as well, corresponding to the goal demanding for organizational supervision.

After three decades researchers return actively to metacognition consideration. According to Farhat and Suhail (2013) the capacity to actively recognize, manage, and purposefully influence the way one thinks is known as metacognition. Again, Baker, Lamoureux, Ken, and Donald (2013) state that Metacognition is the consciousness of the work procedures themselves, as well as the organization, supervision, regulation, and evaluation of those steps that relate to problems and tasks.

Successively organizational supervisions enhance the concept of recognizing goals. Nosratinia and Adibifar (2014) state, that the goals and quality criteria can be used to evaluate the learning quality. The ability of teachers to organize, direct, regulate, monitor, and evaluate their learning through the use of metacognitive methods is a broad talent that can help students learn more effectively.

Side by side the investigation was done into the mechanisms behind the growth of the easily learnt, easily remembered (ELER), rationale in all three categories of early aged

children (ages 4-5, 6-7, and 8–9). These children's assessment of their development depended on the ELER logic, a trial-to-acquisition approach was performed. In order to gradually impact the validity of the ELER connection that underpins these metacognitive regularities, a new investigational pattern made up of six stages a preliminary test, four training steps, and a posttest was used. The ELER judgment arises early (4-5 years), but its utilization is decreased following implicit training, according to the results (Marie, Sylvie, & Thierry, 2015).

Next year Aguirre (2016) states that metacognition is the capacity for thought that enables understanding of known, formulating plans for doing the act of being aware of ideas during teaching, and reflecting on and evaluating the phases and operations of the teaching process. This concept of research focuses declarative reasoning and operational knowledge.

The above investigation inkling towards academic problem generalization by Kinzie (2019) states that teachers' ability to apply simplifications and solve issues in context, make selections, and work independently, diversely, actively, cooperatively, reflectively, and critically all goals of the teaching process.

Soon after the reviews reveal that effective teaching is approached from the standpoint of regularity for the teaching practices. In this instance, the teaching recruitment procedure for teachers has been chosen and three obtaining sub-processes understanding. Retention, and transformation have been improved by utilizing metacognitive approaches (Roger, Adán, & Danilza, 2020).

Additionally, Mikhail and Leona (2020) a different study found that explicit directions and cognitive understanding of the topic of statistical education can incidentally modify the learning of statistics, but no study has ever looked into the metacognition of statistical concepts. They utilized a division challenge that involved separating a constant flow of syllables into distinct recurrent elements as well as an artificial language learning paradigm. During this activity, statistical learning may result in knowledge of both statistical regularities that may be represented in understanding input and finite components. The conceptualizing things recovered from memory as full constituents, innovative constituents are thought to represent knowledge of statistical form.

Afterward, Daniela et al. (2021) state that in order to go from beginner to proficient, students studying software engineering acquire extensive social and cognitive abilities as well as technical knowledge. Due to the increased autonomy and self- and co-regulation requirements of remote learning, the challenges are more significant. Address these issues, the Sim-Programming methodology has been adapted into the (digital) DL environment as e-Sim-Programming. Metacognitive challenges (MC) were added in the second iteration of the e-Sim-Programming implementation as a modification to encourage students' reflective thinking in the way they learn.

Eventually, quite recently, Anatoly, Elena, and Anna (2023) conducted a research study in which they surveyed the acute theoretical and practical difficulty in determining and clarifying the main regularities of the development of metacognitive regulation of the job duties of (informational technology) IT specialists during the phase of university training, in addition to primary professionalization.

Furthermore, Nikolaos, Eleni, and Maria (2023) states that metacognitive regularities are the focus of increased attention given to quality management approaches by the education sector over the past few decades, with a strong emphasis on international standards and other quality certifications. Additionally, Maziahtusima, Idayat, and Sakinah (2025) states that metacognitive strategies can foster a lifetime capacity for learning. In addition, it direct scholastic gains, equipping pupils to navigate the rapidly evolving educational and professional world.

Teachers of all ages are vital for universities, according to a rising number of academic articles on subjects falling within the general quality category, which shows that the administration of quality studies has matured to certain degrees. As a result, instead of focusing purely on procedures and resources, there is a new focus on the fundamental principles required to establish a culture of quality and organizational excellence. Total quality administration is a way of managing that enhances academic and organizational achievements. The essential improvements in students, teaching, and universities are actively engaged in a strong evolution of its organizational atmosphere and pedagogical circumstances.

2.18. Critical Analysis of the Literature Review of the Study on Metacognitive Regularities and Teacher Work Efficiency

The literature provided a comprehensive examination of metacognitive regularities and teacher work efficiency. Valerie et al. (1991) states the cognitive processes involve goal setting, evaluating necessary effort and skills, and projecting outcomes. Both extrinsic and intrinsic performance sources impact professional efficacy and satisfaction. The study

shows that school organization influences teacher self-efficacy and job satisfaction, with a teacher's control over classroom practices playing a key role. After a decade Muhammad et al. (2010) states commitment reflects internalized normative pressure to align actions with organizational goals and interests. Cognitive ability, personality, management skills, commitment, and continuous improvement contribute to effective knowledge and best practices and effective teaching methods enhance teachers' efficiency and dedication to their work. So, Therefore, the Comprehensive investigation of metacognitive theories which define social metacognition and effectively highlights the benefits of metacognition in fostering self-regulation and problem-solving, as well as the collaborative advantages of social metacognition. However, Ming and Sze (2009) states that it assumes that all group members contribute equally, overlooking potential disparities in participation and cognitive ability.

While the theoretical discussions effectively illustrate metacognitive principles, their practical implications in diverse educational contexts require further empirical validation. The distinction between metacognition, metacognitive regulation, and knowledge appears consistent. Furthermore, Markeya (2016) focus on metacognition teaching through strategic instruction. The multiple theories and models, such as those by Rachel (2014); Dongho and Cheolil (2017), provide depth to the study. Then the literature emphasizes the significance of teacher performance in academic quality, linking it to metacognitive regularities, regulatory processes, and work efficiency.

Additionally, Sergey et al. (2019) highlight universities and colleges will restructure their teaching processes to enhance professional capabilities. This involves adopting efficient

techniques to analyze the teaching patterns educators use when sharing knowledge and skills and on other side. Then, Thenmozhi (2019) states that central to this discourse is the notion of metacognition, encompassing knowledge, regulation, and practical teaching applications. This gives solution for teaching processes to enhance professional capabilities.

Lisa and Richard (2020) study explored fluency, defined as temporal regularity rather than speed, as a cue for metacognitive monitoring. This suggests individuals rely on fluency monitoring to guide their metacognitive judgments, linking timing regularity to task assurance. This theory supports the monitoring sub-variable in this study. Then, Daniel and Christian (2020) highlight the value of strategies in enhancing learning and outlines steps and guidelines for integrating metacognition coaching into teaching practices and their relevance to teaching methodologies has Clear connection between work efficiency and metacognitive tools like planning, monitoring, and evaluation.

Moreover, Di (2021) gave insights into teacher commitment and its role in enhancing student outcomes. The literature emphasizes the importance of teacher metacognition in planning, monitoring, and evaluation (Damien et al., 2021), it does not sufficiently address real-world challenges like resource constraints or diverse student needs. Suggestions like using metacognitive regularities are valuable but underexplored in terms of implementation within varying educational contexts. The effectiveness of these metacognitive strategies in improving teacher performance or student outcomes. Factors like technological integration into metacognitive teaching are scarcely addressed, which is a limitation in contemporary educational contexts.

The literature concludes that integrating metacognitive practices can enhance educational outcomes by fostering teacher self-regulation and adaptive instructional methods. However, further studies should address practical implementation barriers and cross-disciplinary applications to solidify these findings. The literature provides a foundational understanding of the role of metacognitive regularities on teacher work efficiency through this theory provides a well-structured categorization framework that enhances understanding and application.

CHAPTER 3

METHODS AND PROCEDURES

This chapter provides an orderly perspective to fully comprehend the concept as it addresses the study's methodology. Below are the methodology's specifics.

3.1. Research Paradigm

A mix methods study uses quantitative data and qualitative data to investigate underlying reasons. According to Vibha and Christine (2019) pragmatism connects reality (its effect) with epistemology (metacognitive regularity). Pragmatism ties reality to epistemology by emphasizing that the truth of a belief lies in its practical consequences. The concept works in real-world situations, such as effective outcomes. It is shaped by outcomes in reality. In this study, it offers an operational framework for interpreting the world around us. It places a strong emphasis on the practical effects of beliefs and deeds. Pragmatism as a philosophical foundation prioritizes the research question and the practical consequences of the inquiry over strict belief to a single methodology or epistemological attitude. In order to fully investigate the relationship between quantifiable cognitive techniques and useful work results, pragmatism and positivism are incorporated into the analysis of university teachers' as metacognitive regularity and work efficiency. By accepting a pragmatic paradigm, mix methods researchers prioritize what works in practice, enabling them to tackle problems effectively. Pragmatism commits epistemological flexibility to the

philosophy of knowledge so, it acknowledges that both objective (quantitative) and subjective (qualitative) perspectives can provide valuable insights. Pragmatism supports combining these approaches to provide a comprehensive understanding of the issue and recommendations. Therefore, Edmonds and Thomas (2017) states that the pragmatic viewpoint diverts us to analyze concepts according to their real-world applications and gives a more adjustable and flexible approach to understanding and retaining information.

3.2. Research Approach

A research approach is a strategy for gathering, analyzing, and interpreting study data. This mix methods research combines quantitative and qualitative approaches to explore research objectives and research questions. The triangulation approach the researcher alternately gathers quantitative and qualitative data before comparing the two databases. This approach involves blending both data typically found in an interpretation part (Creswell, 2009). This can reduce bias and increase reliability, giving meaningful insights and mix methods can address both "how much/how many". According to Louis, Lawrence, and Keith (2018), the mix methods approach is described by a mixture of diverse perspectives. This dual focus bridges the gap between specific, in-depth insights and broader applicability. The Qualitative methods capture the complexity and variability of particular contexts. By integrating quantitative and qualitative data, mix methods research can present both specific, detailed perspectives from participants and overarching themes or trends that are common across a population. The integration of data in mix-methods research gives findings from both types of data to generate insights that may not emerge when each type is examined independently. According to Edmonds and Thomas (2017), this integration

focuses on the conclusions or information achieved after collecting and analyzing both numerical and non-numerical data. By integrating these data types, researchers can verify findings and gain a better understanding of the research topic, such as; quantitative data might reveal statistical trends or relationships, while qualitative data can provide contextual depth.

3.3. Research Design

The study's design is a structure of techniques and steps used to gather to analyze data on variables listed in a current study issue. The convergent parallel design is a mix methods research design that integrates quantitative and qualitative data to provide a comprehensive understanding. In this design, researchers collect and analyze both types of data independently. The results are then merged to compare and offer a confirmed and more perfect interpretation. The explanatory study addressed the objectives and null hypotheses by explaining in interpretation. This design is particularly effective when researchers aim to validate or cross-check findings, as the two data types complement each other. Louis et al. (2018) validity is essential for research to be effective, and to guarantee the accuracy of the facts on the instrument. This design compare or combine the results to draw a more complete interpretation of the findings. It is particularly effective when researchers target to validate or cross-check findings, as the two data types complement each other. For example, quantitative data may provide statistical results, while qualitative data can offer deeper insights. Moreover, open-ended questions support the deep results of the study, due to which they are flexible and allow respondents to provide more detailed answers. Lastly, the mix data was integrated into the analysis. This design through careful planning ensures

both types of data align in terms of timing, research questions, and focus, while also allowing for equal emphasis on each design during analysis and interpretation.

3.4. Population of the Study

The targeted population of this study's was comprised of university teachers from Islamabad, Pakistan. There were 07 private and 16 public sector universities in Islamabad. The 23 HEC-recognized universities of public and private sectors and the targeted population was 7743 public sector university teachers and 2721 private sector university teachers in Islamabad. The names of public sector and private sector universities mentioned in Appendix H.

Table No. 3.1.

Population of Islamabad University Teachers

Sr. No.	Strata	No. of Universities	No. of Teachers
1.	Public Universities	16	7743
2.	Private Universities	07	2721
	Total Universities	23	10464

Note. The data was received from the HEC Higher Education Statistics department of Islamabad 2021-2022 (Appendix H).

3.4.1. Criteria for Selecting the Population

The study used the following criteria while selecting the university teachers for the study;

1. The public and private sector HEC-recognized universities of Islamabad.
2. The university teachers were selected as study participants for qualitative and quantitative.
3. The study does not categorize the gender, departmental and online restriction, so every university teacher was counted as a respondent.
4. The university teachers of all faculties were included as per the sample size.
5. The two major strata such as private and public sector universities were split into two halves. The number of private-sector teachers was lower than that of teachers in the public-sector. To specify the suitable quantitative sample for each stratum, 5% of teachers from each stratum were selected as a quantitative sample of the study.

3.5. Sampling Techniques

A sampling technique is used to select a subset of individuals from a larger population inference about the entire population (Gay, mill, & Airasian, 2012). The study objectives were focused on university teachers' subgroups, such as; Public sector and private sector universities of Islamabad.

3.5.1. Quantitative Sampling Technique

In this study, to quantify variables and generalized findings across the populations. The Proportionate stratified sampling technique was applied. The Proportionate stratified sampling is a statistical sampling method which was divided into distinct subgroups or strata and based on shared characteristics. The sample is then drawn such as; the size of each stratum in the sample is proportional to its size in

the overall population. This ensures that each subgroup is effectively represented in the proportional sample, as it exists in the population, e.g. this technique enhances the representativeness of the sample, leading to more accurate and reliable inferences about the population (Gay et al., 2012). In current study the population was 10464 university teachers in the HEC-recognized universities of Islamabad.

Table No. 3.2.

Distribution of Sampling

Public and Private sector University Teachers	Total	Public Sector	Private Sector
Population	10464	7743	2721
Sample size (5%) in number	524	388	136
Division of sample size (5%) in percentage	5%	3.7%	1.3%

Table No. 3.2. explain the distribution of sample size which was 5% of the 10464 or 524 university teachers. So, taking 5 % from each statra, the 1.3% sample taken from the private sector, which was 5% of the private sector universities population and the 3.7% sample was from the public sector, which was the 5% of the public sector universities population. The ratio is different for private and public university teachers because public university teachers are more in numbers.

3.5.2. Qualitative Sampling Technique

The qualitative data were collected in parallel to the quantitative data. Qualitative responses were supported by the quantitative survey. The researcher utilized the purposive sampling technique to obtain a qualitative sample. Bruce (2001) states after conducting fieldwork on a certain group, samples are chosen. Then, Edmonds and Thomas (2017) states, a qualitative data-gathering phase-specific sample generation was ensured for the respondents'. Afterwards, Louis et al. (2018) states that the purposive sampling techniques provides depth and has been chosen for a specific purpose to access knowledgeable people for improved study. It was used to select to obtain a qualitative sample. Creswell (2018) states that the purposeful sampling was further linked to Homogeneous Sampling, which allows the selection of respondents who acquire identical characteristics and traits. Twenty one, Semi-structured interviews were selected to explain the criteria, the scholar sampled 15 university teachers from public universities and 6 university teachers from private sector universities.

3.5.3. Sample Size

3.5.3.1. Quantitative Sample size

The researcher selected 05% of the population to represent the full population, reducing resources and time. The population was divided into private and public university teachers using proportionate stratified sampling. The given table also shows the rate of sample return from university teachers.

Table No. 3.3.

Sample of the Quantitative Study

Sr. No.	Universities Sector	No. of Universities	Total No. University Teachers	Total *n* (05%)	No. of Return	Rate of return in Percentage
1.	Public Sector Universities	16	7743	388	338	87%
2.	Private Sector Universities	7	2721	136	115	100%
3.	Total no of Universities	23	10,464	524	453	86%

3.5.3.2. Qualitative Sample size

The purposive sampling chooses people who give in-depth information about a subject using a qualitative method (Complete Dissertation, n.d.). A structured interview was conducted with 04% of teachers from both sectors. The 04% qualitative sample was taken from the quantitative 5% of the sample. The 15 university teachers from the public sector and 6 teachers

from private sector universities were selected from 23 universities in Islamabad.

Table No. 3.4.

Sample of the Qualitative Study

Sr. No.	Sector Universities	No. of Universities	Total No. of University Teachers	Total *n* (05%) of quantitative	Total n (04%) of 524
1.	Public Sector Universities	16	7743	388	15
2.	Private Sector Universities	7	2721	136	6
3.	Total no of Universities	23	10,464	524	21

3.6. Tool Construction

The investigation instruments used to gather quantitative data. The hypotheses provide the quantitative results through the close-ended questionnaire (Burke & Larry, 2014). The close-ended questionnaire was developed as two-scale questionnaires. The Semi-structured interview sheet was used for the semi-structured interviews. The instrument starts with the

demographic information to gather details of the university teachers. The conceptual framework chosen for the study represents teachers' work efficiency and metacognitive regularities (Appendix A). The first scale of the questionnaire was developed through metacognitive regularities theory given by (Julie et al., 2021). The second scale of the questionnaire was created on the work efficiency theory presented by Siti et al. (2012) teachers' work efficiency scale has four subcategories and the metacognitive regularities scale has three subcategories. In general, the instrument was divided into three sections: demographics, scale 1 (MRS) and scale 2 (WES). A semi-structured interview sheet was used to find more about the practices of faculty members at universities. An explanation of the research tools, along with an outline of the demographics provided below:

3.6.1. Demographics

The first segment of the tool was asked about the respondents' demographics. It relied on parameters like type of university, experience, job status, and designation. This information provides a fundamental overview of the respondents' backgrounds.

3.6.2. Metacognitive Regularities Scale

In the beginning, 90 closed-ended items for both scales of the questionnaire were created, particularly for the first scale, which measured metacognitive regularity and had 43 closed-ended questions for the three subdomains of planning, monitoring, and evaluation.

Table No. 3.5.

List of Items (initial Version) Teachers' Metacognitive Regularities Scales (MRS)

Scale	Major Selections	No of Items	Item Coding
Teachers' Metacognitive Regularities	Planning	15	PL1 – PL15
	Monitoring	14	M1 – M14
	Evaluation	14	E1 – E14

According to Table No. 3.5. there were 15 items in the Planning segment, ranging from PL1 to PL15 code No., in the Monitoring segment 14 items ranging from M1 to M14 code No. as well as 14 items in the Evaluation segment with E1 to E14 code No.

3.6.3. Work Efficiency Scale

Similar to the first scale 47 closed-ended items were created previously for the second scale. Its' four subdivisions were cognitive abilities, personality, classroom management and commitment, and responsibility.

Table No. 3.6.

List of Items (Initial Version) Teachers' Work Efficiency Scales (WES)

Scale	Major Selections	No of Items	Item Coding
Teachers' Work Efficiency	Cognitive Ability	09	CA1 – CA9
	Personality	16	P1 – P16
	Classroom Management	09	CM1 – CM9
	Commitment and Responsibility	13	CR1 – CR13

Table No. 3.6. shows that there were 09 items in the cognitive ability segment ranging from CA1 to CA9 code No., in the personality segment 16 items ranging from P1 to P16 code No., in the classroom management segment 9 items ranging from CM1 to CM9 code No., as well as 13 items in the Evaluation segment with CR1 to CR13 code numbers.

3.6.4. Five Point Likert Scale

A system of estimates known as the Likert scale is used to quantify attitudes, behaviors, and opinions (Katherine & Kimberly, 2017). The Likert scale is excellent for expressing respondents' agreement. This study utilized five-point scales in quantitative questionnaire:

Strongly Disagree (SD)

Disagree (D)

Neutral (N)

Agree (A)

Strongly Agree (SA)

3.6.5. Semi-Structured Interview Sheet

A Semi-structured interview sheet was used for deep study. This qualitative study was conducted through teachers' Semi-structured interviews, the interview sheet included 27 open-ended questions.

3.6.6. Validity of the Instrument

The degree to determined questionnaire in an investigation is known as validity (Roberta & Alison, 2015). The drafted metacognitive regularities Scale and the Work Efficiency Scale in this study assessed metacognitive regularities and work efficiency in the same questionnaire. The four experts validated the tool before the data were collected. The experts had advised improvement as per their knowledge. The goal was to make the tool more effective in gathering reliable data. The list of experts is given in Appendix G. The Conceptional framework was used for the scales of the questionnaire. The two Scales were reviewed by the specialists in light of the study's objectives, title, and conceptual frameworks. The total 90 questions were draft for the two scales. The questionnaire was based on closed-ended questions. The questionnaires were revised, restructured, and made ready after the experts' comments and recommendations. The improvement was achieved by

obeying insightful comments and recommendations of the experts in the field of education. The list of the correction are given below:

Table No. 3.7.

Instrument Validity Details of Metacognitive Regularities Scale (MRS)

Item Code.	Item No.	Old Items	Revised Items
PL2	2.	I plan my pedagogical task the week before	I plan my pedagogical task a few days before for class.
PL4	3.	I organize my career developmental path by planning.	I plan activities for my career development.
PL5	4.	The result of my lesson preparation are reflected in class interaction.	I feel lesson planning helps me in a better way.
PL10	5.	I feel I can compensate for my weak point with proper plans.	I can compensate for my weak point with proper plans.
PL13	6.	I plan subject objectives to improve my course efficiency.	I plan course objectives to improve my course efficiency.

M3	7.	I observe, the best way to fix topics in student minds is to do a discussion.	I observe the best way to teach topics is to do a discussion.
M4	8.	I have noticed that monitored classes give the best grades in universities.	I noticed that progress-tracked classes give the best grades in universities.
M10	9.	I believe that monitoring is essential for curriculum development.	I believe impact monitoring helps to improve the curriculum.
E12	10.	I know policy challenges for teachers in university.	I always face policy challenges brilliantly at university.

Table No. 3.8.

Instrument Validity Details of Work Efficiency Scale (WES)

Item Code	Item No.	Old Items	Revised Items
CA1	11.	I use my cognitive ability in the planning of classroom teaching.	I use verbal reasoning in classroom teaching.
CA4	12.	I usually utilize my cognitive abilities to avail difficult career opportunities.	I utilize my working memory to avail career opportunities.
CA5	13.	I examine any subject thru cognitive capacity.	I examine any subject thru visual processing.
CA7	14.	I use critical abilities to understand my students as a teacher.	I use social cognition to understand my students as a teacher.
CM1	15.	I maintain silence in classroom management.	I manage silence in classroom for discipline.

Table No. 3.9.

Instrument Validity Details of Section 1. Metacognitive Regularities Semi-Structure Interview Sheet

Q No.	Old Items	Revised Items
12.	Does evaluation help to organize the best work?	Does evaluation help to enhance the quality of work? How?
16.	Are you agree that monitoring effects on teaching?	Do you agree that monitoring effects teaching? Why?

Table No. 3.10.

Instrument Validity Details of Section 2. Work Efficiency Semi-Structure Interview Sheet

Q No.	Old Items	Revised Items
9.	Does an effective teacher organized atmosphere in the university?	Is the university environment well-organized by the teachers? Why?
3.	Is the teacher's attitude makes effects on the teaching and learning process?	Does the teacher's attitude affect the teaching and learning process? How?

Table No. 3.7, 3.8, 3.9 and 3.10. All two instrument validity tables have 4 columns. Column 1 has item codes, and the 2nd column has the serial no. of the question. Items before editing correction have been listed in the third column. Items after correction have been listed in the fourth column.

3.6.7. Pilot Testing of the Study

A pilot study was done to determine the quantitative instrument's reliability. According to Julie (2001) the reliability of scales depends on the sample used. Pilot testing confirmed trustworthiness using specific study samples. According to Roberta and Alison (2015) measuring reliability is the ability of a tool to consistently deliver similar results from individuals that filled out a motivation

testing tool on every attempt. The tool was initially distributed to 52 responders from the sample respondents. The responses were submitted in full by 38 respondents with a return rate of 72%. The 20th version of the statistical program for the social sciences, SPSS, was used to code and analyze the data collected during the pilot trial.

3.6.8. Reliability of the Instrument

To determine the effectiveness of the scale and modify the items for the tool's final edition, the data gathered in the test phase were reviewed. In this regard, the item-total correlation, inter-section correlation, and Cronbach alpha were applied as tests for reliability computation.

Table No. 3.11.

Cronbach Alpha Reliability of Teachers' Metacognitive Regularities Pilot Testing Scale (n=38)

Scale	Major Section	Items	Cronbach Reliability Alpha
Metacognitive Regularities		43	0.959
	Planning	15	0.906
	Monitoring	14	0.873
	Evaluation	14	0.879

Table No. 3.11. Displayed that the reliability of the teacher metacognitive regularities scale (MRS) was 0.959. While the reliability of the planning section 12 items showed 0.906 indicating excellent reliability, monitoring section 10 showed 0.873 demonstrate strong internal consistency with a Cronbach's alpha of 0.873 and evaluation 9 items showed 0.879 reflecting a high level of reliability. Overall, reliability for the total scale and its subs-variables are well. This indicating that the scale is a reliable measure of teachers' metacognitive regularities.

After collecting the complete data, the researcher again checked the Cronbach Alpha Reliability of Teachers' Metacognitive Regularities Scale Final Tool (n=453).

Table No. 3.12.

Item-total Correlation of Teachers' Metacognitive Regularities Scale Pilot Testing (n=38)

Items Codes	r	Items Codes	r	Items Codes	r
PL1	0.777**	M1	0.555**	E1	0.612**
PL2	0.698**	M2	0.621**	E2	0.600**
PL3	0.663**	M3	0.605**	E3	0.737**
PL4	0.686**	M4	0.600**	E4	0.600**
PL5	0.633**	M5	0.719**	E5	0.591**
PL6	0.711**	M6	0.574**	E6	0.674**
PL7	0.636**	M7	0.545**	E7	0.737**
PL8	0.524**	M8	0.605**	E8	0.586**
PL9	0.404**	M9	0.478**	E9	0.578**
PL10	0.638**	M10	0.697**		
PL11	0.604**				
PL12	0.685**				

Correlation is significant at the level 0.01 level (2-tailed). **

Correlation is significant at the0.05 level (2-tailed).*

Table No. 3.12. Specifies the item-total correlation of the Metacognitive Regularities Scale (MRS). The item-total correlations for the planning items ranged from r = 0.404 to r = 0.777 showed strong correlations. The item-total correlations for the monitoring items ranged from r = 0.478 to r = 0.719, showed a moderate correlation and the evaluation items ranged from r = 0.578 to r = 0.737 exhibited strong correlations. The highest correlation was of item No. PL1 (0.777**) and the lowest correlation was of item No. PL9 (0.404**). Overall, indicate that the majority of items within each domain are strongly related to the total score, supporting the reliability and internal consistency of the scale in this pilot sample.

After collecting the complete data, the researcher again checked the Item-Total Correlation of Teachers' Metacognitive Regularities Scale (n=453).

Table No. 3.13.

Inter-section Correlation of Techers' Metacognitive Regularities Scale Pilot Testing (n=38)

	Planning	Monitoring	Evaluation	TMR
Planning	1			
Monitoring	0.878**	1		
Evaluation	0.861**	0.906	1	
T M R	0.961**	0.962**	0.954**	1

Correlation is significant at the level 0.01 level (2-tailed). **

Correlation is significant at the 0.05 level (2-tailed).*

Table No. 3.13. displayed that all the sections were correlated with one another significantly based on a pilot test with 38 participants. The results indicate a strong positive correlation between Planning and Monitoring (0.878), as well as between Planning and Evaluation (0.861). Additionally, Monitoring is strongly correlated with Evaluation (0.906), these high correlations suggest that the components of the TMR scale are closely related and contribute significantly. Overall, the maximum correlation was found between monitoring and teachers' metacognitive regularities (0.962) while the lowest correlation was found between planning and evaluation (0.861).

After collecting the complete data, the researcher again checked the Inter-section Correlation of Techers' Metacognitive Regularities Scale (n=453).

Table No. 3.14.

Cronbach Alpha Reliability of Teachers' Work Efficiency Scale Pilot Testing (n=38)

Scale	Major Section	Items	Cronbach Reliability Alpha
Work Efficiency		47	0.983
	Cognitive Ability	09	0.924
	Personality	16	0.947
	Classroom Management	09	0.921
	Commitment and Responsibility	13	0.964

Table No. 3.14. indicates that the reliability of the teacher work efficiency scale, consisting of 42 items and alpha=0.983, shows excellent internal consistency for the whole scale. The reliability of the sub-variables, cognitive-ability, which consists of 09 items alpha=0.924 suggests high reliability. Personality consists of 11 items and alpha=0.947, demonstrating high reliability, classroom management consists of 09 and alpha=0.921, indicating strong internal consists and lastly, commitment and responsibility consists of 13 items and alpha=0.964, reflecting excellent reliability.

After collecting the complete data, the researcher again checked the Cronbach Alpha Reliability of Teachers' Work Efficiency Scale (n=453).

Table No. 3.15.

Item-total Correlation of Teachers' Work Efficiency Scale Pilot Testing (n=38)

Items Codes	r	Items Codes	r	Items Codes	r
CA1	0.725**	P6	0.855**	CM9	0.502**
CA2	0.571**	P7	0.877**	CR1	0.885**
CA3	0.841**	P8	0.799**	CR2	0.809**
CA4	0.696**	P9	0.775**	CR3	0.806**
CA5	0.818**	P10	0.855**	CR4	0.778**
CA6	0.731**	P11	0.698**	CR5	0.807**
CA7	0.740**	CM1	0.758**	CR6	0.875**
CA8	0.778**	CM2	0.654**	CR7	0.892**
CA9	0.681**	CM3	0.703**	CR8	0.730**
P1	0.621**	CM4	0.804**	CR9	0.622**
P2	0.699**	CM5	0.756**	CR10	0.762**
P3	0.648**	CM6	0.824**	CR11	0.802**
P4	0.799**	CM7	0.840**	CR12	0.830**
P5	0.776**	CM8	0.681**	CR13	0.839**

Correlation is significant at the 0.01 level (2-tailed). **

Correlation is significant at the 0.05 level (2-tailed).*

Table No. 3.15. identifies the item-total correlation of the Work Efficiency Scale range from the highest correlation of r=0.892 to the lowest r=0.502, indicating varying degrees of relationship strength between each item contribute meaningfully to the scale's overall score, with stronger correlations reflecting more consistent alignment with the total scale. The cognitive ability items have ranged from r=0.571 to r = 0.841. The personality items have ranges from r = 0.621 to r = 0.877. The classroom management items have ranged from r = 0.502 to r = 0.840. The commitment and responsibilities items have ranged from r = 0.622 to r = 0.892. These results indicate that the majority of the items show strong correlations with the total score, which supports the reliability of the scale in measuring teachers' work efficiency.

After collecting the complete data, the researcher again checked the Item-Total Correlation of Teachers' Work Efficiency Scale (n=453).

Table No. 3.16.

Inter-section Correlation of Techers' Work Efficiency Scale Pilot Testing (n=38)

	Cognitive Ability	Personality	Classroom Management	Commitment and Responsibility	Teachers Work Efficiency
Cognitive Ability	1				
Personality	0.808**	1			
Classroom Management	0.846**	0.830**	1		
Commitment and Responsibility	0.807**	0.897**	0.944**	1	
Teachers Work Efficiency	0.896**	0.943**	0.957**	0.976**	1

Correlation is significant at the 0.01 level (2-tailed). **

Correlation is significant at the 0.05 level (2-tailed).*

Table No. 3.16. suggested that strong, positive correlations among all the measured variables ranged from 0.807 to 0.976. The relationships between cognitive ability, personality, classroom management, commitment and responsibility, and teachers' work efficiency were strong. Cognitive ability was (r =0 .896), indicating that higher cognitive ability. Personality shows a strong positive correlation with (r =0

.943). Classroom management is also positively correlated with (r = 0.957), demonstrating that better classroom management skills are associated with higher efficiency in teachers' work. Commitment and responsibility exhibit the highest correlation with (r =0 .976), implying that a strong sense of commitment and responsibility is crucial for maximize work efficiency. Overall, Commitment and Responsibility and teachers' Work Efficiency were shown to be highly correlated (0.976**) but the correlation between cognitive ability, and commitment & responsibility was the weakest (0.807**). These results show a correlation in enhancing teachers' work efficiency.

After collecting the complete data, the researcher again checked the Inter-section Correlation of Techers’ Work Efficiency Scale (n=453).

3.7. Data Collection

Data collection is shown to be an essential process in every research development. The data was collected in the year 2023 from teachers at Islamabad's public and private universities. Letters of permission and proposals originated from the National University of Modern Language, Islamabad, and authorities, were based on a letter of approval for all university affiliates. The process of data collection began after receiving approvals from university authorities. Data was gathered through visits to the university and an emailed Google form. Qualitative data was collected through Semi-structured interviews. Steve (2020) stated that parametric tests rely on the assumption that the collection of data is evenly distributed throughout the entire population, such as through Likert scales, parametric tests can be applied. Regression using models 50 + 8n, in which n is the total number of variables.

3.8. Data Analysis

Descriptive analysis involves summarizing and interpreting data to get insights. It focuses on providing a clear understanding of the variables through measures such as mean, median, mode. The analysis of the study focuses on the linear regression that can exist on the dependent variable. Linear regression was utilized on the dependent variable based on practice information regarding the independent variable. The formal statistical test was performed to assess the normality assumption. The null hypothesis was compared through the level of significance (Schuyler, 2012). The study uses normally distributed statements, with the null hypothesis. Descriptive analysis allows researchers to identify potential areas of interest, detect irregularity and establish a foundation for further analysis. Inferential

analysis, on the other hand, goes a step beyond descriptive analysis by using data from a sample to make inferences or generalizations about a larger population. This includes; regression analysis. Descriptive and inferential analyses are often interconnected with descriptive analysis providing the foundation for inferential analysis. Before running an inferential analysis, you might first perform a descriptive analysis to check the distribution of your data,

Although mix methods incorporate both the philosophical principles of deductive and inductive analysis. Jared, Brain, and Lea (2014) state that descriptive statistics offer useful frequency information and knowledge about data. Tests like regressions are essential for decision-making. Descriptive analysis offers the "what" of your data, inferential analysis provides the "why" and "how," allowing you to make broader conclusions and predictions from your sample data. Both analyses are essential, but inferential analysis typically builds upon the insights provided by descriptive analysis.

3.8.1. Quantitative Data Analysis

The explanatory analysis takes us on to the last stage of our journey, simple bivariate analysis uses independent variables and dependent variables. Therefore, Norman (2003) states that the most elementary form of explanatory analysis uses a symmetrical coefficient that indicates the degree of statistical influence of one variable on another. The one or two research questions require some form of associational analysis. The bivariate descriptive analysis serves two purposes. More over Creswell (2015) states that descriptive statistics helped to summarize the overall leanings in the data. The procedure of testing quantitative data was on the

SPSS version 20 was used to evaluate the data after collection via a questionnaire. The regression between the dependent and independent variables in a two-variable paradigm is the linear regression. More involved regression is the next step, where a dependent variable may be influenced by multiple sub-independent variables. Steve (2020) states that an effective size of r = 0.1 is the lowest, r = 0.3 is the average, and r = 0.5 is the greatest. R values of 1%, 9%, and 25% account for the whole variance. The statistical test that was used for testing the hypotheses is described in the table 3.17.

3.8.2. Qualitative Data Analysis

After the qualitative data was coded and reviewed, similar themes were discovered. Bruce (2001) states that the analysis of qualitative data combines explicit coding procedures and the style of theory development through an analytic procedure of constant comparison. The continuous relevancy, joint coding and analysis explain theory more systematically with analytical clarity. The thematic analysis was applied in this study, Creswell (2015) states that themes are similar codes aggregated to form a major idea in the database, they form a core element in qualitative data analysis and thematic analysis interconnecting themes theoretical and conceptual models. Then interpretation of the qualitative findings data was relates with quantitative findings. The qualitative coding for data analysis was described in the table 3.18.

Table No. 3.17.

Data Analysis of the Study

Sr. No.	Objective	Research Questions	Null Hypotheses	Data analysis techniques	Assumption
1.	To investigate the metacognitive regularities in university teachers	What are the metacognitive regularities of University teachers?		Mean	
2.	To determine the work efficiency of university teachers.	What is the level of the work efficiency of university teachers?		Mean	
3.	To assess the Effect of metacognitive	How do university teachers	There was statistically no significant	Linear Regression	Normality of distribution validates

	regularities on work efficiency of university teachers.	consider the effect of their metacognitive regularities on their work efficiency?	effect of metacognitive regularities on work efficiency of university teachers.		statistical tests of the regression coefficient
3a.	To assess the effect of planning on work efficiency of university teachers		There was statistically no significant effect of planning on work efficiency of university teachers.	Linear Regression	Normality of distribution validates statistical tests of the regression coefficient
3b.	To assess the effect of monitoring on work efficiency of university teachers.		There was statistically no significant effect of monitoring on work	Linear Regression	Normality of distribution validates statistical tests of the

		efficiency of university teachers.		regression coefficient
3c.	To assess the effect of evaluation on work efficiency of university teachers.	There was statistically no significant effect of evaluation on work efficiency of university teachers.	Linear Regression	Normality of distribution validates statistical tests of the regression coefficient

Table No. 3.18.

Depiction of Themes and Sub-Themes with Coding Scheme

Sr. No.	Main Theme	Sub Theme Categories	Coding Scheme
1.	Metacognitive Regulatory	1. Planning	i. Planning comprise
			ii. Planning effect on students' performance
			iii. Planning improve course efficiency
			iv. Planning complete commitment
			v. Planning schedule work in advance
		2. Monitoring	vi. Monitoring organize best work
			vii. Monitoring difficult to do
			viii. Presentation help student work monitoring
			ix. Achieving step by step commitment
			x. Class resources updated
		3. Evaluation	xi. Provide factual support
			xii. Evaluation enhance the quality of work
			xiii. Evaluation promotes subject inspection
			xiv. Evaluation found gap in teaching process
			xv. Evaluation consider annual practice
2.	Work Efficiency	1. Cognitive Ability	i. Cognitive ability helps in teaching practice
			ii. Cognitive ability helps in class room management
		2. Personality	iii. Personality affect the teaching
			iv. Personality is the combination of attitude
		3. Classroom Management	v. Silence is effective for classroom management
			vi. Group activity is useful in classroom management

		4. Commitment and Responsibility	vii. Performance intervened the commitment viii. Commitment increase your responsibility
3.	Effect of University Teachers Metacognitive Regularities on their Work Efficiency	1. Metacognitive Regulatory Effect on Work Efficiency 2. Work efficiency Determination	xvi. Enhance teaching xvii. Integrates the information ix. University environment remain well organized by teachers work. x. Teachers affects students over all well-being

3.9. Research Study Ethics

The British Educational Research Association [BERA] (2018) and the American Psychological Association (2017) stated research ethics were followed in this investigation.

1. In this study, it was made sure that before consenting to participate, participants were completely aware of the study's goals, methods and advantages.
2. University teachers were free to choose to participate or not.
3. Participants' privacy was protected by making sure that their answers and personal information were kept private.
4. While gathering data, participants' identities were kept anonymous by not filling their identification.
5. University teachers have the freedom to refuse to give responses to the study at any moment and without concern it was a way to respect their autonomy and rights.

6. It was confirmed that teachers respect is taken care of and the moral standards of the university were followed.
7. The research method was explained honestly to avoid conflicts of interest in the findings.
8. The responses from university teachers were guaranteed to guard against illegal access, use, or disclosure of the information
9. It was made sure that the email and data gathering procedures were applied according to institutional ethical standards.
10. Gratitude was paid to every teacher for their willing participation in the research.

CHAPTER 4

ANALYSIS AND INTERPERETATION OF THE DATA

4.1. Summary of Analysis

The fourth chapter focuses on an in-depth review of the respondent, research objectives, research questions, hypotheses and statistical tests used, including mean and regression. It also includes a descriptive analysis of the data collected using a semi-structured interview sheet and questionnaire, as well as an interpretation of the results.

The five sections that follow are further divisions of the data analysis.

4.1.1. Demographics

This chapter's first section provides a general introduction to the respondents, along with several percentages based on their designation, job status and experience. Although demographic links were not the purpose of this study, none of the faculties could be identified without them.

4.1.2. Descriptive Statistics

Descriptive statistics provide a description of the data collected from the study's sample, which can then be applied to the entire population. Relevant tests are part of the procedure. Therefore, in an investigation, quantitative descriptions are presented using descriptive statistics (William, James, & Kanika, 2016).

4.1.3. Section I Objective 1 (Metacognitive Regularity of University Teachers)

The chapter contains the initial goal. The mean test score is applied in order to meet objective 1, which is to investigate the metacognitive regularities in university teachers. The first research question offers qualitative data to support the qualitative arguments. The hybrid approach, known as a concurrent combination design, collects separately and interprets each data point together.

4.1.4. Section II Objective 2 (Work Efficiency of University Teachers at the University)

When creating new and improved environmental projects, mix methods are especially beneficial. The mean score of the test is used to meet objective 2, which is to determine university teacher work efficiency. Research question 2, how to determine the work efficiency of university teachers at the university? The second question of this chapter also supports a mix research study.

4.1.5. Inferential Statistics

In this sections, the conclusions drawn for the population were analyzed. Hypotheses testing was used in this investigation (Creswell, 2015). Moreover, William et al. (2016) states that the integration of inferential statistics is to attempt to conclude the broader population from the sample data.

4.1.6. Section III Objective 3 and Sub-Objectives 3a, 3b, 3c (Effect of Metacognitive Regularities on Work Efficiency of University Teachers)

The 3rd goal and its sub-objectives are covered in this section. The regression test has been used to accomplish analysis. Objectives 3 and 3a, 3b, and 3c were meant to evaluate the effects of metacognitive regularities and their sub-variables, such as planning, monitoring, and evaluation.

4.1.7. Thematic Analysis

A technique for analyzing qualitative data was thematic analysis, which involves the collection of data and searching for learning to identify themes.

4.1.8. Section IV Research Question 1. And 2. (Q1- What are the metacognitive regularities of university teachers? Q2- How to determine the work efficiency of university teachers at the university? and Q3- How do university teachers consider the effect of their metacognitive regularities on their work efficiency?)

To obtain the inside viewpoints, Semi-structured interviews were set up with university teachers. There were 27 questions from the conceptual framework given to each teacher. The respondent (teachers) have been named by the researcher in alphabetical order to protect their privacy. The twenty one university teachers from

Islamabad's HEC-recognized universities served as the qualitative study's total sample. The semi-structured interviews were conducted by visiting the teachers.

4.1.9. Section V Comparison of Results

The section provides the main construct for the convergent parallel design. The combination of quantitative and qualitative data. The study design involves the integration of both qualitative and quantitative data after their independent analysis to produce a comprehensive investigation of the study's variables, which provides important conclusions (Creswell, 2009).

4.1.1. DEMOGRAPHIC

Table No. 4.1.

The Sector-wise Respondent University Teachers' Distribution (n=453)

Universities type	Frequency	Percentage
Public	359	79.2%
Private	94	20.8%

Table No. 4.2.

The University Teachers' Distribution as per the Job Status (n=453)

University Teachers Designations	Frequency	Percentage
Lecturer	256	56.5%
Assistant Lecturer	103	22.7%
Associate Professor	84	18.5%
Professor	10	2.2%

Table No. 4.3.

The University Teachers' Distribution as per the Designation (n=453)

University Teachers Job Status	Frequency	Percentage
Permanent	271	59.8%
Contracting	90	19.9%
Visiting	92	20.3%

Table No. 4.4.

The University Teachers' Distribution as per the Experiences (n=453)

University Teachers Experiences	Frequency	Percentage
0-2 years	77	17.0%
2-5 years	99	21.9%
5-10 years	143	31%
10-20 years	122	26%
20+ years	12	2.6%

Descriptive Statistics

Section 1

4.2. Metacognitive Regularity of University Teachers

Objective 1: To investigate the metacognitive regularities in university teachers

Table No. 4.5.

The Metacognitive Regularity of University Teachers (n=453)

Sr. No.	Variable	Sub-Variable	*n*	Mean of Mean	Status
1.	Metacognitive Regularities		453	3.97	Agree
		Planning	453	4.07	Agree
		Monitoring	453	3.96	Agree
		Evaluation	453	3.84	Agree

Table No. 4.5. Indicates the metacognitive regularities in university teachers of Islamabad. The mean score of metacognitive regularities was 3.97. The planning mean score was 4.07. The monitoring mean score was 3.96 and the evaluation mean score was 3.84. The result showed that planning regarding the work efficiency of respondents was agreed upon planning for the best learning environment, a few days before planning pedagogical tasks, planning activities for career development, lesson planning, marking planned

commitments on the calendar, conducting student activities by managing class time, recognize teaching strength with help of planning, plan helps in lecture formation, planning compensate weak points, helps in planning course objectives and planning helps in targeted result in university working are agreed.

The result displayed that monitoring concerning the metacognitive regularities of respondents was agreed upon, Teachers track lesson plans to improve lecture delivery, teachers observe that discussion gives the best result for teaching, class progress depends on monitoring class records, presentations are the best way to check student progress, and monitoring makes it possible for teachers to review their professional development, tracking helps teachers to accomplish course responsibilities, monitoring helps to fulfill teaching commitments, monitoring gives best effect on curriculum, class resources are updated by monitoring and teachers agreed that universities assigned task are always followed up for the best future result.

The result shows that evaluation regarding the metacognitive regularities of respondents was agreed upon that teachers consider course evaluation annually, classroom observation is the key concern for teaching, evaluation improves teaching, evaluation found gaps in teaching, monitoring detect deficiencies in student learning and teaching task evaluate. Teachers agreed that they evaluate themselves through teaching task committedly, topic evaluation promotes subject evaluation, teachers face policy challenges brilliantly through evaluation and teachers knew that institutional standard established on evaluation.

Section 2

4.3. Work Efficiency of University Teachers

Objective 2: To determine the work efficiency of university teachers.

Table No. 4.6.

Work Efficiency of University Teachers at the University (n=453)

Sr. No.	Variable	Sub-Variable	*n*	Mean of Mean	Status
1.	Work Efficiency		453	3.91	Agree
		Cognitive Ability	453	3.96	Agree
		Personality	453	3.99	Agree
		Classroom Management	453	3.77	Agree
		Commitment and Responsibility	453	3.91	Agree

Table No. 4.6. determined the Islamabad university teachers' effectiveness. University teachers' work efficiencies of mean score was 3.91. The cognitive ability of mean score was 3.96. Personality of mean score was 3.99. Classroom management mean score was 3.77. Commitment and Responsibility mean score was 3.91.

The results of this study demonstrated that respondents' cognitive ability and work efficiency were in acceptance, verbal reasoning is useful for pedagogies, intellectual capacities promote classroom instruction, teachers utilize working memory to avail career opportunities, teachers examine the subject through visual processing, utilize conceptional skills for managing task, utilize social cognition to understand the students and they utilize intellectual capacities to take decisions for students.

The results of the investigation showed that respondents' work efficiency and personalities were viewed as acceptable that teachers believe to be a popular teacher among students, believe strong relationships with students and teaching go hand in hand, they believe that using strict discipline will not change students' behavior, they apply all the qualities in teaching to help the students, they agree that behavior creates characters, they control their mood swings in the classroom, they are controlling their feeling in difficult situations, they investigate the scenario before taking class decisions, they consider that monitoring makes it easy to advise students, they tackle work missions carefully and they keep versatility in their personality for their colleagues.

The results demonstrated that respondents' work efficiency and classroom management were appropriate, they agree on managing silence in the classroom, generally, they utilize a teamwork strategy in class, they are in favor of students sitting in straight lines, they respect university regulation in the classroom, they like to design classroom with a focus on the students, they help pupils regularly to motivate them, they utilize only the administration’s provided resources in the classroom and they constantly ask the student to keep the classroom tidy.

The results of this study indicated that the work efficiency, commitment, and responsibilities of the respondents were effective, teachers completed the subject curriculum with responsibility, they wisely met the demands of the students' learning, they engaged every learner in period, teachers took part in all activities of the institution, they take responsibility for building up students' social skills, they believe that teachers maintain academic standards, they trust that the interpersonal abilities of students are developed by teachers, teachers are always a part of the university establishment workgroup, they spend time on updating university policies, they always offer a hand to other officials as a good university colleague, they evaluate classrooms with an accurate approach, they respect their seniors' comments heartily, teachers are committed to carrying out the classes at the appointed hour.

Inferential Statistics

Section III

4.4. Effect of Metacognitive Regularities on Work Efficiency of University Teachers

Objective 3: To assess the effect of metacognitive regularities on the work efficiency of university teachers.

$H_0 1$: There is statistically no significant effect of metacognitive regularities on work efficiency of university teachers.

Table No. 4.7.

Effect of Metacognitive Regularities on Work Efficiency of University Teachers (n=453)

Independent Variable	Dependent Variable	R^2	β	t	Sig.
Metacognitive Regularities	Work Efficiency	0.831	0.415	5.512	0.00

a. Independent variable = Metacognitive Regularity

b. Dependent variable = Work Efficiency

**p<0.01, *<0.05

Table No. 4.7. presents the results of a regression analysis that considers the effect of metacognitive regularities on the work efficiency of university teachers. The value of R^2

=0.831 indicates that 83.1% variance in work efficiency can be explained by metacognitive regularities. This suggests a strong explanatory power of the independent variable on the dependent variable. The value β=0.415 signifies a positive relationship between metacognitive regularities and work efficiency. The t-value of 5.512 is a measure of the statistical significance of the relationship between the independent and dependent variables. A high t-value indicates a significant relationship. The significance value ($p < 0.01$) is 0.00, which is below the 0.01 threshold. This indicates that the effect of metacognitive regularities on work efficiency is statistically significant at the 1% level. The null hypothesis was fail to accept. This means that there is a statistically significant effect of metacognitive regularities on the work efficiency of university teachers. Therefore, metacognitive regularities positively and significantly influence the work efficiency of university teachers.

4.4.1. Effect of Planning on Work Efficiency of University Teachers

Objective 3a: To assess the effects of planning on work efficiency of university teachers.

$H_0$1a : There is statistically no significant effect of planning on work efficiency of university teachers.

Table No. 4.8.

Effect of Planning on Work Efficiency of University Teachers (n=453)

Sub-Independent Variable	Dependent Variable	R^2	β	t	Sig.
Planning	Work Efficiency	0.756	0.869	9.183	0.000

a. Independent variable = Planning

b. Dependent variable = Work Efficiency

**p<0.01, *<0.05

Table No. 4.8. displayed that The R^2 value of 0.756 indicates that 75.6% of the variance in work efficiency of university teachers can explained by their planning. This is a strong indication that planning affects work efficiency. The Beta coefficient of 0.869 suggests a strong positive relationship between planning and work efficiency. This implies that as planning increases, work efficiency also significantly increases. The t-value of 9.183 is significantly high. The significance

level (p-value) of 0.000 is less than 0.05, which means the result is statistically significant. Therefore, the null hypothesis failed to be accepted. This indicates that the effect of planning on the work efficiency of university teachers is statistically significant. It is concluded that planning, as measured by metacognitive regularities, has a positive effect on the work efficiency of university teachers.

4.4.2. Effect of Monitoring on Work Efficiency of University Teachers

Objective 3b: To assess the effects of monitoring on work efficiency of university teachers.

$H_0$1b : There is statistically no significant effect of monitoring on work efficiency of university teachers.

Table No. 4.9.

Effect of Monitoring on Work Efficiency of University Teachers (n=453)

Sub-Independent Variable	Dependent Variable	R^2	β	t	Sig.
Monitoring	Work Efficiency	0.760	0.872	7.967	0.000

a. Independent variable = Monitoring

b. Dependent variable = Work Efficiency

**p<0.01, *<0.05

Table No. 4.9. presents the results of a regression analysis investigated the effect of monitoring on the work efficiency of university teachers. The value of R^2 0.760 indicates that approximately 76% of the variance and monitoring is a strong predictor of work efficiency. The standardized β = 0.872 suggests a strong positive relationship between monitoring and work efficiency. The t-value of 7.967, coupled

with a significance level ($p < 0.001$), indicates that the effect of monitoring on work efficiency is statistically significant. The null hypothesis failed to be accepted. This finding suggests that monitoring, as measured by metacognitive regularities, has a statistically significant effect on the work efficiency of university teachers.

4.4.3. Effect of Evaluation on Work Efficiency of University Teachers

Objective 3c: To assess the effects of evaluation on work efficiency of university teachers.

$H_0$1c**:** There was statistically no significant effect of evaluation on work efficiency of university teachers.

Table No. 4.10.

Effect of Evaluation on Work Efficiency of University Teachers (n=453)

Sub-Independent Variable	Dependent Variable	R^2	β	t	Sig.
Evaluation	Work Efficiency	0.706	0.840	9.694	0.000

a. Independent variable = Evaluation

b. Dependent variable = Work Efficiency

**p<0.01, *<0.05

Table No. 4.10. demonstrate that 70.6% of the variance, evaluation significantly predicts work efficiency, as indicated by the high-value R^2=0.706 and a strong standardized β = 0.840. The t= 9.694 is significant at the 0.001 level. These results suggest that evaluation has a statistically significant positive effect on the work

efficiency of university teachers. Therefore, the null hypothesis failed to be accepted.

Thematic Analyses of Qualitative Data

Section IV

4.5. Metacognitive Regularities

Objective 1. To investigate the metacognitive regularities in university teachers.

Research Question 1. What are the metacognitive regularities of university teachers?

4.5.1. Themes Emerged

The twenty one university teachers were interviewed. The purpose of the semi-structured interview was to investigate the effect of metacognitive regularities on university teachers through a variety of questions. Semi-structured questions were asked during the interview. The systematic procedure of categorizing qualitative feedback and combining the codes that subsequently serve as variables of the researcher's interest in comprehending a phenomenon is known as thematic analysis. The researcher has converted teachers' identities in Alphabet to protect teachers' privacy. In section 1 of the research instrument, the researcher formed five questions based on each indicator and in section 2, the researcher formed two questions based on each indicator. Themes, sub-themes and sub-sub themes list up in table No. 3.18.

4.5.1.1. Planning

The first theme that was attained through thematic analysis was planning. Interviewees mentioned that planning comprises the correct vision for the

mission, planning impacts student performance, planning improves course efficiency, commitment is completed by using a calendar and scheduling daily work activities in advance is important. The university teachers replied that

i. *Planning Comprise*

A, highlighted the importance of understanding the cause, which support initial concept in planning. B, expressed confusion regarding planning supports. However, C, said that having a clear vision is crucial for effective planning. This claimed was supported by D, who emphasized that planning itself is rooted in vision and mission. E, repeated he same idea by stating that vision and mission serve as the targets of planning efforts. F, contributed by describing planning as a pathway toward upcoming achievements. G, Supported the concept that planning helps in accomplishing tasks aligned with missions and visions. H, determined the discussion by underlining that planning cannot be successful without a clear vision and mission. I, emphasized the significance of knowing the mission, which supports the planning's visualized concept. J, spoke concern about the planning support. K, stated that good planning requires a clear vision. L, underlined that purpose and vision are the foundation of planning itself. M, claiming that planning efforts are directed on the vision and mission. N, helped by establishing planning as a means of achieving future goals. O, accepted that planning facilitates the completion of tasks that are

connected. P, promoted the value of the initial planned concept. Q, stated concern about the planning encouragement. R, claimed that efficient planning needs a clear vision. S, stated that the foundation of planning is vision and mission. T, saying that planning efforts are directed toward the vision and mission. Finally, U, explaining the process of planning as a means of achieving foreseeable objectives.

ii. *Planning Effects on Students Performance*

A, agreed for the significance of planning. B, added by focusing its relevance in the context of lesson planning, indicating its role in structured education delivery. Further on this concept C, suggesting that planning creates rules and helps students in staying on track without conscious effort. D, responds by admitting the unevenness in teachers' grip on timelines and the necessity of planning to change this. E, emphasized the connection between planning and student engagement, underscoring its role in fostering active participation in learning activities. F, emphasized the confidence it instills in teachers, suggesting that well-prepared teachers are more effective in their teaching roles. G, discussed the idea of planning as providing guiding channels, showing its role in directing the learning process. H, highlighted the share of development, suggesting that organized planning by teachers helps in students' goal-setting abilities. I, acknowledged the need of planning. J, Significance in planning highlights its function in offering of planned instruction. K, making the argument

that planning helps learners remain on directions. L, acknowledges the inequity of teachers' control over deadlines and the need for preparation to address this. M, indicating that instructors who are well-prepared are more successful in their teaching positions. N, demonstrated that teachers who are well-prepared are more successful in their positions. O, Planning serves as a guiding framework that directs and shapes the learning process. P, highlighted the importance of planning. Q, Planning's importance focuses on its role in providing planned teaching. R, stated that planning helps pupils stay on course and establishes rules. S, replies by acknowledging that teacher control over schedules is varied and that planning is required to fix this. T, highlighted that they are more successful in their teaching positions when they are well-prepared. Lastly, U, indicated that instructors who are organized conduct their jobs better.

iii. *Planning Improve Course Efficiency*

A and B, agreed, highlighting about planning enhancement process that leads to better outcomes. However, C and D, offered different views, noting that planning may not always be effective since it's fundamental to the course itself and efficiency in the end depends on results. E and F, contributed by pointing out the benefits of planning, such as selecting suitable words and examples or ensuring quality material for each topic. Lastly, G and H, emphasized the practical aspects of planning, suggesting preparing topics before class and ensuring continuity by linking

information through topics. I, improving our planning methods is crucial because it directly contributes to achieving stronger and more successful results. J, focus on enhancing how we plan, it sets us up for smoother execution and more positive results. K, argued that planning isn't always effective, as it's just a foundation, and real efficiency is judged by outcomes. L, suggesting that planning alone doesn't guarantee efficiency outcomes matter more. M, Highlighted the value of planning by choosing the right words, examples, and quality content for each topic. N, emphasized planning's role in selecting effective words, examples, and strong content per topic. O, Focused on effective planning through pre-class topic preparation and connections. P, refining the planning process plays a key role in driving better outcomes and long-term effectiveness. Q, enhancing the planning phase helps streamline processes and consistently leads to improved performance outcomes. R, pointed out that while planning is essential, its success is ultimately measured by the results it delivers. S, noted that planning may not always lead to efficiency, since results are the true indicator of success. T, Showed how planning helps in using appropriate language, examples, and ensuring high-quality material. Lastly, U, demonstrated that planning leads to better words choice relevant examples, and well prepared materials.

iv. *Planning Complete Commitment*

A and B, showed the value of calendars in recalling tasks and serving as a planner itself. C, expanded on this, saying about calendars marking for reminders, helping in organization and task prioritization. D, emphasized the importance of dedication in making planning effective, suggesting that commitment is vital for successful execution. E, adds on this by showing the need of setting clear deadlines within a plan. F, offered a practical approach, suggesting the creation of a priority list and its integration into the planner. G, identified the significance of managing activities within identified timeframes, supporting with effective planning strategies. H, determined the discussion by pointing out the usefulness of calendar alarms in reminding individuals of their commitments before of time. I, demonstrated how calendars help remember tasks and act as planners. J, showed calendars as tools for both reminders and planning. K, setting calendars reminders helps structure work and ensures key tasks aren't over looked. L, noted that success depends on committed execution of well-made plans. M, enhancing our planning process with clear deadlines ensures we stay on track and achieve better results. N, suggested making a priority list and including it in the planner. O, highlighted how proper planning ensures tasks are completed within set timelines. P, highlighted calendars' role in task recall and planning. Q, proved calendars useful for tracking and organizing tasks. R, with calendar alerts, it's easier to stay organized and manage tasks by priority. S, highlighted that commitment is key to turning

plans into success. T, effective planning, especially with well-defined deadlines, leads to stronger, more predictable outcomes. Lastly, U, recommended integrating a priority list into the planning process.

v. *Planning Schedule Work in Advance*

A and B, both supported the tasks to be completed before planning, A, emphasized its priority in the planning process, while B, added that it should be done according to necessity. However, C, disagreed, pointing out that due to a hectic schedule, it's not always feasible to complete tasks earlier. D, supported A and B's viewpoint, equating work planners with task completion. E and F, joined in, stating that completing tasks earlier confirms a smoother workflow and minimizes distractions. G, agreed, highlighting the effectiveness of this practice in time management. H, conveyed the idea of completing tasks before planning enhances work efficiency. I, suggested the need to complete tasks ahead of planning, highlighting their importance. J, highlighted completing tasks first as essential to effective planning. K, differed, explaining that with such a packed schedule, finishing tasks ahead of time isn't always possible. L, saying that using planners directly contributes to getting tasks done. M, getting things done ahead of time helps maintain a steady flow and reduces breaks. N, early task completion ensures better focus and a more organized workflow. O, agreed, the effectiveness of this practice in time management. P, stated task completion as a key step before planning begins. Q,

emphasized that finishing tasks early is crucial for successful planning. R, citing a demanding workload as a reason why early task completion isn't always practical. S, emphasizing that effective planning tools led to successful task execution. T, finishing tasks early keeps the process running smoothly and limits unexpected distractions. Lastly, U, it supports a seamless process and cuts down on disruptions.

4.5.1.2. Monitoring

Respondents also mentioned that monitoring helps to organize the best work, monitoring is difficult to do, presentation helps student work monitoring, monitoring helps in achieving step-by-step commitment to work and all class resources are updated by monitoring.

vi. ***Monitoring Organize Best Work***

A, emphasized the importance of focusing only on task completion rather than constant monitoring. B, acknowledged that occasional monitoring might be necessary. In comparison, C, strongly favored the concept of continuous monitoring, stating its absolute necessity. D, sought a more in-doubt approach, suggesting doubts about the benefits of monitoring. E, highlighted the value of regular feedback provided through monitoring activities. F, emphasized that monitoring helps in identifying areas for improvement and enhancement. G, focused on the role of monitoring in error detection and correction. H, identified the importance of monitoring in reviewing the effect and effectiveness of one's work. I, highlighted that

our priority should be on achieving results. J, it may be important to carry out periodic monitoring from time to time. K, ongoing monitoring is absolutely vital. Without it, you risk missing critical issues as they arise. L, targeted in favor strategy, asking questions regarding the advantages of monitoring. M, emphasized the importance of regular input from monitoring activities. N, underlined that monitoring supports in determining points in need of growth and enhancement. O, focusing on the function of monitoring in identifying and fixing errors. P, pointed out that efficiency improves when the focus remains on outcomes, not on excessive oversight. Q, agree that some level of monitoring could be required occasionally to ensure everything stays on track. R, it's not optional; it's a necessary part of effective management. S, placed some doubt on the advantages of monitoring by taking a more critical viewpoint. T, showed how important it is to receive constant input from efforts to monitor. Lastly, U, highlighted the fact that monitoring contributes in finding components that require progress and enhancement.

vii. *Monitoring Difficult to do*

A, pointed out common ground that monitoring is really important. B, however, introduced a critical viewpoint and suggested that the necessity of monitoring depends on what exactly is being monitored. C, supported the importance of monitoring by highlighting its role in maintaining a comfortable and calm environment. D, acknowledged the effort required for

effective monitoring, indicating its significant feature. E, contributed by emphasizing the significance of planning, suggested that poor planning can lead to ineffective monitoring sessions. F, drew attention to the possible effects of insufficient monitoring, such as receiving incorrect data due to misconceptions in the lecture. G, added another thing by suggesting that the difficulty in monitoring may stem from an ineffective approach rather than the activity itself. H, showed the high level of skill and attention required for monitoring, suggested that it cannot be performed unconsciously. I, highlighted the importance of monitoring as a basis for collaboration. J, arguing that the need for monitoring is contingent upon the specific subject of the observation. K, emphasizing how it helps to keep a peaceful and comfortable atmosphere. L, highlighted the work necessary for efficient monitoring, highlighting its important aspect. M, contributed by highlighting the importance of planning and implying that inadequate planning may result from. N, brought to light the likely effects of weak monitoring, such as achieving insufficient information as a result of inattentive lecture. O, suggesting that an inefficient strategy, rather than the activity itself, might be the cause of the monitoring challenges. P, identified an agreed-upon view that monitoring is crucial. Q, proposed that the need for monitoring would vary depending on the specific subject being watched. R, monitoring is to preserving a relaxed and peaceful atmosphere, which reinforced its significance. S, recognized that effective monitoring requires effort, highlighting its important aspect. T, added by highlighting the

importance of planning and pointing out that insufficient preparation might result in inefficient monitoring sessions. Finally, U, addressed some of the effects of inadequate monitoring, including getting incorrect information as a result of classroom mistakes.

viii. *Presentation Help Student Work Monitoring*

A, suggested that presentations have limited benefits, while B, claimed that presentations are always beneficial. C, supported the idea about bullet points in presentations contribute to students' deeper understanding. D, agreed, highlighting the importance of students conveying their own comprehension. E, stated that presentations help improve students concern. F, added to the discussion by stating that presentations enhance communication skills. G, supported this view, emphasizing that presentations boost confidence levels. H, differences, saying that presentations might be premature for students at this stage in their academic journey. I, stated that the benefits of presentations are minimal. J, stated that presentations are always helpful. K, accepted the concept that using bullet points in presentations helps students grasp concepts more deeply. L, accepted it is for pupils to express student understanding. M, claimed that students' concerns are improved by presentations. N, Furthered, states that communication skills are improved by presentations. O, confirmed this concept by highlighting that presentations enhance confidence levels. P, represented that the advantages of presentations are low. Q, argued that

learners always benefit from presentations. R, acknowledged that incorporating bullet points in presentations enhances students' understanding of the lecture. S, emphasized the need of students expressing their own understanding, sharing. T, believed that presentations aid in raising scholars awareness. However, U, contributed that presentations improve the ability to communicate.

ix. *Achieving step by step commitment*

A, they agreed that monitoring is truly a gradual process, B, emphasized its role in facilitating informed decision-making for future actions. C, they also acknowledged that monitoring serves as a means to ensure progress through step-by-step procedures. D, contributing to the refinement of goals and keeping focus on what truly matters. E, additionally, they highlighted the accountability aspect of monitoring. F, recognizing its role in keeping individuals responsible for their work. G and H, furthermore, they emphasized how monitoring provides the necessary direction and awareness essential for successful goal attainment. I, acknowledged that monitoring is actually a slow process. J, highlighted monitoring helps people make well-informed decisions on what to do in the future. K, additionally, they recognized that monitoring is a way to guarantee progress through methodical approaches. L, helping to focus attention on the important things and improve goals. M, emphasized the responsibility component of monitoring. N, acknowledging its function in sustaining

students for their studies. O, highlighted, monitoring gives the required guidance. P, stated that monitoring is actually a slow procedure. Q, highlighted monitoring assists in making better choices for next steps. R, likewise they agreed that monitoring is a way to assure success through systematic measures. S, assist in improving objectives and paying attention on what's important. T, the responsibility element of monitoring was also pointed out. However, U, being aware of its purpose in keeping individuals accountable for their job.

x. *Class Resource Updated*

A, suggested the importance of highlighting any deficiencies in resources, which was recalled. B, emphasized the alignment of provided resources with requirements. C, contributed for using the role of monitoring in ensuring resource sufficiency, a sense that was supported. D, suggested to update class resources. E, highlighted the user's role in identifying resource needs. F, emphasized the role of teachers in informing about the physical condition management of material resources, a point challenged by. G, by saying that such responsibility lies with management. However, H, expressed agreement with the importance of teachers' observation skills in resource management. I, emphasized the need to point out any shortages in resources, which was remembered. J, highlighted the available resources matched the specified requirements. K, the act of monitoring played a role in maintaining sufficient resources, a point that was acknowledged. L,

recommended revising the materials used in class. M, emphasized the importance of the user's input in determining what resources are required. N, stated that the importance of teachers in communicating how to manage the physical state of material resources was highlighted, though this point faced opposition. O, stated that responsibility for this rests with the management team. P, replied the significance of identifying any resource gaps, which was noted. Q, focused the compatibility between the resources offered and the work needs. R, using monitoring to ensure adequate resources was a contribution that received support. S, advised making updates to the educational resources for the class. T, underlined the user's responsibility in recognizing the necessary resources. Finally, U, replied that teachers play a key role in providing guidance on maintaining the condition of physical resources, a claim that was contested.

4.5.1.3. Evaluation

During the interview, respondents indicated that evaluation provides factual Support, evaluation helps enhance the quality of work, inspection promotes the subject's development, evaluation finds gaps in the teaching process and course evaluation is an annual evaluation practice in an academic institution is necessary.

xi. *Provide Factual Support*

A, believes that evaluation is indeed necessary, while B, keep the opposing view, arguing that it's not required if executed properly. C, offered a

complex viewpoint, suggested that evaluation was important to somewhat, specifying a range of 60 to 70%. D, disagreed with A and firmly stated that evaluation was not necessary at all. E, expressed agreement with A, emphasizing that true evaluation provided genuine support. F, added to the pro-evaluation stand and claimed that it prevented mistakes. G, highlighted the importance of evaluation by stating that it clarified the complexities of the workflow and H, contributed by emphasizing that evaluation offered a visualization of the current state of affairs. I, thinks that assessment is truly essential. J, argue that proper execution reduces the need for it altogether. K, indicated that evaluation held moderate importance, falling within the sixty% range. L, opposed A's view and asserted strongly that there was no need for any evaluation. M, highlighting that the honest assessment offered real encouragement. N, incorporated into the pro-evaluation stand, with claims that it helped avoid errors. O, emphasized that evaluation was crucial in shedding light on the intricate nature of the workflow. P, holds the view that conducting evaluations is important. Q, states that if implemented effectively, the requirement may be resolved. R, replied the importance of evaluation was considered to be somewhat significant, estimated between sixty seven%. S, disagreed with A and insisted that conducting an evaluation was completely unnecessary. T, viewpoint that the sincere feedback gave meaningful reassurance. Lastly, U, added it to the evaluation setup, declaring that it reduced the chance of mistakes.

xii. *Evaluation Enhance the Quality of Work*

A, expressed a viewpoint and emphasized the role of efforts in evaluation. B, agreed. C, contributed that evaluation identifies both weak points requiring improvement and strong points that offer encouragement. D, re-stated that evaluation covers both good and bad aspects of work. E, added another perspective by stating that accuracy in evaluation enhances overall productivity. F, expanded on this idea by suggesting that evaluation goes beyond simple work efficiency. G, emphasized the role of evaluation in reducing work-related problems. H, suggested that evaluation also served to prevent critical situations. I, shared an opinion and highlighted the importance of effort in the assessment process. J, it was proposed that evaluation played a role in avoiding potential crises. K, evaluation helps highlight areas that need improvement while also recognizing strengths that provide motivation. L, the evaluation includes both the strengths and weaknesses of the work. M, highlighting another viewpoint, it was noted that precise evaluation contributes to improved overall efficiency. N, further developed the concept by proposing that assessment involves more than just measuring productivity. O, the importance of assessment in addressing job-related challenges. P, conveyed a perspective while stressing how crucial effort is in making evaluations. Q, evaluation was also seen as a means of averting serious issues. R, through evaluation, we can identify shortcomings that need attention as well as strengths that serve as a source of encouragement. S, the assessment addresses both the positive

and negative elements of the work. T, from a different angle, it was suggested that greater accuracy in assessments boosts general productivity, and U, elaborated on the idea by emphasizing that evaluation encompasses more than mere operational efficiency.

xiii. *Evaluation Promote Subject Inspection*

A, states that inspection is the initial step, followed by subject development. B, that's true. C and D, contribute by emphasizing that strong results confirm the subject development, aligning with the group's agreement on the importance of these steps for maximized student learning. E, stated the necessity of topic inspection and subject development for academic achievements. F, highlights that inspection enhances subjects' knowledge with more information, while G, again states that inspection promotes overall improvements. H, concludes the discussion by emphasizing that inspection, raises awareness of critical aspects. I, assessment comes first, and is then followed by the development of the subject. J, highlighting inspection, the discussion brings important issues to light and increases awareness of key factors. K, strong outcomes confirm the progress made and demonstrate the group's collective confidence in these measures to improve student learning. L, encouraging performance supports the subject's growth and underscores the shared conviction within the group about the effectiveness of these approaches to student learning. M, emphasized the importance of thoroughly examining the topic and

developing the subject matter to attain academic success. N, inspection develops individuals' understanding by providing them with additional insights. O, inspections leads to broader improvements in performance and quality. P, stated that process begins with inspection, which is subsequently followed by subject development. Q, focusing on inspection within the discussion helps shed light on vital concerns and enhances understanding of crucial elements. R, positive results affirm the subject's advancement and highlight the team's united trust in these strategies to boost student learning. S, reinforce the development of the subject and reflect the group's consensus on the value of these actions in enhancing learning outcomes. T, highlighted the need for careful evaluation of the topic and structured subject development as key factors for academic accomplishment, and U, offering more detailed information, inspection contributes to a broader knowledge of the subject.

xiv. *Evaluation Found Gap in Teaching Process*

A, claims that evaluation effectively identifies missing steps. B, emphasizes that it exposes gaps that arise when problems are overlooked. C, added to the discussion by highlighting that evaluation contributes to progress by evaluating the efficacy of the plan in place. D, points out the role of evaluation in setting targets, supporting the view that it serves as a compass for advancement. E, contributes by stating that evaluation serves as a mean to recall and address missing concepts, similar to fixed forgotten points. F,

strengthened this idea by likening evaluation as an act of making corrections of overlooked aspects. G, expands the scope of the discussion by stating that evaluation defines the direction of the process. H, emphasized the critical role of evaluation in analyzing and addressing instances of weak performance, underlining its importance for further improvement. I, argues that evaluation highlights omissions that occur when certain problems are ignored. J, highlights the shortcomings that emerge when issues are ignored. K, contributed to the discussion by emphasizing that evaluation plays a key role in advancing progress by assessing how effective the current plan is. L, evaluation plays a crucial role in guiding goal-setting, acting as a directional tool for progress. M, emphasizes that evaluation helps in identifying and recovering overlooked ideas, acting like a tool to revisit forgotten concepts. N, comparing evaluation to the process of identifying and correcting previously unnoticed elements. O, evaluation plays a pivotal role in shaping the course of the entire process. P, evaluation reveals the gaps caused by failing to address specific issues. Q, replied that flaws that develop from neglecting problems. R, replied discussion underlined that progress is supported through evaluation, as it helps determine how well the existing plan is working. S, informing the process of setting objectives, evaluation functions as a guiding force that steers development forward. T, suggests that through evaluation, one can revisit and fill in gaps in understanding, much like retrieving previously forgotten information. Lastly, U, the concept was

supported by describing evaluation as a means of addressing and amending aspects that had initially been overlooked.

xv. *Evaluation Consider Annual Practice*

A, focused particularly on academic progress. B, emphasized the mandatory nature of these evaluations within the course/ curriculum. C, emphasized their role in setting objectives. D, suggested reviewing them. E and F, highlight that evaluations offer numerous suggestions. G, supported performance management. H, considered it essential for making informed decisions to progress move forward. I, placed special emphasis on educational advancement. J, stated that requirement for these evaluations as a compulsory part of the course or curriculum. K, highlighted their contribution to defining goals. L, stated that crucial for making informed choices to ensure continued progress. M, assessments provide a wide range of recommendations. N, analyses generate multiple constructive ideas for improvement. O, assisted in managing employee performance. P, concentrated primarily on improving academic performance. Q, highlighted that these evaluations are an essential and mandatory component of the curriculum. R, argued their involvement in establishing targets. S, considered vital to make well-informed decisions in order to advance further. T, evaluations yield several valuable suggestions. Lastly, U, feedback from evaluations includes numerous helpful proposals.

These results focused on the importance of vision and mission in planning, its role in education and its part in completing courses on time, the role of calendars in effective planning and time management, and generally, completing tasks before planning as a beneficial and practical approach, despite differing opinions on its possibility in all situations. Additionally the importance of monitoring in work processes the effectiveness of presentations in student learning, the benefits of monitoring in achieving goals, and the allocation and monitoring of resources. Participants shared diverse viewpoints on the complexities and importance of monitoring in various aspects of their work, including resource allocation and responsibility. Furthermore the importance of evaluation in their work, emphasized its challenging role in work and productivity. They agreed on the pivotal role of topic inspection and subject development in the learning process. They also discussed the significance of annual evaluations within their academic course, recognizing their role as a comprehensive summary of their practices. Finally, the discussion highlights the complexity of monitoring in education, focusing on its effect, evaluation criteria, and the complex nature of evaluation methodologies.

4.6. Teachers Work Efficiency

Objective 2: To determine the work efficiency of university teachers.

Research Question 2. What is the level of the work efficiency of university teachers?

4.6.1. Themes Emerged

4.6.1.1. Cognitive Ability

The first theme received after thematic analysis is the cognitive ability of the university teachers. Respondents considered the cognitive ability to help in teaching and think that cognitive ability helps in classroom management. The university teachers mentioned that

i. Cognitive Ability Helps in Teaching Practices

A, yes, the teacher needs to give answers. B, said, yes, of course. C, says yes, strongly required in teachers. D, answered yes they easily understand teaching. E, states yes, helps in executing topic content. F, said yes, easily prioritize the task. G, stated yes, easily explore ideas for explaining topics. H, also said, yes, help in giving topic explanations. I, the teacher is required to provide responses. J, stated that expected to help by giving explanations of the topics. As the teacher, I am required to respond. K, confirms that it is absolutely essential for teachers. L, find it easy to grasp what's being taught. M, Confirms positively and contributes to delivering the topic content. N, yes, the task can be prioritized with ease. O, yes, it is easy to explore ideas for issues that need explanation.

P, it is necessary for the teacher to offer answers. Q, replied providing topic explanations is part of my role as a teacher, it's my responsibility to respond. R, endorses it's highly necessary in educators. S, understand the lessons without difficulty. T, agrees and assists in carrying out the topic material and U, admitted, arranging the job is easy.

ii. Cognitive Ability Helps in Classroom Management

A, stats that it is definitely mandatory, same as B and C, supported that expresses willingness to explore new methods. D, emphasized the importance of employing different approaches for explaining complex concepts, while E, highlighted their effectiveness in addressing classroom issues. F, added to the discussion by affirming that diversified teaching strategies enabled teachers to offer tailored guidance to students. G, pointed out that such methods contribute to maintaining student focus during lessons, same as H, emphasized their role in fostering student interest and engagement. I, considering that it is clearly required. J, encouraged with an honesty to trying innovative approaches. K, assisted in a way that shows interest in experimenting with different strategies. L, highlighted the significance of using varied methods to clarify intricate ideas. M, emphasized that handled challenges in the classroom. N, emphasizing that using varied teaching methods allowed educators to provide personalized support to their students. O, highlighted as effective in sustaining student concentration during class. P, indications that it is

surely essential. Q, supported with a readiness to accept new techniques. R, supported alternative solutions. S, replied the value of adopting multiple strategies to make complex concepts easier to understand. T, analyzed ability to resolve problems encountered in the classroom. Lastly U, highlighting how a range of instructional strategies helped teachers deliver customized assistance to learners.

4.6.1.2. Personality

The second important theme that was teacher's Personality, affects the teaching and learning process and personality is a combination of attitudes. The university teachers responded that

iii. Personality Affects the Teaching

A, believes that personality does surely reflect, while B, agrees but adds that it's not the only defining factor. C, shares a strong belief in the effect of personality on teaching effectiveness. D, underscores this point by suggesting that teachers' experiences shape their personalities and therefore, their teaching methods. E, highlights the role of observation, noting that students learn from the behavior and approach of their teachers. F, strengthens this concept by stating that a teacher's personality becomes evident during classroom interactions. G, states that organized personalities are crucial for achieving academic success. H, states differences from this viewpoint and suggests that personality might not be the only determinant of effective teaching. I, convinced that one's

personality is inevitably revealed. J, agrees, but emphasizes that it's not the sole factor that defines the situation. K, firmly believes that a teacher's personality greatly influences how effectively they teach. L, teacher's personality and ultimately their approach to teaching is influenced by their personal experiences. M, emphasizes the importance of observation, pointing out that students absorb lessons through watching their teachers' conduct and methods. N, highlighted teacher's personality naturally reveals itself through their interactions in the classroom. O, organized is essential for succeeding in academic tasks. P, holds the view that personality undeniably shows through. Q, noting that other important elements also play a role. R, states that teaching success is significantly shaped by the educator's personality. S, view that educators' methods in the classroom are shaped by the life experiences that mold their character. T, observation plays a key role, as students often model their learning on how their teachers act and engage with their work. However U, states supported by the observation that classroom interactions reflect a teacher's true personality.

iv. Personality is the Combination of Attitude

A, acknowledged the influence of situations on responses, indicating that responses are context-dependent. B, supported this view simply with a "yes." C, added complexity by suggesting that even in similar situations, responses can vary based on individual beliefs. D, supported this concept

by highlighting that diverted attitudes can emerge in different situations. E, expands the discussion to include teachers and states that their thoughts and actions reveal a blend of personalities. Further F, links attitude to behavior and personality management, showing that attitude shapes teachers interactions. G, supports the views that individual personality expresses during performance moments. Finally, H, drowns a distinction between personality and attitude and states that they are separate entities. I, recognized that responses vary based on the situation, showing they depend on context. J, accepted that the nature of replies is influenced by the surrounding situation. K, stated that reactions in similar scenarios can still vary due to differences in individual perspectives and values. L, emphasizing that people's attitudes may shift depending on the circumstances. M, replied mindset and behavior reflect a mix of different personalities. N, teachers' behavior and personality influence their interactions, highlighting how attitude plays a key role. O, suggestion that a person's unique character is revealed in moments of performance. P, admitted that answers are shaped by environments, highlighting the role of situation. Q, even in similar conditions, people's responses may differ depending on their personal beliefs. R, replied personal beliefs can lead to different responses, even when the situations are alike. S, showing that altered perspectives can arise under different conditions. T, stated that in a settings behave combination of various traits from multiple personalities.

However U, demonstrates that their attitude significantly impacts how they engage with others.

4.6.1.3. Classroom Management

Another theme that was attained from the analysis was classroom management. The silence is effective for classroom management and the teachers use group activity known as classroom management. The university teachers mentioned that

v. Silence is Effective for Classroom Management

A and B, both expressed doubt about the significance of silence. However, C, highlighted the positive effect of silence on raised focus and attentiveness through active listening. D, emphasizes that silence facilitates easier comprehension. E, states same concept that silence is essential for achieving deep understanding. In gap, F, disagreed and stated that silence in the classroom could lead to passivity among students. G, opposed this argument and stated that silence allowed teachers to convey concepts more effectively. On the other hand, H, emphasizes that the effectiveness of silence depends on the teacher's skill in utilizing it. I, uncertainty over the importance of silence. J, demonstrated silence enhance concentration and improve attentive listening. K, Showed that remaining silent can sharpen attention and deepen listening skills. L, highlights that quietness makes understanding simpler. M, true comprehension can only emerge in the presence of silence. N, arguing that a quiet classroom might result in

students becoming passive. O, arguing that maintaining silence enabled teachers to explain ideas more clearly. P, concern regarding silence's importance. Q, emphasized the role of silence in boosting focus and encouraging active listening. R, Explained the benefits of silence in increasing mental clarity and fostering engaged listening. S, replied that being silent helps in grasping things more easily. T, silence creates the space needed for profound insight to take root. Lastly U, saying that too much silence in class could make students disengaged and inactive.

vi. Group Activity is useful in classroom management

A, stated that group activities cover individual capabilities, while B, gave the idea that its effectiveness depended on various factors. C, added support by highlighting its efficacy in lab work management and active learning scenarios. D and E, take a part by stating that group activities can be beneficial when carried out through theme games or drama and role play. F, expanded on this by supporting for brainstorming activities within groups. However, G, disagreed and argued that team-based assignments might hide weaker students within the group. H, pointed out that group activities might not be suitable for individual learning. I, mentioned that group tasks often overshadow individual skills. J, suggested that how well it worked was influenced by several different factors. K, demonstrating its effectiveness in managing laboratory tasks and promoting active learning.

L, engaging in group activities through themed games or dramatic role-playing can enhance their effectiveness and benefits. M, group settings can significantly boost the positive outcomes of such activities. N, facilitated group brainstorming sessions to encourage idea generation and collaboration. O, opposed that group assignments could allow less capable students to blend in without contributing significantly. P, observed that participating in group activities can mask personal abilities. Q, indicated that its success was determined by a range of variables. R, showing its capability in streamlining work and enhancing engagement in active learning environments. S, group tasks become more impactful when they incorporate role play or are structured as themed games. T, group participation can be more beneficial when activities involve creative methods. Lastly, U, Provided support for collaborative thinking exercises within teams.

4.6.1.4. Commitment and Responsibilities

Another theme from the analysis of semi-structured interview transcripts was the commitment and responsibilities. This theme is related to the effective performance intervened by the teachers' Commitment and think being committed increases your responsibility. The university teachers mentioned that

vii. Performance intervened the commitment

A, stated that it couldn't affect, to which B, disagrees and states that it does truly have an effect. C, supported B's viewpoint, emphasized a strong correlation between the two factors. Moving beyond a link, D, highlighted the importance of preplanned commitments fulfilled by teachers in relation to departmental responsibilities. E, also emphasized the significance of preparedness in meeting these commitments. F, adds another dimension, states that performance is always linked to the completion of tasks, creating a teacher's commitment. G, further improves that idea by stating that fulfilling commitments demonstrates effective performance. H, makes people aware of the role of self-monitoring in offering effective performance and states that teachers who engage in self-evaluation develop to perform better. I, claimed that it was incapable of having an effect. J, argues that it genuinely does make a difference. K, insists that it indeed has a real impact. L, highlighted a significant link between the two variables. M, emphasizing self-monitoring shows its effect on achieving strong performance, and teachers who reflect on their work are more likely to grow and become more effective. N, emphasizing that performance is consistently tied to task completion, which in turn fosters teacher dedication. O, commitments is a clear indicator of strong performance. P, said it had no influence on the matter. Q, stated that a close relationship between the two elements. R, crucial it is for teachers to follow through on their predetermined responsibilities within the department. S, highlighting the importance of

self-monitoring helps individuals enhance their performance, and educators who regularly assess themselves tend to improve their teaching effectiveness. T, stated that performance is inherently connected to fulfilling tasks, thereby reinforcing a teacher's sense of responsibility. Finally, U, commitments reflects an individual's ability to perform effectively.

viii. Commitment Increase your Responsibility

A, believed in firm commitment, emphasized its ongoing presence. B, acknowledged commitment but hinted at its varied. In comparison. C, linked commitment to workload, stated its variations based on work demands. D, viewed responsibility as associated to commitment, with the responsibility to fulfill tasks as committed. E, recited the same idea, focusing on the necessity of responsibility for fulfillment. F, connected commitment with professionalism. G, emphasized the levels of professionalism through accountable commitment. Similarly, H, differed, defining commitment and responsibility as various views. I, held a strong belief in unwavering dedication and highlighted its continuous role. J, recognized the dedication, though noted its inconsistency in contrast. K, commitment was tied to the workload and adjusted depending on the intensity of work demands. L, believed that responsibility is tied to commitment, meaning one must complete tasks they have agreed to. M, emphasized the importance of taking responsibility to achieve one's goals. N, demonstrated dedication through a professional approach. O, demonstrated a high standard of

professionalism by consistently honoring responsibilities. P, supported faithful commitment and stressed its lasting significance. Q, admitted to the presence of commitment, yet pointed out how it differed in degree compared to others. R, commitment was connected to the workload and varied in response to changing work requirements. S, responsibility as a reflection of one's commitment, requiring the completion of duties as promised. T, highlighting that fulfillment depends on accepting responsibility. Finally, U, Aligned strong commitment with a high standard of professionalism.

All of the conversation participants agreed that teachers should offer solutions to improve the learning process and support the use of a variety of teaching pedagogies in the classroom by highlighting the advantages of doing so. Then the discussion goes into the deep association among teachers' mindset, reactions, circumstances, personality, and approach. They emphasized the importance and possible limitations of this relationship and evaluating every detail of its involvement. Furthermore a variety of perspectives and points of view were revealed during the conversation, which focused on the effects of preparation, commitment, self-monitoring, and the relationship between commitment and responsibility on effective performance and the value of teacher involvement in learning environments, emphasizing its important role in supporting efficient instruction and encouraging student achievement.

4.7. Effect of University Teachers Metacognitive Regularities on their Work Efficiency

Objective 3: To assess the effect of metacognitive regularities on work efficiency of university teachers.

Research Question 3. How do university teachers consider the effect of their metacognitive regularities on their work efficiency?

4.7.1. Themes Emerged

4.7.1.1. Metacognitive Regularities Effects on Work Efficiency

The additional key theme acquired from the interviews was support from university teachers that monitoring effects on teaching and evaluation integrates the information.

i. Enhance Teaching

A, argued that monitoring indeed enhanced teaching. While B, introduces degree by suggesting that monitoring may have positive effects but it's not always. Similarly, C, highlighted the potential negative impact of biased monitoring, indicating that its effectiveness depends on the fairness of its implementation. D, focused on its role in identifying potential issues. E and F, adds that monitoring influences the procedures of lecture delivery, contributing to its effectiveness. Conversely, G and H, oppose that monitoring serves merely as an indicator or a measuring parameter, respectively, suggesting a more limited role. I, stated that supervision

genuinely improved instructional quality. J, degree suggests that monitoring can sometimes have beneficial effects, though this isn't always the case. K, emphasized that biased monitoring could have harmful consequences, noting that its success joints on how fairly it is applied. L, concentrated on its function of detecting possible problems. M, observing and tracking lecture delivery processes helps improve their overall effectiveness. N, belief that monitoring is solely a tool for measurement or indication, implying it has only a restricted function. O, indication that monitoring functions just as a gauge or metric, thus assigning it a narrow scope. P, claimed that overseeing teachers' work effectively strengthened their teaching performance. Q, implies that while monitoring might lead to positive outcomes, its impact isn't consistently favorable. R, replied that the negative effects of biased monitoring may arise if it's not implemented equitably, as its effectiveness relies on impartial execution. S, emphasized its purpose in spotting potential concerns. T, monitoring plays a role in shaping how lectures are delivered, thereby enhancing their impact. Finally, U, argue against the view that monitoring merely reflects or measures performance, as this interpretation limits its full significance.

ii. Integrates the Information

A, claimed the identification of a superior option among the choices. B, through participation. C, added depth to the conversation by emphasizing the importance of evaluative clauses in determining the best choice. D,

introduced the role of computers in facilitating evaluation processes and obtaining acknowledgment. E, mentioned the significance of informative data in evaluations, supported by Participant F, emphasized the presentation of results. G, expanded the idea by highlighting the practical integration of information during evaluations. H, contributed by mentioning the diversity of evaluation outcomes in report cards. I, stated that the best option had been identified from the available choices. J, by taking part. K, highlighting how evaluative clauses play a crucial role in identifying the most suitable option. L, explored how computers assist in streamlining evaluation procedures and gaining recognition. M, the importance of using informative data in evaluations was highlighted, with support from the participant. N, placed a strong focus on how the results were presented. O, emphasized the real-world application of information by incorporating it effectively during assessments. P, stated that one option stood out as the most favorable among the alternatives. Q, via active involvement. R, contributed the significance of evaluative clauses in making the optimal decision. S, discussed the use of computers in enhancing assessment methods and securing acknowledgment. T, participant emphasized the value of relying on meaningful data when conducting evaluations. Lastly, U, highlighted the importance of presenting the results clearly.

4.7.2.1. Work Efficiency Determination

Establishing the vision for work efficiency at the university level requires well-organized university environment and accepted that teachers affect student's overall well-being.

ix. University Environment Remain Well Organized by Teachers Work

A, acknowledges this diversity and states that texts do not always connect. B, agreed, claiming the system of teachers for this gap. C, supported this view by emphasizing the self-rule teachers own within their classrooms. D, added the necessity of self-motivation for such diversity to flourish. However, E, argues that individual teachers alone cannot achieve that Changes. F, presents a counterpoint and states that well-organized teachers can reduce negative influences within institutions, thereby G, disagrees, opposing that it's the responsibility of the administration to ensure such diversity through monitoring teaching staff. H, determined the discussion by highlighting the essential role of teachers in running educational institutions. I, stated that texts do not necessarily always align or relate to each other. J, yes, agreed that the responsibility for addressing this gap should fall on the education system and teachers. K, highlighting the autonomy teachers have within their own classrooms. L, the importance of self-motivation is essential for fostering such diversity to thrive. M, argued that individual teachers by themselves cannot bring about those changes. N, suggests that skilled and well-structured teachers have the ability to

diminish adverse effects within educational institutions. O, belief that ensuring diversity among teaching staff falls under the administration's responsibility to monitor and manage. P, acknowledges the diversity present and emphasizes that texts may not always be directly linked or connected. Q, agree that closing this gap is a task for the educational system and its teachers. R, emphasizing the self-governing authority teachers possess in their classroom environments. S, stated that diversity to prosper, it is crucial to have self-motivation as a driving force. T, claim is made that only teachers working alone cannot accomplish those transformations. Finally, U, argued that effective and properly organized teachers can mitigate harmful influences present within school environments.

x. Teachers Affects Students Over all Well Being

A, acknowledges that this effect is dependent upon the level of engagement established by the teacher. B, agreed, emphasizing the crucial role of teachers in fostering student growth. C, adds to the conversation and highlights that teachers serve as modifiers for students, shaping their educational experience. D, agrees and claims that effective teaching is truly dynamic in this process. E, emphasized the importance of building positive and respectful relationships with students. F, expands this view and states that effective communication is key to successful teaching. G, pointed out the necessity of monitoring and guiding students in a timely manner to ensure their progress. H, defined the discussion by emphasizing the role of

teachers in supporting students and boosting their academic potential. I, recognizes that this impact relies on the degree of student engagement fostered by the teacher. J, yes, highlighting the essential importance of teachers in promoting the development of students. K, teachers act as agents of change for students, influencing and shaping their learning journey. L, agreed and state that successful teaching is genuinely adaptable within this process. M, highlighted the significance of fostering positive and respectful connections with students. N, highlights that clear and efficient communication is essential for achieving success in teaching. O, emphasized the importance of supervising and directing students promptly to guarantee their development. P, understands that the extent of this effect is influenced by how effectively the teacher promotes engagement. Q, emphasizing the vital contribution of educators in nurturing student progress. R, Educators function as catalysts in students' development, molding their academic experiences. S, encourage that impactful instruction is genuinely flexible and evolving throughout this process. T, replied the value of developing supportive and courteous relationships with learners. Finally, U, emphasizes that mastering effective communication is fundamental to ensuring successful educational outcomes.

The results highlight that university teachers consider the effect of their metacognitive regularities on their work efficiency such as monitoring and evaluation, play a crucial role in improving teaching effectiveness and information integration. While some participants view monitoring as a

valuable tool for enhancing lecture delivery and identifying teaching issues, others stress its limitations if not implemented fairly. In terms of work efficiency, a well-organized university environment is seen as partially dependent on teachers' efforts, though administrative support is also necessary. Finally, the result is clear that teachers significantly affect students' overall well-being, especially through engagement, communication, and positive relationships.

Section V

4.8. Comparison of Result

The quantitative and qualitative data were based on two research questions. The first question investigated about the metacognitive regularities of university teachers and determine the work efficiency of university teachers. The study investigated the effect of metacognitive regularities on work efficiency of university teachers by Conceptional framework. The understanding of university teachers were obtain through self-developed questionnaire and semi-structured interview based on theory of metacognitive regularities (Julie et al., 2021) and model of work efficiency (Siti et al., 2012) for study the practices of university teachers.

The result from descriptive statistics revealed that the university teachers agreed on the metacognitive regularities, planning regarding the work efficiency of respondents was agreed upon planning for the best university activities, agreed on monitoring for teachers' professional development and also agreed upon evaluation that promotes institutional standards. The university teachers agreed on the importance of work efficiency, agreed on the cognitive ability to utilize intellectual capacities to make decisions, agreed upon personality to keep their personality versatile for working, agreed upon classroom management and they like to design classrooms to focus on the students and also agreed on commitment and responsibilities for effective university working.

The inferential statistics reveal the positive influence of metacognitive regularities on the work efficiency of university teachers. The sub-variable concludes that planning, monitoring and evaluation also effects positively on work efficiency of university teachers.

The thematic analysis of the first research question indicates that the analysis emphasized the importance of vision and mission in planning, effective use of calendars, and task completion strategies. It highlighted monitoring as essential for goal achievement, resource allocation, and productivity, despite its complexities. Evaluation was recognized as challenging yet critical, particularly in subject development and annual academic reviews. Participants also stressed the significance of inspection and methodology in enhancing learning outcomes. The second research question specifies the analysis highlighted the importance of teachers offering solutions to enhance the learning process and adopting diverse pedagogies, emphasizing their benefits. It explored the complex relationship between teachers' personality, and approach, alongside their preparation, commitment and monitoring. The participants accepted the significance of teacher involvement in fostering metacognitive regularity for work efficiency, student achievement and the balance between commitment and responsibility in achieving successful outcomes.

The comparative results of the inferential statistics and thematic analysis indicate that metacognitive strategies (planning, monitoring, and evaluation) are vital for enhancing work efficiency among university teachers. However, while the inferential statistics provide a direct and quantifiable link to work efficiency, the thematic analysis provides rich, context-driven insights into how these strategies manifest in teaching practices. The thematic findings also introduce additional dimensions related to teacher personality, involvement, and pedagogical approaches, which help to understand the broader, more holistic picture of what contributes to effective teaching and working outcomes. Altogether these findings offer a comprehensive view of the university teachers' efficiency and effectiveness.

Table No. 4.11.

Quantitative and Qualitative Major Results

Quantitative Outcomes	Qualitative Outcomes
	Thematic analysis was performed on semi-structured interview sheet.
Descriptive Statistics Metacognitive regularity of university teachers. (mean score 3.97) Higher score	The first question was that are the metacognitive regularities of university teachers? The themes that emerged from the first interview question included, metacognitive regularity enhance teaching, integrates the information, planning comprise, planning effect on students' performance, planning improve course efficiency, planning complete commitment, planning schedule work in advance, monitoring organize best work, monitoring difficult to do, presentation help student work monitoring, achieving step by step commitment, class resources updated, provide factual support, evaluation enhance the quality of work, evaluation promotes subject inspection, evaluation found gap in teaching process and evaluation consider annual practice.
Work efficiency of university teachers (mean score 3.91) Higher score	The second interview question, what is the level of the work efficiency of university teachers? The themes that emerged from the second interview question included, University environment remain well organized by teachers work, teachers affects students over all well-being, cognitive ability helps in teaching practice, cognitive ability helps in class room management, personality affect the teaching, personality is the combination of attitude, silence is effective for classroom management, group activity is useful in classroom management, performance intervened the commitment, commitment increase your responsibility.

Inferential Out comes	The third interview question, How do university teachers consider the effect of their metacognitive regularities on their work efficiency? The themes that emerged from the third interview question included, university teachers consider the effect of their metacognitive regularities on their work efficiency such as monitoring and evaluation, play a crucial role in improving teaching effectiveness and information integration. While some participants view monitoring as a valuable tool for enhancing lecture delivery and identifying teaching issues, others stress its limitations if not implemented fairly. In terms of work efficiency, a well-organized university environment is seen as partially dependent on teachers' efforts, though administrative support is also necessary.
H_O1= Effect of Metacognitive Regularities (Private and Public) rejected Significance difference at t(453)=5.512 where p.000 result is positively and significantly influence	
H_O 1a= Effect of Planning (Private and Public) rejected Significance difference at t(453)=9.183 where p.000 result is Positive effect on the work efficiency	
H_O1b= Effect of Monitoring (Private and Public) rejected Significance difference at t(453)=7.96 where p.000 result is Positive effect on the work efficiency	
H_O1c= Effect of Evaluation (Private and Public) rejected Significance difference at t(453)=9.694 where p.000 result is Positive effect on the work efficiency	

4.8.1. Major Results

In this study the effect of metacognitive regularities check on work efficiency of university teacher. The results showed that respondents agreed on the importance of planning for work efficiency, career development and achieving targeted

university outcomes. Monitoring was recognized as crucial for improving lecture delivery, tracking student progress, and fulfilling teaching commitments. Evaluation was agreed to enhance teaching quality, identify learning gaps and strengthen institutional standards. Overall, planning, monitoring and evaluation were seen as essential for professional growth and academic success. Furthermore, result revealed that respondents' cognitive abilities, work efficiency and intellectual skills were effectively applied to teaching and decision-making for students. Teachers' personalities and emotional control positively impacted relationships, discipline, and classroom behavior. Efficient classroom management strategies and teamwork were widely practiced with respect for regulations and resources. Teachers showed strong commitment to responsibilities, student development, institutional activities and maintaining academic standards. Additionally statistical results shows metacognitive regularities positively and significantly influence the work efficiency of university teachers. It is analyze that Planning, as measured by metacognitive regularities, has a positive effect on the work efficiency of university teachers. Monitoring as measured by metacognitive regularities, has a statistically significant effect on the work efficiency of university teachers and evaluation has a statistically significant positive effect on the work efficiency of university teachers. Moreover, the results emphasized the critical vision of the complexities and benefits of monitoring, evaluation and annual reviews in enhancing learning and productivity. The discussion underlined the challenges and importance of effective planning, monitoring and evaluation in academic processes. The effect of metacognitive regularities on teachers should offer solutions and support in

teaching methods by showcasing their benefits. Participants discussed how teachers' personality influence their approach and relationships. They also highlighted the effect of commitment and responsibility on teaching effectiveness and student success.

CHAPTER 5

SUMMARY, DISCUSSION, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary

The research and understanding of regulations are fundamental for teachers' academic activity. Identifying motivating elements and implementing staff changes are essential for the university's competitiveness. The teacher's work efficiency may improve through incorporating metacognitive regularities. Teachers can set clear goals, collaborate efficiently, identify opportunities, and find multiple solutions for university students' educational problems. Metacognitive regularities are significant for teachers. It helps to manage workplace resources and institution requirements. It makes teaching-learning practices effective and manages lecturers successfully. This study investigates the effect of metacognitive regularities on university teachers' work efficiency. Specifically, the objectives are: To investigate the metacognitive regularities of university teachers, to determine the work efficiency of university teachers at the university and to assess the effect of metacognitive regularities on the work efficiency of university teachers. This includes explaining the specific effects of planning, monitoring, and evaluation on their work efficiency through Sub-objectives. The mix methods quantitative data got deep insight through the following research questions: 1) what are the metacognitive regularities of university teachers? 2) How can the work efficiency of university teachers at the

university be determined? How do university teachers consider the effect of their metacognitive regularities on their work efficiency? These objectives and questions collectively investigate, how metacognitive regularity practices influence the work effectiveness of university teachers.

This study describes; the effectiveness of metacognitive regularities in university teachers working. The created conceptual framework gives a clear base to establish hypotheses and research questions, for improving work behavior in universities. The conceptual framework is based on the root theory of metacognition. The theory of mind known as metacognition examines mental processes in individuals, the current study was to make clear the mechanisms behind metacognitive regularities in university instructors' work efficiency. It is a belief that implies general mental processes connected to the work and metacognitive regularities refer to the processes that control people's cognitive operations and identify their perceptions. The conceptual framework is established through the model of metacognitive regularities (Julie et al., 2021) and the work efficiency model (Siti et al., 2012). It can be useful in monitoring development and potential. It can help advance the development of productive teamwork and provide multiple solutions to issues raised by learners. Metacognitive regulation model refers to becoming aware of efficiency as necessary for metacognition and it reflects in selected suitable resource management. It has a direct effect on performance outcomes. It has three sub-variables such as; planning, monitoring and evaluation. Work efficiency model helps to study understanding and focusing on tasks within an organization, keeping track of shared objectives and achieving desired results. It has four sub-variables such as: cognitive ability, personality, classroom management and commitment and responsibility. There are lack of metacognitive

regularities research in the field of education sciences and it might be filled by this current study. Instructors are important assets for higher educational institutions, and their work reflections can be used to gauge workplace sustainability.

The explanatory study utilized pragmatism, combining epistemology and reality to investigate university teachers' work efficiency in pedagogical and organizational practices. This mix-methods research approach includes quantitative and qualitative data analysis. The effect of metacognitive regularities on work efficiency was described through descriptive correlational design. The total population of 23 Islamabad universities are 10464, of which 7743 were from public sector universities and 2721 were from Private sector universities. The proportionate stratified sampling techniques were used to select public and private sector university teachers for quantitative data. The sample size was 05% (524) of the total population, the 388 university teachers were selected from the public sector and 136 from private sector universities. Purposive sampling was used for qualitative data and it was approximately 04% of the quantitative sampling, the 15 university teachers were selected from the public sector and 06 from private sector universities. Quantitative data was collected by the questionnaire and it was measured by a five-point Likert scale. The questionnaire have two self-developed scales, the metacognitive regulatory assessment scale further has 3 sub-variables given by (Julie et al., 2021) and the work efficiency assessment scale more has the 4 sub-variables given by (Siti et al., 2012). Qualitative data collected by Semi-structured interviews. The delimitation of the study included universities in Islamabad with HEC recognition, the study scope was delimited to the investigation of a one-way effect, research exclusively based on university teachers at the universities of Islamabad. The instruments were verified by validity and reliability tests. The validity test

was done by four educational experts. The 52 university teachers were selected for pilot test and 38 returned that was a 72% rate of return. The reliability of the teacher metacognitive regularities scale was 0.959, indicating that the scale is a reliable measure of teachers' metacognitive regularities and the reliability of the teacher work efficiency scale, consisting of 42 items and alpha=0.983, shows excellent internal consistency for the complete scale. The reliability test was analyzed by SPSS version 20th. After the data collection, the effect of metacognitive regularities on the work efficiency of university teachers' mean score and regression analysis were used. The conclusion and recommendations were made upon the analysis and findings.

5.2 Findings

The research findings have been presented under this heading.

Objective No. 1. “To investigate the metacognitive regularities of university teachers.”

1. The university teachers in Islamabad generally agreed with (mean=3.97) metacognitive regularities as reflected in their responses.
2. Metacognitive regularities was an independent variable that included three sub-variables. Planning was the most prominent sub-variables with (mean=4.07) university teachers expressing agreement at the highest level compared to the other sub-variable.
3. The monitoring results (mean=3.96) indicate that university teachers generally agreed and representing a moderate level among the sub-variables of metacognitive regularities.

4. The evaluation indicates that university teachers agreed through this was the lowest level of agreement among the sub-variables of metacognitive regularities (mean=3.84).

Objective No. 2. “To determine the work efficiency of university teachers.”

5. The university teachers generally agreed to their work efficiency (mean=3.91).
6. Work efficiency was the dependent variable and included four sub-variables. Among these, cognitive ability was noted as an area where university teachers agreed (mean=3.96) making it the second most highly rated sub-variable of work efficiency.
7. The personality aspect received the strongest agreement from university teachers and making it the most prominent sub-variable related to work efficiency (mean=3.99).
8. The classroom management aspect indicates that university teachers generally agreed (mean=3.77) through it was identified as the least effective among the sub-variables of the work efficiency.
9. The commitment and responsibilities of university teachers were found to agree (mean=3.91) and reflect a moderate level of work efficiency among the sub-variables assessed.

Objective No. 3. “To assess the effect of metacognitive regularities on the work efficiency of university teachers.”

10. It was found that metacognitive regularities account for a significant portion of the variance in work efficiency with a strong relationship observed between the

independent and dependent variables as indicated by the regression analysis ($R^2 = 0.831$).

11. The beta coefficient (β=0.415) indicates a positive relationship of metacognitive regularities.
12. The value of t=5.512 measured the statistical significance of the relationship between the independent and dependent variables at a significance level of one per cent and the findings was statistically significant.

Objective No. 3a. "To assess the effects of planning on work efficiency of university teachers."

13. It was found that planning accounts for a significant proportion of the variance in work efficiency with the regression ($R^2 = 0.756$) value indicating a strong relationship.
14. The beta coefficient (β=0.869) indicates a strongly positive relationship with planning.
15. The value of t=9.183 measured the statistical significance of the relationship between planning and work efficiency and indicated a significantly high.

Objective No. 3b. "To assess the effects of monitoring on work efficiency of university teachers."

16. It was found that monitoring for a significant part of the variance in work efficiency with the regression ($R^2 = 0.760$) value indicates a strong correlation.
17. The beta coefficient (β=0.872) indicates a strongly positive relationship with monitoring.

18. The value of t=7.967 measured the statistical significance of the relationship between monitoring and work efficiency and the finding was statistically significant.

Objective No. 3c. “To assess the effects of evaluation on work efficiency of university teachers.”

19. It was found that evaluation was a significant part of the variance in work efficiency with a high regression ($R^2 = 0.706$) coefficient value indicates a strong relationship.
20. The beta coefficient (β=0.840) indicates a strongly positive relationship with evaluation.
21. The value of t=9.694 measured the statistical significance of the relationship between evaluation and work efficiency and indicated that the finding was statistically significant.

5.2.1. Quantitative and Qualitative Comparative Findings

Metacognitive regularities were investigated in public and private sector university teachers' practices. The effect of metacognitive regularities was found in their cognitive ability, personality, classroom management and commitment and responsibilities. The analysis showed the planning in achieving university work, alongside the importance of evaluation and monitoring. Teachers' personalities and classroom management are essential in enhancing work efficiency and fostering student achievement. Balancing responsibility and commitment remains key to

successful educational outcomes. The university teachers also accepted the importance of the effect of metacognitive regularities on their work efficiency.

5.3. Discussion

The study was established on three main objectives and five hypotheses (one main and three sub-hypotheses). The findings of the research provided valuable insights related to the effect of metacognitive regularities on work efficiency of university teachers. The first main objective of the study focused on investigating the metacognitive regularities in university teachers. The majority of the teachers were aware of metacognitive regularities in their practices. The study found that respondents agree on the importance of planning for work efficiency, including creating a conducive learning environment, and career development activities through planning and managing class time. University teachers also stated that overseeing their metacognitive regularities is essential for enhancing their delivery of lectures, ensuring professional development, and updating curriculum resources. They also agree that annual evaluation of courses, classroom observations, and teaching tasks is essential for improving teaching, detecting gaps, and addressing policy challenges. Therefore, Teachers are committed to evaluating themselves and their teaching tasks. Markeya (2016) views support that throughout their systematically review of the results, teachers' metacognitive teaching was highlighted as being essential to helping students develop metacognition. The range of performance results are associated with metacognition and those who are developing their cognitive capacities will most profit from metacognitive instruction.

The second major objective focused on determining the work efficiency of university teachers. It was found that most university teachers were aware of work efficiency for their successful teaching careers. The study found that teachers utilized cognitive abilities which are beneficial for pedagogy and classroom instruction. They use cognitive abilities in their work to manage tasks and make decisions. Teachers believe in strong relationships with students through strict discipline, and adapting to students' behavior. In the same context here, Hanna et al. (2019) study supports that the metacognitive-self helps in self-regulatory tasks. University teachers use teamwork strategies, respect university regulations, and focus on student motivation. They also maintain academic standards, engage students, and maintain a positive attitude. Teachers committed themselves to their subjects, participate in institutional activities, and uphold academic standards. They are committed to updating policies, evaluating classrooms, and respecting senior comments. Overall, teachers demonstrate effective work efficiency, commitment, and responsibility. Here previously, Ana and Mihaela (2018) explains in non-educational filed that the roles of managers can be characterized as centers of interaction, indicating that they are responsible for facilitating communication inside an institution. They completed the curriculum with responsibility, engaged students and participated in institutional activities. Teachers believed in maintaining academic standards, developed students' interpersonal abilities, they updated policies, evaluated classrooms, and respected senior comments and were part of university workgroups. It is effectively support by Roger and Vincent (2013) states work efficiency is the most essential element in success and responsibility since it creates possibility for positions in the future.

The third major objective assess the effect of metacognitive regularities on the work efficiency of university teachers. It explores the relationship between metacognitive regularities and work efficiency. First, the relationship of metacognitive regularity and work efficiency has discussed. A highly significant relationship was found between the strong explanatory powers of the independent variable (metacognitive regularities) on the dependent variable (work efficiency). It is supported by many studies such as; Harry (2004) states the institution can effectively accomplish sustainability by improving staff members' efficiency and developing team and individual capacity through a systematic and integrated approach. Therefore, Qiao (2019) supports that a novel method for assessing the quality of education provided by universities integrates contemporary strategies to evaluate and enhance institutional performance. Secondly, the relationship of sub-variable of metacognitive regularity with work efficiency of university teachers discussed. The sub-variable of planning was statistically significant, has a positive effect that was strong indication that planning affects work efficiency. These findings highlighted the significance of the purpose and vision in planning, and their function in education. In general, the idea is that finishing tasks ahead of schedule is a sensible and useful strategy regardless of opinions regarding its applicability in all circumstances. Furthermore, Indra (2023) supports that planning is the process of doing things through a series of related actions. Everyone must be ready through the planning of classes.

It was found that strong positive relationship between monitoring and work efficiency. The value of monitoring in work processes has a variety of perspectives on the significance of monitoring in a range of their related work areas with responsibility and resource allocation. Moreover, Xiaoyu et al. (2019) relates that the dynamic process of thought "self-

monitored" itself by utilizing component knowledge and systematic analysis together with metacognition to monitor other processes.

It was found that evaluation has a statistically significant positive effect on the work efficiency of university teachers. The significance of evaluation in their work and underlined its difficult role in output. They both agreed that topic inspection and subject development are essential components of the learning process. In their academic course, they acknowledge their function as a thorough review of their procedures. The study supports by Eric and John (2012) that numerous distinct abilities and actions are reviewed in the evaluation, such as; planning and classroom management. The application of metacognitive regularities in the teaching-learning process is crucial to incorporating teachers into their work and beneficial for the institution and themselves.

5.4. Conclusion

The current study's findings result in the following conclusions.

The first objective focused on investigating the metacognitive regularities of university teachers. It was concluded that university teachers in Islamabad generally agreed on the presence of metacognitive regularities. Among the sub-variables of metacognitive regularities, planning emerged as the most prominent, reflecting a strong agreement among teachers on its importance. Monitoring held a moderate position indicating agreement but slightly less emphasis compared to planning. Finally, evaluation though still indicating agreement, suggesting it might be less prioritized or challenging in practice. These results highlight a varied but positive engagement with metacognitive practices among university

teachers with a particular emphasis on planning (Finding No. 1, 2, 3, 4, 13, 14, 15, 16, 17, 18, 19, 20 & 21).

The second objective to determine the work efficiency of university teachers were concluded the work efficiency of 453 university teachers in Islamabad, focusing on four sub-variables: cognitive ability, personality, classroom management, and commitment and responsibilities. The overall mean score for work efficiency, indicating that university teachers generally agreed on their efficiency. Moreover, Personality had the highest mean score suggesting strong agreement among university teachers regarding its contribution to work efficiency. Then cognitive ability ranked second highlighting its significant role in their work efficiency. Then Commitment and responsibilities scored moderately and reflecting agreement on its importance. Lastly, Classroom indicating it is an area where teachers felt comparatively less confident though still agreed on its importance (Finding No. 5, 6, 7, 8 & 9).

The third objective assessed the effect of metacognitive regularities on the work efficiency of university teachers. It was concluded that metacognitive regularities significantly influence work efficiency. A strong positive relationship between metacognitive regularities and work efficiency was found (Finding No. 10, 11 & 12).

5.4.1. Comparative Conclusion

The mix conclusion highlight that metacognitive regularities integrating information thate essential for enhancing teaching quality and making informed decisions. While monitoring can offer positive outcomes, its effectiveness depends on fairness and proper implementation. Overall, combining thorough evaluation methods with fair monitoring

practices leads to more effective educational improvements. The planning in achieving educational and organizational achievement highlights the importance of effective work management and monitoring in enhancing productivity and achieving objectives. The participants emphasized the significance of evaluation, despite its challenges. The insights reflect the complexities of monitoring and evaluation methodologies in education, emphasizing their role in fostering growth and development. Teachers play a pivotal role in fostering diversity, guiding student development, and shaping educational success through their autonomy, motivation, and effective engagement strategies. Their influence is essential in creating positive, inclusive learning environments that support overall well-being and academic growth. The essential role of university teachers is to enhance work efficiency and a deep understanding of their cognitive abilities and personalities. Emphasizing the importance of monitoring and responsibility. It became clear that teacher involvement is crucial for creating supportive classroom management that drives student achievement and effective instruction.

5.5. Recommendations for Teachers

The study revealed the positive outcomes in their findings and conclusion but for more enhancement in the work efficiency of university teachers there were given the recommendations for the university teachers.

1. The study concludes that university teachers were familiar with metacognitive regularity practices. However, to enhance work efficiency, it is recommended that metacognitive regularity three-month short-term courses for teachers, if required,

be organized by the university, with a focus on teachers' future career development (Finding No. 10, 11 & 12).

2. Teachers experience an annual evaluation process conducted by their universities. It is recommended that they prepare self-analysis reports to highlight their work efficiency. Writing these reports enables them to effectively showcase their contributions during the university's annual course evaluation (Finding No. 4).
3. Teachers can monitor their teaching practices to align with the university's future goals by staying informed about the latest curriculum for degree course. This approach also enhances their work efficiency through regular monitoring of pedagogical methods, it is recommended to ensure effective planning in accordance with the updated academic curriculum (Finding No. 1, 2 & 3).
4. Recorded teaching observations helps fulfill commitments and responsibilities. It is recommended that teachers evaluate their work experience using a daily self-observation chart (Finding No. 9)
5. Managing evaluation, classroom management and organizational tasks can be challenging among a busy schedule. To address this, it is recommended to maintain a daily reflection manual as an informal record for evaluating daily activities (finding No. 19, 20 & 21).

5.6. Recommendations for Future Researchers

The study's outcomes suggest that future researchers take into account the following recommendations

1. This study shows the effect of metacognitive regularities on the work efficiency of university teachers. However, other branches of metacognition could also be explored in this context. Future researchers are recommended to expand this investigation by conducting experimental studies on adaptive metacognition and its influence on the work efficiency of university teachers (Finding No. 13, 14 & 15).
2. The study of metacognitive regularities was initially conducted in the higher education sector. It is recommended to extend this analysis to the K-12 level. Future researches are encouraged to investigate the effect of metacognitive regularities on the work efficiency of college teachers (Finding No. 5, 6, 7 & 8).
3. This study is currently conducted at Islamabad University and its findings cannot be generalized to university teachers across Pakistan. It is recommended that similar research be conduct with university teachers from other cities of Pakistan (Finding No. 16, 17 & 18).

5.7. Alignment Table

Table 5.1.

Alignment Table of Objective, Hypothesis, Techniques and Recommendation (n=453)

Sr. No.	Objective	Null Hypotheses	Research Question	Research Methodology	Finding	Recommendation
1.	To investigate the metacognitive regularities in		What are the metacognitive	Mix Methods/	1-The university teachers in Islamabad	It is recommended that similar research be

	university teachers.	regularities of university teachers?	Descriptive statistic	generally agreed with metacognitive regularities as reflected in their responses. 2-Planning was the most prominent sub-variables with university teachers expressing agreement at the highest level compared to the other sub-variable. 3- The monitoring results indicate that university teachers generally agreed and representing a moderate level among the sub-variables of metacognitive regularities. 4-The evaluation indicates that university teachers agreed through this was the lowest level of agreement among the sub-variables of metacognitive regularities.	conduct with university teachers from other cities of Pakistan. It is recommended to ensure effective planning in accordance with The updated academic curriculum.

2.	To determine the work efficiency of university teachers.	What is the level of the work efficiency of university teachers?	Mix Methods/ Descriptive statistic	5-The university teachers generally agreed to their work efficiency. 6-Work efficiency was the dependent variable and included four sub-variable. Among these, cognitive ability was noted as an area where university teachers agreed making it the second most highly rated sub-variable of work efficiency. 7. The personality aspect received the strongest agreement from university teachers and making it the most prominent sub-variable related to work efficiency. 8. The classroom management aspect indicates that university teachers generally agreed through it was identified as the least effective among	It is recommended to extend this analysis to the K-12 level. Future researches are encouraged to investigate the effect of metacognitive regularities on the work efficiency of college teachers. It is recommended that teachers evaluate their work experience using a daily self-observation chart.

					the sub-variables of the work efficiency. 9. The commitment and responsibilities of university teachers were found to agree and reflect a moderate level of work efficiency among the sub-variables assessed.	
3.	To assess the Effect of metacognitive regularities on work efficiency of university teachers.	There is statistically no significant effect of metacogniti ve regularities on work efficiency of university teachers.	How do university teachers consider the effect of their metacogni tive regularitie s on their work efficiency ?	Mix Methods/ Inferential statistic	10. It was found that metacognitive regularities account for a significant portion of the variance in work efficiency with a strong relationship observed between the two factors as indicated by the regression analysis. 11. The beta coefficient indicates a positive relationship of metacognitive regularities. 12. The value of t measured the statistical	it is recommended that metacognitive regularity three-month short-term courses for teachers, if required, be organized by the university, with a focus on teachers' future career development

				significance of the relationship between the independent and dependent variables at a significance level of one per cent and the findings was statistically significant.	
3a.	To assess the effect of planning on work efficiency of university teachers.	There is no statistically significant effect of planning on work efficiency of university teachers.	Mix Methods/ Inferential statistic	13. It was found that planning accounts for a significant proportion of the variance in work efficiency with the regression value indicating a strong relationship. 14. The beta coefficient indicates a strongly positive relationship with planning. 15. The value of t measured the statistical significance of the relationship between planning and work efficiency and indicated a significantly high.	Future researchers are recommended to expand this investigation by conducting experimental studies on adaptive metacognition and its influence on the work efficiency of university teachers.

3b.	To assess the effect of monitoring on work efficiency of university teachers.	There is statistically no significant effect of monitoring on work efficiency of university teachers.	Mix Methods/ Inferential statistic	16. It was found that monitoring for a significant part of the variance in work efficiency with the regression value indicates a strong correlation. 17. The beta coefficient indicates a strongly positive relationship with monitoring. 18. The value of t measured the statistical significance of the relationship between monitoring and work efficiency and the finding was statistically significant.	It is recommended that similar research be conduct with university teachers from other cities of Pakistan.
3c.	To assess the effect of evaluation on work efficiency of university teachers.	There is statistically no significant effect of evaluation on work efficiency of university teachers.	Mix Methods/ Inferential statistic	19. It was found that evaluation was a significant part of the variance in work efficiency with a high regression coefficient value indicates a strong relationship. 20. The beta coefficient	It is recommended to maintain a daily reflection manual as an informal record for evaluating daily activities.

	indicates a strongly positive relationship with evaluation. 21. The value of t measured the statistical significance of the relationship between evaluation and work efficiency and indicated that the finding was statistically significant.

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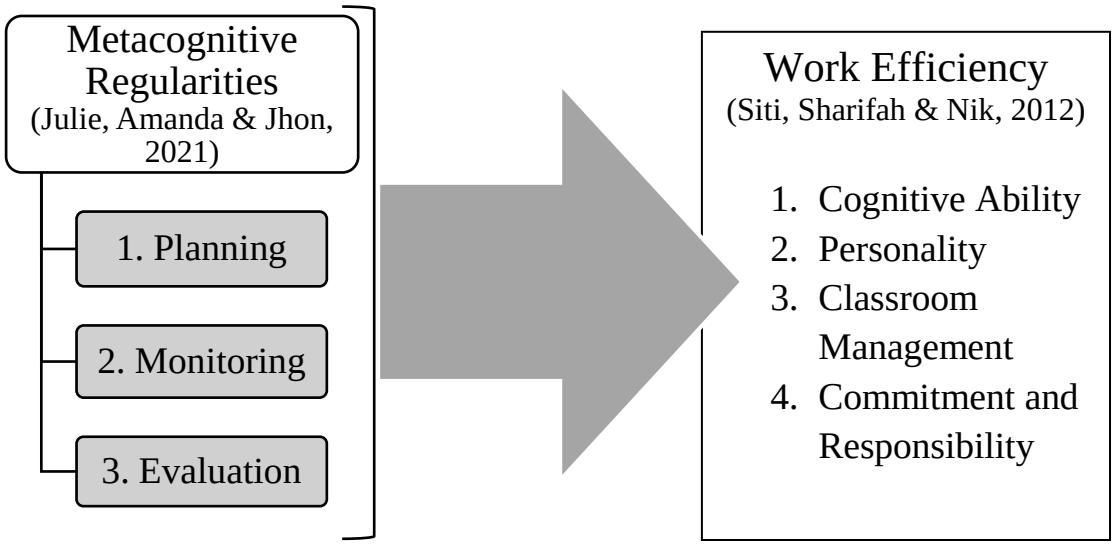
Appendix A

CONCEPTUAL FRAMEWORK OF THE STUDY



Appendix B

APROVAL OF M.Phil THESIS TOPIC AND SUPERVISOR

NATIONAL UNIVERSITY OF MODERN LANGUAGES
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF EDUCATIONAL SCIENCES

M.L.1-3/ES/2023/421 Dated: 26-06-2023

Name: **Khadija Muhammad Hussain** **Reg No.** **44-M.Phil/Edu/S22**

Subject: **APPROVAL OF M.Phil THESIS TOPIC AND SUPERVISOR**

1. Reference to Letter No, M.L.1-4/Edu/2021/421, dated 26-06-2021, the Competent Authority has approved the title/theme/Practical/Theoretical Implication and Supervisor in 16th BASR Meeting dated 21st June 2023 and the recommendations of Faculty Board of Studies vide its meeting held on 27th April 2023.

   a. **Supervisor's Name & Designation**
   Dr. Qurat ul Ain Hina,
   Assistant Professor,
   Department of Educational Sciences NUML, Islamabad.

   b. **Topic of Thesis**

   Effect of Meta Cognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study

   c. **Theme: Organizational Behaviour**
   d. **Practical Application: Pedagogical Implication**

2. You may carry out research on the given topic under the guidance of your Supervisor and submit the thesis for further evaluation within the stipulated time by **30th June 2024** for further processing as per NUML MPhil Timeline. **(Timeline Attached).**

3. As per policy of NUML, all MPhil/PhD thesis are to be run on turnitin by QEC of NUML before being sent for evaluation. The university shall not take any responsibility for high similarity resulting due to thesis run from own sources.

4. Thesis is to be prepared strictly on NUML's format which can be taken from MPhil/PhD Coordinator.

Dr. Wajeeha Shahid
Head
Department of Educational Sciences

Distribution:

Ms. Khadija Muhammad Hussain (M.Phil Scholar)

Dr. Qurat ul Ain Hina (Thesis Supervisor)

Appendix C

PERMISSION LETTER FOR DATA COLLECTION

DEPARTMENT OF EDUCATIONAL SCIENCES
FACULTY OF SOCIAL SCIENCES
National University of Modern Languages
Sector H-9, Islamabad
Tel.No: 051-9265100 Ext: 2090

ML.1-3/2023-ES/439

Dated: 05-07-2023

WHOM SO EVER IT MAY CONCERN

Ms. Khadija D/O Muhammad Hussain student of Mphil (Edu) Department of Educational Sciences National University of Modern Languages Islamabad is engaged in project of Research Work.

She may please be allowed to visit your Institutions to obtain the required information for her Research Work.

This information shall not be divulged to any unauthorized person or agency. It shall be kept confidential.

05/07/23

Dr Wajeeha Shahid
Head,
Department of Educational Sciences.

Appendix D

COVER LETTER OF VALIDITY CERTIFICATE

Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study

Subject: Request for a Certificate of Validity

Dr._____

Respected Ma'am/Sir,

I have included my research questionnaires, which are titled as Effect of Metacognitive Regularities on Work efficiency of University Teachers: A mix Methods Study.

Tool 1, The questionnaire

There are the two questionnaire. It is structured so that the independent variable Metacognitive Regularities is covered and the dependent variable Work Efficiency of University Teachers is covered in the second. There are 43 questions in the first questionnaire and 47 in the second questionnaire.

Tool 2, Semi-Structured Interview sheet

There is a Semi-structured interview sheet for qualitative analysis, the researcher will interact with university teachers in interviews. The interview sheet consists of a variety of questions that demonstrate the level of metacognitive regularities that affect the effectiveness of the university teachers' work.

Please review my questionnaire to ensure that it is valid. You may also offer helpful comments for improving the conclusion of the paper.

Khadija Muhammad Hussain
MPhil scholar (Educational sciences)
Department of education
National university of Modern Languages
Islamabad Pakistan

Appendix E

A SAMPLE CERTIFICATE FOR THE VALIDATION OF TOOLS

CERTIFICATE OF VALIDITY

Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study

By Khadija Muhammad Hussain

MPhil scholar, Department of Education, Faculty of Social Sciences

National University of Modern Languages (NUML), H-9, Islamabad Pakistan

This certifies that I have evaluated the research tools developed by the scholar for his research paper and determined them to be excellently constructed for "Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study".

It is understood that the research tool developed for the above-mentioned title, as well as its association with the objectives and hypotheses of the research, ensures appropriate validity for the purpose of the research and can be used for data collection by the researcher with an appropriate level of confidence.

Name: _____

Designation: _____

Institution: _____

Signature: _____

Date: _____

Appendix F

INSTRUMENT VALIDITY EXPERTS LIST

Sr No.	Name of Experts	Designation	Department	Name of the University
1	Dr. Syed Nasir Hussain	Assistant Professor	Early childhood education & elementary Teacher Education Department	Allama Iqbal Open University Islamabad
2	Dr. Munazza Ambreen	Assistant Professor	Secondary Teacher Education Department	Allama Iqbal Open University Islamabad
3	Dr. Mubeshera Tufail	Lecturer	Early childhood education & elementary Teacher Education Department	Allama Iqbal Open University Islamabad
4	Dr. Tooba Saleem	Lecturer	Secondary Teacher Education Department	Allama Iqbal Open University Islamabad

Appendix G

CERTIFICATES OF THE TOOL VALIDATION

CERTIFICATE OF VALIDITY

Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study

By Khadija Muhammad Hussain

MPhil scholar, Department of Education, Faculty of Social Sciences

National University of Modern Languages (NUML), H-9, Islamabad Pakistan

This certifies that I have evaluated the research tools developed by the scholar for his research paper and determined them to be excellently constructed for "Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study".

It is understood that the research tool developed for the above-mentioned title, as well as its association with the objectives and hypotheses of the research, ensures appropriate validity for the purpose of the research and can be used for data collection by the researcher with an appropriate level of confidence.

Name: Dr. Syed Nasir Hussain

Designation: Assistant Professor
Early Childhood Education &
Elementary Teacher Education Department
Allama Iqbal Open University, Islamabad

Institution:

Signature:

Date: 15/8/2023

CERTIFICATE OF VALIDITY

Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study

By Khadija Muhammad Hussain

MPhil scholar, Department of Education, Faculty of Social Sciences

National University of Modern Languages (NUML), H-9, Islamabad Pakistan

This certifies that I have evaluated the research tools developed by the scholar for his research paper and determined them to be excellently constructed for "Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study".

It is understood that the research tool developed for the above-mentioned title, as well as its association with the objectives and hypotheses of the research, ensures appropriate validity for the purpose of the research and can be used for data collection by the researcher with an appropriate level of confidence.

Dr. Munazza Ambreen
Assistant Professor
STED, AIOU

Name: Dr. Munazza

Designation: Assistant Professor

Institution: AIOU

Signature:

Date: 16/08/23

CERTIFICATE OF VALIDITY

Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study

By Khadija Muhammad Hussain

MPhil scholar, Department of Education, Faculty of Social Sciences

National University of Modern Languages (NUML), H-9, Islamabad Pakistan

This certifies that I have evaluated the research tools developed by the scholar for his research paper and determined them to be excellently constructed for "Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study".

It is understood that the research tool developed for the above-mentioned title, as well as its association with the objectives and hypotheses of the research, ensures appropriate validity for the purpose of the research and can be used for data collection by the researcher with an appropriate level of confidence.

Name: Dr. Mubeshera Tufail

Designation: Lecturer

Institution: AIOU

Signature:

Date: 17-08-2023

Ms. Mubeshera Tufail
Lecturer
Early Childhood [illegible]
Elementary Teacher Educ[illegible]
Allama Iqbal Op[illegible]
Islamabad

CERTIFICATE OF VALIDITY

Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study

By Khadija Muhammad Hussain

MPhil scholar, Department of Education, Faculty of Social Sciences

National University of Modern Languages (NUML), H-9, Islamabad Pakistan

This certifies that I have evaluated the research tools developed by the scholar for his research paper and determined them to be excellently constructed for "Effect of Metacognitive Regularities on Work Efficiency of University Teachers: A Mix Methods Study".

It is understood that the research tool developed for the above-mentioned title, as well as its association with the objectives and hypotheses of the research, ensures appropriate validity for the purpose of the research and can be used for data collection by the researcher with an appropriate level of confidence.

Name: Dr. Tooba Saleem

Designation: Lecturer

Institution: AIOU

Signature: Tooba

Date: 18-08-23

Dr. Tooba Saleem
Lecturer
Secondary Teacher Education Department
AIOU Islamabad

Appendix H

LIST OF UNIVERSITY TEACHERS IN PUBLIC AND PRIVATE HEC RECOGNIZED UNIVERSITY IN ISLAMABAD ENROLEMENT (2021-2022)

S No	Islamabad public and private sector University Names	Public	No	Private	No
1	Air university	Public	373		
2	Allama Iqbal open university (AIOU)	Public	199		
3	Capital University of Science and Technology			Private	218
4	Baharia university	Public	922		
5	Comsat Institute of Information and Technology	Public	2268		
6	Health Services Academy (HAS)	Public	18		
7	Institute of space Technology	Public	180		
8	International Islamic University (IST)	Public	620		
9	National Defence University (NDU)	Public	103		
10	National Universities of Modern Languages (NUML)	Public	771		
11	National University of Science and Technologies (NUST)	Public	1344		
12	Pakistan Institute of Development Economics (PIDE)	public	31		
13	Pakistan Institute of Engineering and Applied Science (PIEAS)	Public	298		
14	Quaide azam University	Public	322		
15	Shaheed Zulfiqar Ali Bhutto Medical University	Public	195		

16	Foundation University			Private	352
17	National University of Computer and Emerging science			Private	533
18	National University of Technology Islamabad (NUTECH)	Public	86		
19	Ripha University			Private	1007
20	Shifa Tameer-e-Millat University			Private	227
21	Sir Syed Institute of Technology, Islamabad (CASE)			Private	53
22	Muslim Youth University			Private	58
	Total		**7743**		**2721**

Universities total Population	**10464**	

Appendix I

DETAILS OF THE SAMPLING UNIVERSITY-WISE VIEW

	Public University of HEIs for the year 2021-22			
	Name of University		Total no T's in each U	Sample size 05 % of each U
1	Air University, Islamabad	Public	373	19
2	Allama Iqbal Open University (AIOU), Islamabad	Public	199	10
3	Bahria University, Islamabad	Public	922	46
4	COMSATS University, Islamabad	Public	2268	113
5	Health Services Academy (HSA), Islamabad	Public	18	01
6	Institute of Space Technology, Islamabad	Public	180	09
7	International Islamic University, Islamabad	Public	620	31
8	National Defense University (NDU), Islamabad	Public	103	05
9	National Skills University, Islamabad	Public	13	1
10	National University of Modern Languages (NUML), Islamabad	Public	771	39
11	National University of Sciences & Technology (NUST), Islamabad	Public	1344	67
12	National University of Technology (NUTECH), Islamabad	Public	86	5
13	Pakistan Institute of Development Economics (PIDE), Islamabad	Public	31	6
14	Pakistan Institute of Engineering & Applied Sciences (PIEAS), Islamabad	Public	298	10
15	Quaid-i-Azam University, Islamabad	Public	322	16
16	Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad	Public	195	10
	Total	**16**	**7743**	**388**
	Private University of HEIs for the year 2021-22			
1	Capital University of Sciences & Technology, Islamabad	Private	218	11
2	Foundation University, Islamabad	Private	352	18
3	Muslim Youth University, Islamabad	Private	58	03
4	National University of Computer and Emerging Sciences, Islamabad	Private	533	26
5	Riphah International University, Islamabad	Private	1007	50
6	Shifa Tameer-e-Millat University, Islamabad	Private	500	25
7	Sir Syed (CASE) Institute of Technology, Islamabad	Private	53	03
	Total	**7**	**2721**	**136**

Appendix J

Sr. No _____

THE QUESTIONNAIRE

Effect of Metacognitive Regularities on Work Efficiency of University Teachers

Dear Respondent,

I am MPhil student conducting research on the aforementioned subject. I asked you to complete the questionnaire I've enclosed. Demographic data make up the questionnaire's first section. Metacognitive Regularities are the subject of the second and last section of the questionnaire. The questionnaire's second section addresses the effectiveness of teachers' work. The questionnaire was created with research in mind. I will keep the information you supply and your response private. I value your independence and dignity.

Khadija Muhammad Hussain
M.Phil. Scholar (Educational Sciences)
Department of Educational Sciences
NUML, Islamabad, Pakistan

Tool /Questionnaire

Demographics:

1	**University type**	Public (1)	Private (2)			
2	**Designation**	Lecturer (1)	Ass. Prof (2)	Assoc. Prof (3)	Professor (4)	
3	**Job status**	Permanent (1)	Contract (2)	Visiting (3)		
4	**Experience**	0-2 (1)	2-5 (2)	5-10 (3)	10-20 (4)	20+ (5)

Metacognitive Regularity Assessment Scale (MRAS)

Instruction:

Please mark your response against 1 to 5 that Indicate your response like (1= strongly disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree).

Sr. No	Code	Questions	SD 1	D 2	N 3	A 4	SA 5
		1. Planning It is a management process concludes by determining ways to enhance your effectiveness going forward in similar circumstances according to both internal and external input					
1	PL1	I do planning for the best learning environment.	1	2	3	4	5
2	PL2	I plan my pedagogical task a few days before for class.	1	2	3	4	5
3	PL3	I plan activities for my career development.	1	2	3	4	5
4	PL4	I feel lesson planning helps me in a better way.	1	2	3	4	5
5	PL5	I complete my commitment by using calendar.	1	2	3	4	5
6	PL6	I successfully conduct student activities by managing class time.	1	2	3	4	5
7	PL7	I feel planning helps me recognize teaching strengths.	1	2	3	4	5
8	PL8	I revise my responsibilities during lecture formation.	1	2	3	4	5
9	PL9	I can compensate for my weak point with proper plans.	1	2	3	4	5
10	PL10	I schedule my daily work activities in advance.	1	2	3	4	5
11	PL11	I plan course objectives to improve my course efficiency.	1	2	3	4	5
12	PL12	I always make target plans for exam topics.	1	2	3	4	5
		2. Monitoring The thoughtful checked of abilities and techniques to raise the potential of a preferred result can be learned in a manner that allows for transfer to new situations.					

13	M1	I keep track of my lesson plans to improve my lecture delivery.	1	2	3	4	5
14	M2	I observe the best way to teach topics is to do a discussion.	1	2	3	4	5
15	M3	I noticed that progress-tracked classes give the best grades in universities.	1	2	3	4	5
16	M4	I check student learning through presentations.	1	2	3	4	5
17	M5	I keep checking on my own pedagogies.	1	2	3	4	5
18	M6	I keep track of my instruction practice to help me with course responsibilities.	1	2	3	4	5
19	M7	I progress in my teachings through a series of achieved commitments.	1	2	3	4	5
20	M8	I believe impact monitoring helps to improve the curriculum.	1	2	3	4	5
21	M9	I agree that all class resources are updated by oversight.	1	2	3	4	5
22	M10	I always follow up on my university-assigned task.	1	2	3	4	5
		3. Evaluation An intense method of estimation usually involves connections between previous knowledge and new material, organizing and structuring content ideas, reorganizing one's cognitive processes, using schemes and a focus on proof and reasoning, as well as making connections between one's own experiences and realistic scenarios.					
23	E1	I consider course evaluation as an annual practice for the university.	1	2	3	4	5
24	E2	I think classroom observations are the key concern in teaching.	1	2	3	4	5
25	E3	I always improve my teaching thru valuation.	1	2	3	4	5
26	E4	I found gaps in my teaching through summing up.	1	2	3	4	5
27	E5	I detect students learning deficiencies by observation.	1	2	3	4	5
28	E6	I always evaluate my teaching task with commitment.	1	2	3	4	5
29	E7	I believe topic inspection promotes the subject's development.	1	2	3	4	5

30	E8	I always face policy challenges brilliantly at university.	1	2	3	4	5
31	E9	I know institutional standards established on valuation.	1	2	3	4	5

Work Efficiency Assessment scale (WEAS)

		1. Cognitive Ability A highly general mental capability that, among other things, comprises the capacity for logic, arrange, resolve issues, think creatively, understand complex things, learn fast, and gain insight is just how intellect or cognitive ability is defined.					
	Code	**Questions**	**SD**	**D**	**N**	**A**	**SA**
1	CA1	I use verbal reasoning in classroom teaching.	1	2	3	4	5
2	CA2	I utilize reasoning abilities for pedagogical tasks oversight.	1	2	3	4	5
3	CA3	I trust intellectual capacity promotes classroom instruction.	1	2	3	4	5
4	CA4	I utilize my working memory to avail career opportunities.	1	2	3	4	5
5	CA5	I examine any subject thru visual processing.	1	2	3	4	5
6	CA6	I take notice of conditions using my conceptual skills for task management.	1	2	3	4	5
7	CA7	I use social cognition to understand my students as a teacher.	1	2	3	4	5
8	CA8	I always solve issues using my thinking skills.	1	2	3	4	5
9	CA9	I utilize my intellectual capacities to take decisions for students.	1	2	3	4	5
		2. Personality It is considered that compared to someone who is moderate, someone who is extreme on a specific feature level shows that characteristic's family of related behaviors more commonly. Thus, an illustration of a competitive attitude.					
10	P1	I am a very popular teacher of students.	1	2	3	4	5
11	P2	I think strong relationships with students and teaching go hand in hand.	1	2	3	4	5

12	P3	I am well aware that changing student behavior by strictness is not possible.	1	2	3	4	5
13	P4	I apply all of my qualities in teaching to help my students.	1	2	3	4	5
14	P5	I know behavior creates characters.	1	2	3	4	5
15	P6	I can control my mood swings in the classroom.	1	2	3	4	5
16	P7	I am able to control my feelings In difficult situations.	1	2	3	4	5
17	P8	I investigate the scenario before taking class decisions.	1	2	3	4	5
18	P9	I consider tracking makes it easy to advise students who are not active.	1	2	3	4	5
19	P10	I tackle my mission carefully.	1	2	3	4	5
20	P11	I am a versatile person for my colleagues.	1	2	3	4	5
		3. Classroom Management In this context, classroom management generally refers to the methods and techniques employed by teachers to address the issue of maintaining order in their classes.					
21	CM1	I manage silence in classroom for discipline.	1	2	3	4	5
22	CM2	I generally utilize a teamwork strategy in class.	1	2	3	4	5
23	CM3	I observe, It's ideal for students to sit in straight lines.	1	2	3	4	5
24	CM4	I focus on respecting university regulations in the classroom.	1	2	3	4	5
25	CM5	I like to design classrooms with a focus on the students.	1	2	3	4	5
26	CM6	I help pupils on a regular basis to motivate them.	1	2	3	4	5
27	CM7	I know planning creates excellent class time.	1	2	3	4	5
28	CM8	I utilize only the administration's provided resources in classroom.	1	2	3	4	5
29	CM9	I constantly ask students to keep the classroom tidy by observing them.	1	2	3	4	5
		4. Commitment and Responsibility A commitment is an intellectual or passionate attachment to a group's goals and ideals, to how one fits into those goals and values, and to the group as a whole.					
30	CR1	I am responsible for completing the subject curriculum.	1	2	3	4	5

31	CR2	I wisely meet the demands of the student's learning.	1	2	3	4	5
32	CR3	I try to engage every learner in my period.	1	2	3	4	5
33	CR4	I take part in all institution-wide events.	1	2	3	4	5
34	CR5	It is a teacher's responsibility to build up students' social skills.	1	2	3	4	5
35	CR6	I believe the duty of the teacher is to maintain academic standards.	1	2	3	4	5
36	CR7	I trust that the interpersonal abilities of students must be developed by teachers.	1	2	3	4	5
37	CR8	I always become a part of the university establishment workgroup	1	2	3	4	5
38	CR9	I spend my time updating university policies.	1	2	3	4	5
39	CR 10	I always offer a hand to other officials as a good university colleague.	1	2	3	4	5
40	CR 11	I give classroom evaluations with an accurate approach.	1	2	3	4	5
41	CR 12	I feel it is my responsibility to respect my seniors' comments heartily.	1	2	3	4	5
42	CR 13	I am committed to carrying out the classes at the appointed hour.	1	2	3	4	5

Appendix K

Sr. No----------

SEMI-STRUCTURED INTERVIEW SHEET

Effects of Metacognitive Regularities on Work Efficiency of University Teachers

Semi-Structured Interview sheet

Demographics:

1	**University type**	Public (1)	Private (2)			
4	**Designation**	Lecturer (1)	Ass. Prof (2)	Assoc. Prof (3)	Professor (4)	
5	**Job status**	Permanent (1)	Contract (2)	Visiting (3)		
6	**Experience**	0-2 (1)	2-5 (2)	5-10 (3)	10-20 (4)	20+ (5)

Section One Metacognitive Regularities

Planning

1. Do you feel planning comprises the correct vision for mission. How?

_____

2. Do you think planning gives effect on student performance? Why?

_____

3. Do you think planning improves course efficiency? How?

_____

4. Do you complete commitment by using a calendar? How?

_____

5. Do you schedule daily work activities in advance? Why?

_____

Monitoring

6. Do you feel monitoring helps to organize the best work? How?

_____

7. Do you think that monitoring is difficult to do? Why?

_____

8. Do you think presentation helps student work monitoring? How?

_____

9. Do you think monitoring helps in achieving step-by-step commitment to work? Why?

_____

10. Do you agree that all class resources are updated by monitoring? How?

_____

Evaluation

11. Does evaluation provide factual Support? How?

_____

12. Does evaluation help to enhance the quality of work? Why?

_____

13. Do you believe topic inspection promotes the subject's development? Why?

_____

14. Do you think evaluation found gap in teaching process? How?

_____

15. Do you consider course evaluation as an annual evaluation practice in an academic institution? Why?

_____

Section Two Work Efficiency

Cognitive Ability

1. Does Cognitive ability help in teaching? How?

_____

2. Do you think that Cognitive ability helps in classroom management? Why?

_____

Personality

3. Does the teacher's Personality affect the teaching and learning process? How?

_____

4. Do you think Personality is a combination of attitudes? Why?

_____

Classroom Management

5. Does the silence is effective for classroom management? Why?

_____

6. Do the teachers use group activity known as classroom management? How?

_____

Commitment and Responsibility

7. Do you feel that Effective performance is intervened by the teachers Commitment? How?

_____

8. Do you think being committed increases your responsibility? Why?

_____

Section Three Effect of University Teachers Metacognitive Regularities on their Work Efficiency

Metacognitive Regularity Effects on Work Efficiency

1. Do you agree that monitoring effects on teaching? Why?

_____

2. Do you think that evaluation integrates the information? How?

_____

Work Efficiency Determination

3. Does the university environment remain well-organized by the teachers? Why?

_____

4. Do you accept that teacher affects students' overall well-being? How?

_____

Special note:

A Semi-structured interview was recorded with the respondent's permission.

Dated: _____

Signature: _____

Researcher comments: _____

Appendix L

QEC TURNITIN REPORT

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