Journal of Engineering Education Transformations,
Volume No. 37, January 2024 Special Issue, eISSN 2394-1707

A Holistic Approach to Professional Development: Integrating Kolb's Experiential Learning Theory for Soft Skills Mastery

Dr.G.Haritha[1], Dr.Ratna Rao[2]
[1]Department of OB&Communication, Institute of Management, Nirma University, Ahmedabad, Gujarat
[2]Department of Humanities& Social Science, Institute of Technology, Nirma University, Ahmedabad, Gujarat
[1]guduru.haritha@gmail.com
[2]ratna.rao@nirmauni,ac.in

***Abstract* - Kolb's Experiential Learning Theory emerged as a foundational educational framework in higher education, offering a structured approach to design sessions and courses that encompass a complete learning cycle. The theory aligned specific phases of the cycle with varied learning styles, acknowledging the diverse preferences individuals have for learning. Recognizing these distinct learning styles constitute the initial stride in cultivating learners' awareness of alternative learning strategies. The research investigated the practical application of Kolb's theory within professional studies encompassing disciplines such as management, engineering, design, and law. Through a stage wise application of the theory, the research delved into how Kolb's Experiential Learning Theory effectively enhanced the understanding of soft skills. The objectives of the study were twofold: first, to understand the dominant learning styles of the mentioned professional courses and apply Kolb's Experiential Learning Model in a step-by-step process to teach and learn soft skills for each course, and second, to evaluate the effectiveness of the stage-wise application of Kolb's theory in understanding soft skills to the management learners for holistic student development, which could further be applied to other professional courses too. By integrating theory into practical scenarios stage by stage and in a cyclic way, educators and practitioners actively contribute to assimilation, thus paving the way for the holistic development of professional learners, equipping them with the soft skills necessary for success in their respective fields.**

Key words: **Kolb's experiential learning theory; learning styles; professional learners; soft skills; teaching and learning**

***JEET Category*— Research**

I. INTRODUCTION

The Kolb's influential study, "Experiential Learning: Experience as the Source of Learning and Development," of 1984, has profoundly shaped minds of educators and trainers. Particularly, (Cimatti, 2016) those who engage with learners over higher secondary and above have been significantly impacted by the ideas put forth by this American organizational psychologist. (Fielding 1994, Robotham 1995). In contrast to the works of numerous other authors, the research by Kolb provides a solid foundation (Holman et al. 1997) in theory. The process of erudition entails the production of knowledge through involvement into experiences (Kolb, 1984). His theory provides a structured approach for organising and sequencing curricula, outlining how individual sessions or entire courses can be designed to enhance student learning.

The theory proposes a cyclical learning process comprised of four stages: experience, reflection, generalisation, and testing (Cowan, 1998), with each stage intricately linked to a distinct learning style (Cimatti, 2016). The initial step in enhancing learners' adaptability to diverse learning situations (Gibbs, 1988) is to increase their awareness of various approaches by recognising individuals with diverse learning preferences. Similarly, educators should acknowledge one's own style of learning as the foundation for developing effective teaching and learning methodologies (Fielding, 1994). Inconsistencies between a learner's style and an educator's approach can hinder the progression of learning (Fielding, 1994). Kolb's work emphasises the importance of experiential learning and the synchronisation of pedagogical techniques with individual learning preferences, providing educators and learners with invaluable insights (Robotham, 1995).

As higher education experiences growth across multiple countries and a heightened focus on inclusivity, diversity, retention rates, and lifelong learning emerges, the exploration of varied learning styles is steadily gaining significance. (Asif et al., 2021; Buheji, 2020). This is especially relevant in the context of soft skills education, where recognition and appreciation of skills and usage diversity have risen to prominence (Cimatti, 2016; Garcia, 2014). The concept of diverse learning styles aligns with these principles as it is deeply ingrained in an educational framework that recognizes all essential facets of active learning, while also adeptly embracing a broad spectrum of individual and culturally influenced differences (Medriano, 2021). The theory's validity and practicability have gained widespread acceptance, with it frequently functioning as the primary or sole framework in discussions about experiential learning (Henry, 1989) and soft skills education (Cornali, 2018). This theory's appeal

stems from its capacity to rationalise diverse learning approaches, such as self-directed learning, learning through practical engagement, workplace-based learning, and problem-centred learning. The aforementioned approaches have garnered significant interest in the realm of higher education (Cimatti, 2016) as well as in the domain of soft skills instruction (Jaser Khalaf Mahasneh, 2016; Mishra et al., 2020). The extensive applicability of the theory in the domain of soft skills is supported by insights derived from other disciplines (Buheji & Buheji, 2020; Cornali, 2018; Cimatti, 2016; Fixsen & Ridge, 2019; Immanuel et al., 2021; Mishra et al., 2020; Jaser Khalaf Mahasneh, 2016). According to Burkill et al. (2000), engaging in this practice aids learners in cultivating self-awareness and assists educators in becoming reflective instructors. Additionally, it promotes learners' ability to engage in perceptive learning, (Mason O'Connor and Birnie,1998). The identification of learners' individual learning styles (Hertzog and Lieble, 1996), the imparting of crucial skills (Harwood and Chalkley, 1998; Kilmartin and Heigh, 1999), the organization of group work (Brown, 1999), the assessment of Learning through resources (Shepherd and Healey, 1998), and the development of a comprehensive program for enhancing cumulative skills (Jenkins, 1998) are all valuable contributions. This theoretical framework offers a versatile and comprehensive approach in improving multiple aspects of education and facilitating the adoption of effective learning practices (Mellor, 1991)

Kolb's theory is highly regarded for enhancing soft skill teaching in professional settings (Cimatti, 2016; Garcia, 2014). It offers practical application guidelines, promoting diverse teaching methods that are beneficial for cultivating soft skills in learners (Cacciolatti et al., 2017). The theory provides a strong theoretical basis for instructors, bridging the gap between soft skill concepts and practical applications in professional contexts (Garcia, 2014). Emphasis on reflective practices and targeted feedback, fosters a conducive learning environment for professional learners (Cacciolatti et al., 2017). Accommodating various learning styles and backgrounds, addresses diverse needs, making it adaptable across multiple professional domains, from engineering, management to design and law.

The Fixsen & Ridge (2019) study highlights Kolb's theory as a versatile tool for teaching soft skills to professional learners, both individually and in team settings. Theory emphasis on the applicability across various fields aims to bridge the gap between theory and practical application. The research serves a twofold thought: To understand the dominant learning styles and outlining Kolb's theory's traits and exploring its potential in holistic development of professional learners, especially in soft skill education.

II. KOLB'S EXPERIENTIAL LEARNING THEORY

In 1984, Kolb introduced a comprehensive theory which laid foundation for an academic approach focused on lifelong learning, with roots tracing back to the diverse contributions of Dewey and Lewin. The theory emerged from the cognitive, ethical, socio-psychological and intellectual traditions (Skerritt-Zuber, 1992). At the heart of Kolb's model is a thoughtful illustration of a continuous cycle that depicts the conceptualization of experience through reflective process. The concepts then direct the selection of new experiences and active experimentation. These phases are labelled by Kolb as concrete experience (CE), reflective observation (RO), abstract conceptualization (AC), and active experimentation (AE), and they constitute a sequential cycle (Table I). Although the learners happen to initiate the process at any phase, it is recommended that they follow the stages in order. The feedback generated by the learning cycle serves as the foundation for new actions and the evaluation of their outcomes. It is recommended that learners traverse the cycle multiple times, visualising it as a spiral of iterations (Lieble, 1996). As suggested by its name, the experiential learning theory emphasizes the importance of engaging in experiential activities, encompassing elements such as investigation and workroom sessions. The crux is to guide learners through a way that is systematic in each stage of the cycle, making sure of vigorous connections between the concept and experience.

TABLE I
THE EXPERIENTIAL LEARNING CYCLE BY KOLB (BASED ON JENKINS 11998,431)

Concrete experience (CE) →Reflective observation (RO)→ Abstract conceptualization (AC) → Active experimentation (AE)(in a cyclic process)

Concrete experience	Learner engages in the activity.
Reflective observation	Learner engages in conscious reflection on an experience.
Abstract conceptualization	Learner encounters or endeavors to hypothesize a theoretical structure of the observed or intended scenario.
Active experimentation	The learner formulates strategies for testing a theoretical model or for planning an upcoming experience.

The model provides a direct critique of excessively theoretical programmes or courses that fail to recognise the significance of prior experiences and knowledge of learners (Lieble,1996). It similarly criticises activities, such as specific on ground courses, replications, and activities, in which learners lack adequate grounding for the experience or are not given sufficient opportunities to trace back on the knowledge and connect it to their broader readings or the more theoretical aspects of the course (Jenkins, 1997).Kolb's theory, rooted in experiential learning, is structured around two key axes: abstract conceptualization-concrete experience (AC-CE) and active experimentation-reflective observation (AE-RO) (Kolb and Smith, 1986). These axes encapsulate how individuals absorb new experiences and process them for understanding. The theory illustrates a spectrum from

concrete, sensory immersion to abstract, logic-driven thinking. Following experiences, individuals engage in transformative comprehension, diverging towards active experimentation or reflective observation (Fielding, 1994). These axes intersect to form four learning styles (Fig. 1) that denote individuals' preferred learning approaches and even their disciplinary affiliations. According to Kolb (1984), individuals tend to favour a specific learning style, though they may adapt based on circumstances. Kolb identified four distinct learning styles, each linked to varied learning conditions (Table. II).

Divergent learners exhibit divergent thinking, engaging in multifaceted perspectives and extensive idea generation. They excel in constructing theoretical frameworks, connecting diverse concepts for holistic understanding. Key traits include creativity, multi-perspective observation, openness to experience, issue recognition, and exploration of opportunities (Kolb, 1984). Convergent learners are strong in hypothetical-deductive reasoning, emphasizing practical applications and structured problem-solving. They excel in hands-on tasks, make focused efforts, and prioritize one correct solution. They assess proposals, make choices, and select among alternatives based on systematic reasoning processes (Kolb, 1984).

Accommodators are proactive individuals who emphasize practical execution and adaptability in problem-solving. They readily adjust strategies, focus on immediate outcomes, and employ a trial-and-error approach. They establish clear objectives, prioritize actions, and are inclined to establish timetables to achieve their goals (Kolb, 1984). Assimilators use inductive reasoning to extract patterns from specific instances, constructing comprehensive understandings by synthesizing information. They excel in developing theories, analysing alternatives, defining issues, setting standards, and forming hypotheses (Kolb, 1984).

Divergers	**Convergers**
English	Art
Philosophy	History
History	Computing
Linguistics	Applied economics
Sociology	Applied physics
	Engineering
	Forestry
	Demography
	Law
	Medical research

Accommodators	**Assimilators**
Commerce	Earth sciences
Environmental sciences	Mathematics
Education	Economics
Political sciences	Theoretical physics
Public administration	Astronomy
Soft skills	Chemistry
Demography	Classics
	Physics

Fig. 1. Discipline Groups (From Nulty and Barret 1996, 335)

The selection of a learner's style is influenced by inherent abilities, past learning experiences, and learning conditions. Kolb proposed that effective learning occurs when teaching aligns with an individual's preferred learning style (Table II). Learners tend to favour their natural learning tendencies. Educators may also lean towards methods aligning with their own styles, assuming these are best for students. Research advocates for engaging learners across multiple learning stages to boost learning and retention (Sticky, 1987), supporting Kolb's recommendation for educators to encourage participation in all four phases of the learning process.

Kolb (1984) proposes intentional mismatches between learning and instructional styles for long-term benefits. This approach aims to cultivate self-renewal and self-direction in learners across four learning phases: being active, reflective, abstract, and concrete. The strategy encourages navigating tensions from diverse orientations, recognizing that creativity often emerges from such interactions (Sticky, 1987). The goal is fostering learners capable of self-renewal and proficiency across all phases, engaging actively with conflicts to ignite and nurture creativity (Kolb, 1984).

TABLE II
THE RELATIONSHIP BETWEEN LEARNING STYLES AND LEARNING CONDITIONS (AFTER KOLB 1984)

Learning Style	Optimum Learning conditions
Diverger	When permitted to observe and acquire a vast array of data
Converger	When hands on applications of ideas and theories are provided, when permitted to acquire practical experience
Accommodator	When presented with rationally solid hypotheses to contemplate
Assimilator	When permitted to observe and acquire a vast array of data

A. Kolb's Theory and Soft skills

In the contemporary environment, the importance of soft skills transcends disciplinary boundaries and imparts an important role in the holistic development of individuals (Borah et al., 2020). This is accentuated for learners as they navigate the dynamic currents of personality evolution (Byrne et al., 2018). While the core essence of soft skills resonates universally, a survey conducted for the development of the research generate distinct demands for these skills, enriching both personal and professional development paths.

In the post-pandemic landscape, a cross-disciplinary survey across engineering, management, law, and design highlighted crucial soft skills. For engineering learners, key skills include communication, originality, teamwork, conflict resolution, time management, problem-solving, attention to detail, critical thinking, empathy, and a willingness to learn. Management majors prioritize analytical and strategic reasoning, delegation, adaptability, entrepreneurial skills, emotional intelligence, cross-cultural competence, and mental agility. Law students aim to enhance attention to detail, perseverance, commercial awareness, resilience, and proficiency in public relations, networking, negotiations, and international affairs. Design learners value creativity, curiosity, open-mindedness, systematic thinking, ethical discernment, flexibility, adaptability, learning agility, and broadening perspectives.

The diversity among these specific soft skills underscores their broad relevance in various academic spheres. Amidst the evolving educational environment, cultivating these multifaceted soft skills among learners ensures a smooth transition into diverse professional domains (Byrne et al., 2018). This preparation not only nurtures personal growth but also facilitates seamless integration into a rapidly changing global landscape.

B. Dominant Learning Styles

In various academic domains, learners exhibit distinct dominant learning styles. In engineering, the converging learning style, focused on applying abstract concepts practically, aligns with problem-solving needs (Yu, 2015; Zhonglei, 2004). In Management studies, learners often combine assimilating and diverging styles, reflecting varied approaches to comprehension and idea exploration (Succi & Canovi, 2020). Law learners typically blend assimilating for analytical interpretation and converging for practical application (Singh Dubey & Tiwari, 2020). Design learners frequently embrace diverging for creativity and assimilating for understanding design theories (Yu, 2015; Zhonglei, 2004). The adaptation of learning styles to context underscores learners' flexibility. (Table III).

TABLE III
FIELD WISE DOMINANT LEARNING STYLES (BASED ON THE RESEARCH SURVEY)

Field of Study	Dominant Learning Styles
Engineering	Converging
Management	Assimilating, Diverging
Law	Assimilating, Converging
Design	Diverging, Assimilating

C. Applying the Theory to Soft skills

Kolb's experiential learning theory offers a versatile framework for effective teaching strategies across disciplines, resonating with educators' diverse roles. Its phases-engagement, reflection, conceptualization, and experimentation; mirror research phases, outlining a cyclical learning path (Skerritt-Zuber, 1992). This theory's adaptability extends to teaching interpersonal skills to professional learners, evident in both practical scenarios and abstract concepts like emotional intelligence etc.

Gibbs (1988) correlates instructional methods with Kolb's phases: creating experiential opportunities, boosting self-awareness, reviewing experiences, and offering alternative experience pathways. Kolb advocates for action plans and learning methods bridging conceptualization and experimentation. Techniques like structured discussions, peer evaluations, and self-assessment enhance the reflective phase (Canovi, 2020). Svinicki and Dixon (1994) suggest similar strategies aligning with the learning cycle's different aspects.

Gibbs (1988) asserts that genuine learning involves a blend of action and knowledge, surpassing mere practical application or theoretical reflection. This approach forms an effective method for teaching soft skills to professional learners. When guided through Kolb's experiential cycle, learners' adaptability, resilience, and flexibility thrive (Canovi, 2020). Using concrete experiences followed by reflective session aids in extracting insights and abstract conceptualization. Subsequent active experimentation, be it through role-playing or real scenarios, fosters skill implementation and refinement. Hence, Kolb's theory offers educators a comprehensive guide for nurturing the holistic development of critical soft skills among aspiring professionals.

III. TEACHING APPROACHES

A. Teaching Collaborative Skills for Engineering Learners using the Kolb's Experiential Learning Cycle

Initiate the process of developing collaborative skills by presenting engineering learners with real-world engineering assignments that require teamwork and collaboration. These initiatives may involve the design of prototypes, the resolution of technical obstacles, or the creation of innovative solutions, all of which require collaborative effort, which forms a Concrete Experience (CE)- the first stage.

Divide learners into groups and have them engage in collaborative project work for the second stage (RO - Reflective Observation). After achieving each project milestone, encourage them to reflect on the team's collaborative dynamics. Encourage them to identify effective communication strategies, obstacles encountered, and methods for enhancing team synergy. This reflection enhances the comprehension of collaborative dynamics.

Conduct a workshop or lecture that introduces the concept of collaboration in engineering contexts at Stage 3 (AC - Abstract Conceptualization). Include topics such as effective communication, cooperation strategies, conflict resolution, and the significance of interprofessional collaboration. Incorporate collaboration theories and models into engineering.

Assign each team a specific aspect of collaboration to concentrate on (e.g., communication, problem-solving, etc.) in the fourth stage (AE - Active Experimentation). Provide them with case studies or articles highlighting

successful engineering collaboration. It is their responsibility to demonstrate how the designated aspect of collaboration can be effectively implemented in engineering projects through the use of creative formats such as role-plays, videos, or presentations.
In the following session:
The fifth stage (CE - Concrete Experience) is where teams present their creative initiatives, demonstrating various aspects of effective collaboration in engineering contexts. This experience exposes learners to a variety of collaboration strategies.
After the presentations, facilitate small-group discussions in which learners ruminate on the presented collaboration strategies. Encourage them to identify common strategies that resulted in successful outcomes and to investigate potential obstacles that may arise in engineering collaborations in stage 6.
Stage 7 (AC - Conceptualization of the Abstract): Facilitate a plenary session in which you synthesise the important insights from the presentations and discussions. Relate these insights to established theories and models of engineering collaboration, enabling learners to conceptualise the practical implications within an engineering context.
Stage 8 (AE - Active Experimentation): Assign learners the task of developing individual action plans to enhance their collaborative skills. Request that they delineate specific strategies for enhancing engineering project communication, interdisciplinary collaboration, and conflict resolution. Encourage them to establish measurable objectives for every aspect of collaboration and to consider how these skills can positively influence their future engineering endeavours.

B. Teaching Emotional Intelligence for management learners using Kolb's Experiential Learning Cycle

Stage 1 (CE - Concrete Experience): Provide learners in management with scenarios or case studies involving emotional challenges in the workplace. Conflicts, team dynamics, or leadership situations in which emotional intelligence is crucial could be portrayed by these scenarios.
Stage 2 (RO - Reflective Observation): Divide learners into groups and have them analyse the Stage 1 scenarios. Encourage them to discuss how emotions were managed, the impact of emotional reactions, and the potential causes for varying emotional reactions. This reflection allows them to examine their own and others' emotional responses.
Deliver a lecture or presentation introducing the concept of emotional intelligence at Stage 3 (AC - Abstract Conceptualization). Incorporate components of emotional intelligence, encompassing motivation, self-awareness, empathy, self-regulation, and social skills, while also integrating applicable leadership and management theories related to emotional intelligence.
Assign each student group (e.g., self-awareness, empathy, etc.) a particular aspect of emotional intelligence to investigate. Give them articles or case studies that illustrate these characteristics. Their assignment is to present their findings and insights in a creative format, such as a role-play, video, or poster, demonstrating how the designated aspect of emotional intelligence can be applied in the workplace in stage 4.
In the following session:
Learners present their creative projects and observe those of other groups in the fifth stage (CE - Concrete Experience). This experience exposes them to a diversity of perspectives regarding the application of emotional intelligence in various situations.
Stage 6 (RO - Reflective Observation): After the presentations, facilitate small group discussions in which learners ruminate on the various applications of emotional intelligence. Encourage them to identify similarities, distinctions, and potential obstacles associated with the implementation of these strategies.
Stage 7 (AC - Conceptualization of the Abstract): Facilitate a plenary session in which you summarise the main takeaways from the presentations and discussions. Connect these insights to established theories and models of emotional intelligence to assist learners in conceptualising the practical applications within a theoretical context.
Stage 8 (AE - Active Experimentation): For this stage, ask each student to write a reflection paper or create a personal action plan. They should describe how they intend to improve their emotional intelligence and implement it in their future managerial responsibilities. Encourage them to establish measurable objectives for enhancing each component of emotional intelligence.
As they advance in their careers, they will be better equipped to effectively manage emotions, make better decisions, develop strong relationships, and lead teams with greater emotional intelligence.

C. Teaching Negotiation Skills to Law learners using Kolb's Experiential Learning Cycle

Stage 1 (CE - Concrete Experience): Commence the educational process by providing law students with opportunities to engage in authentic negotiating situations in the real world. One effective approach to familiarize individuals with legal disputes or contract negotiations is through the utilization of brief case studies or simulated negotiation situations. This establishes the foundation for practical negotiation expertise.

The learners should be organized into smaller groups in order to engage in discussions regarding the negotiating scenarios that were presented to them during Stage 2, which involves reflective observation (RO). It is advisable to prompt individuals to engage in introspection regarding the potential challenges they foresee, their preliminary impressions, and any presumptions they may have formed regarding the stance of the other party. This reflective exercise will equip individuals with the necessary preparation for the theoretical stages.

In Stage 3, the Abstract Conceptualization phase, it is recommended to deliver a lecture or conduct a workshop to introduce essential negotiation theories, methods, and concepts. This essay will examine several negotiation tactics, encompassing both distributive and integrative

approaches. Additionally, it will introduce key terminology such as BATNA (Best Alternative to a Negotiated Agreement) and ZOPA (Zone of Possible Agreements). This phase facilitates learners in comprehending the theoretical underpinnings of negotiation.

Allocate learners into pairs for the Stage 4 of the negotiation process, known as AE (Active Experimentation). Every partnership is confronted with a distinct negotiation environment that entails conflicting interests. Offer them resources, such as scholarly papers or educational videos, that exemplify diverse bargaining tactics. Each participant is accountable for the preparation and execution of a negotiation exercise utilizing one of the methods they have acquired. This allows individuals to actively engage in the exploration and application of negotiation tactics.

During the upcoming session:

The fifth stage, known as Concrete Experience (CE), is characterized by direct and tangible encounters with real-life situations or events. The learners proceed to provide presentations on the results of their negotiations to the entire class. The authors engage in a comprehensive analysis of the negotiation techniques utilized, the challenges faced, and the resulting outcomes. The act of sharing personal experiences offers the entire class a concrete educational opportunity.

Following the completion of the presentations, it is recommended to enable group discussions when learners engage in reflection regarding the diverse negotiating techniques that were utilized, the outcomes that were achieved, and the valuable lessons that were derived from each respective approach. It is imperative to foster an environment that prompts individuals to critically assess the effectiveness of diverse techniques within different contextual frameworks.

The seventh stage, known as Abstract Conceptualization (AC), is characterized by the ability to think critically and analytically about concepts and ideas. Please facilitate a plenary session during which you expound upon the theories and concepts that have been previously presented. Examine the practical experiences of the learners within the context of the theoretical framework, elucidating the correlation between different negotiation methods and various negotiation theories.

Stage 8, known as Active Experimentation, involves instructing learners to create individual or group assessments of their negotiation exercises. Based on the individual's personal experiences, it is imperative for them to engage in a critical evaluation of their selected strategy, thoroughly examining its inherent strengths, shortcomings, and prospects for further development. This stage involves the application of experimental methods to theoretical analysis.

This technique facilitates a comprehensive understanding of the subject matter and the practical utilization of negotiation abilities, hence enhancing the probability of learners effectively applying their acquired information in their forthcoming legal profession.

D. Teaching systematic thinking to Design learners using Kolb's Experiential Learning Cycle

Start by presenting design case studies or real-world design challenges that necessitate systematic problem-solving. Individually analyse the design processes, strategies, and results presented in these cases. This constitutes the first tangible experience.

Stage 2 (RO - Reflective Observation): Divide learners into small groups and give them design case-related guiding questions. These queries should encourage them to reflect on the design decisions made, the factors considered, and possible areas for improvement. This encourages them to think critically about the observed design processes.

Stage 3 (AC - Abstract Conceptualization): Deliver a lecture or presentation that introduces various frameworks and methodologies for systematic thinking used in design. Describe how these frameworks can facilitate a structured and organised approach to problem solving by designers. Provide examples of how systematic thinking has led to effective design results.

Assign each student group a specific systematic thinking framework (such as Design Thinking, Six Sigma, TRIZ, etc.) in the fourth stage (AE - Active Experimentation). Request that they apply the allotted framework to a fresh design problem. They must document their strategy, decisions, and results. This phase encourages learners to actively experiment with employing the principles of systematic thinking.

In the following session:

Stage 5 (CE - Concrete Experience): Have each group present their approach, demonstrating how they utilised the allocated systematic thinking framework to solve the design problem. This presentation is their concrete experience, enabling them to share and learn from one another's methods.

Stage 6 (RO - Reflective Observation): Initiate a reflective discussion after each presentation. Encourage learners to compare and contrast the various systems of systematic thought employed by their peers. Discuss the advantages and disadvantages of each approach and how they influenced the design solutions.

Stage 7 (AC - Abstract Conceptualization): Facilitate a teacher-led plenary session in which you summarise the most important insights and lessons learned from the various systematic thinking approaches. Connect these observations to the larger notion of systematic thinking and its significance in design.

Stage 8 (AE - Active Experimentation): Assign learners a task requiring them to analyse a novel design case or project using a systematic thinking framework of their choosing. This time, they may choose a framework that resonated with them or investigate one that has not yet been explored. This encourages them to continue experimenting with systematic thought.

Learners in the example were encouraged to reflect on and implement their learning in varied contexts; similarly, design learners shall approach design problems more effectively by utilising their acquired skills.

IV. THE EXPERIMENT

A. *Participants & Methodology*

An experimental study assessed Kolb's experiential theory stages and its effectiveness by exploring Emotional Intelligence (EI) among 50 undergraduate students in a management program. Using Daniel Goleman's (1995) concept of EI that encompassed self-awareness, emotion management, self-motivation, empathy, and social aptitude. Participants completed a 50-statement questionnaire based on Goleman's framework, rating each statement on a 5-point scale (1-5). Survey analysis categorized scores into three intervals: 35-50 (Strength area), 18-34 (Opportunity for improvement), and 10-17 (Priority for development).

Prior to the intervention, baseline emotional intelligence scores (Table IV; fig 2) were gathered from participants using a questionnaire The intervention involved an experimental group of 25 students and a control group of 25 students. The intervention program used developed teaching approach for soft skills teaching. the program included long duration two sessions for the experimental group, aligning with Kolb's stages. These sessions aimed at guiding sequential experiential learning of Kolb's cycle. Post-intervention, the same questionnaire was used for a follow-up assessment and the scores were captured (Table V; fig 3). Comparison of pre- and post-intervention scores for both groups (Table VI, fig 4) highlighted the program's effectiveness in enhancing emotional intelligence among management students, showcasing the importance of Kolb's experiential learning method in teaching soft skills.

B. *Analysis & Interpretation*

Following are the scores of learners from controlled and experimental groups:

TABLE IV

PRE-INTERVENTION SCORES

Group	Strength Area (35-50)	Opportunity for Improvement (18-34)	Priority for Development (10-17)
Controlled (25)	11	12	2
Experimental (25)	12	11	2

Group	Strength Area (35-50)	Opportunity for Improvement (18-34)	Priority for Development (10-17)
Controlled Group (25)	15	9	1
Experimental Group (25)	20	5	0

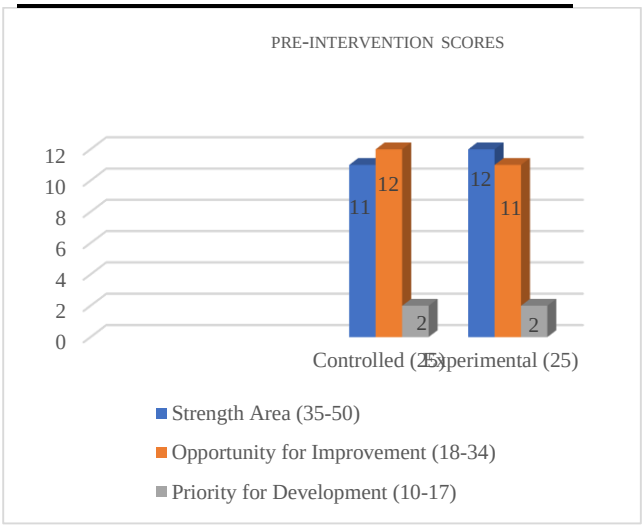

Fig.2 Pre- Intervention Scores

Both groups showed similar pre-intervention scores, evenly distributed across three ranges. Graphically, it depicts an equitable allocation, indicating comparable baseline conditions for assessing the intervention's effectiveness in both groups.

TABLE 5

POST-INTERVENTION SCORES

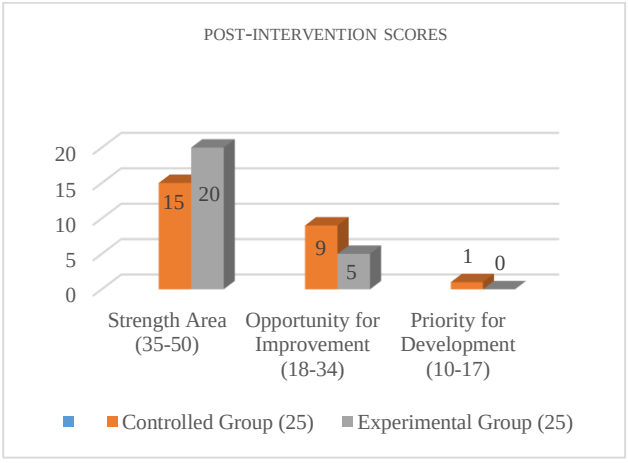

Fig.3 Post- Intervention Score

The results of the post-intervention assessment indicate a significant enhancement in the experimental group as compared to the controlled group. The results of the study of the post-intervention assessment revealed substantial improvement in emotional intelligence within the experimental group compared to the control group. The

experimental group displayed a higher number of students with strengths in emotional intelligence and fewer needing development, indicating the intervention's significant impact.

TABLE VI
PRE AND POST INTERVENTION SCORES

	Pre-Intervention	Post-Intervention	Comparison
Controlled Group (25)			
Strength Area	12	15	Increased by 3
Opportunity for Improvement	11	9	Decreased by 2
Priority for Development	2	1	Decreased by 1
Experimental Group (25)			
Strength Area	11	20	Increased by 9
Opportunity for Improvement	12	5	Decreased by 7
Priority for Development	2	0	Decreased by 2

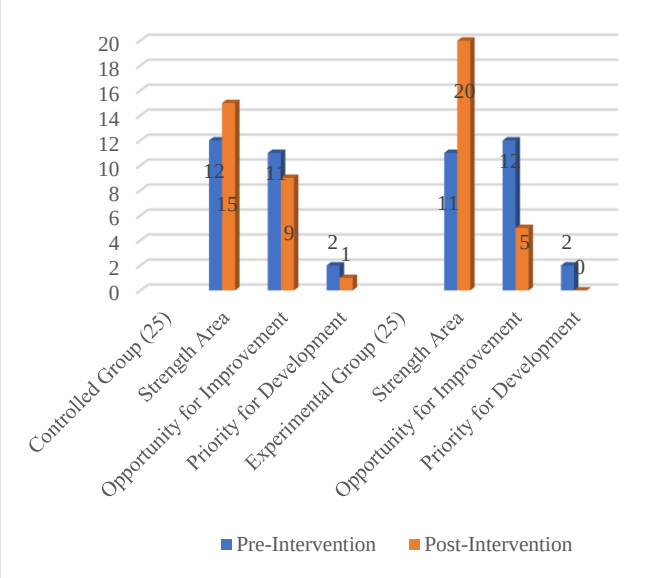

Fig.4 Pre and Post Intervention Scores

The Table VI illustrates pre-intervention and post-intervention scores for two groups: controlled and experimental, across strength area, opportunity for improvement, and priority for development. Comparatively, the controlled group showed moderate improvements in strength area and opportunity for improvement, maintaining consistency in priority for development. In contrast, the experimental group demonstrated substantial progress across all categories, with significant increases in strength area and notable decreases in both opportunity for improvement and priority for development.

The data strongly suggests that the intervention program had a more pronounced impact on the experimental group, fostering substantial advancements in their identified areas. The controlled group, while showing progress, experienced comparatively modest improvements. These findings underscore the efficacy of the intervention in significantly enhancing the experimental group's strengths, addressing areas for improvement, and reshaping priorities for development.

V. DISCUSSION AND CONCLUSION

The research experiment accentuates the smooth integration of experiential learning of Kolb's cycle, in management education without necessitating a drastic shift in teaching methods. Simple adjustments, like integrating reflective components into lectures, align with these principles. This gradual adoption not only enhances learning but also bolsters confidence in both learners and educators. Likewise, in fields of engineering, law, and design, merging experiential learning and Kolb's cycle significantly can enhance soft skill acquisition. These disciplines often demand a blend of theory and hands-on experience. Embracing experiential learning helps educators bridge the gap between theoretical understanding and practical proficiency, fostering a holistic and enriched educational experience. The learning approaches across various disciplines are tailored to suit specific learning styles:

Engineering education aligns naturally with the converging learning style, focusing on problem-solving and practical application. Active experimentation and real-world challenges enhance strategic thinking and problem-solving skills among engineering learners.

Management (Assimilating, Diverging): Experiential learning methods effectively complement diverse learning approaches in management education. The use of theoretical frameworks benefits assimilating learners, while activities like case studies and debates cater to diverging learners, encouraging original thinking and varied perspectives.

Law (Assimilating, Converging): Legal studies suit both assimilating and converging learning styles. Analysing complex legal concepts through case studies benefits assimilating learners, while problem-solving exercises help convergent learners apply legal principles to real-world situations, merging theoretical understanding with practical application.

Design: The design industry caters well to both diverging and assimilating learning styles. Creative projects and brainstorming sessions promote creativity among diverse learners, while understanding design theories and principles benefits assimilating learners, achieved through theoretical frameworks and analytical evaluations.

The experiment focused on examining Kolb's experiential learning theory's impact on management learners. Unlike many other teaching methodologies in management studies, Kolb's theory stands out due to its emphasis on both experiential and reflective phases, fostering continuous learning, critical thinking, and adaptability. This theory is particularly valuable in modern business contexts characterized by constant change. The experiment highlighted the effectiveness of implementing Kolb's theory in enhancing soft skills acquisition among

management students, emphasizing its role in practical learning and holistic development. The findings extend beyond management to various professional disciplines, suggesting future research opportunities in experiential learning. Ultimately, integrating Kolb's cycle into education offers a flexible framework benefiting diverse disciplines like engineering, law, and design, enhancing students' soft skills through tailored experiential learning strategies.

References

Asif, M., Zhiyong, D., Raisinghani, M. S., & Hassan, A. (2021). Rhetoric Situation of Novel Coronavirus (COVID-19) in social media and its Impact on Pedagogy. *International Journal of Online Pedagogy and Course Design (IJOPCD), 11*(3), 62-77. http://doi.org/10.4018/IJOPCD.2021070105

Biggs, J. (1999). Teaching for Quality Learning at University. Milton Keynes, UK: Society for Research into Higher Education and Open University Press.

Birnie, J., & Mason O'Connor, K. (1998). Practicals and Laboratory Work in Softskills. Cheltenham, UK: Softskills Discipline Network, Cheltenham and Gloucester College of Higher Education.

Borah, R. D., Malik, K., & Massini, S. (2021). Teaching-focused university–industry collaborations: determinants and impact on graduates' employability competencies. *Research Policy, 50*, 104172.

Boud, D., Keogh, R., & Walker, D. (Eds.). (1985). Reflection: Turning Experience into Learning. London, UK: Kogan Page.

Boyatzis, R. E., Cowen, S. S., Kolb, D. A., & Associates. (1995). Innovation in Professional Education: Steps on a Journey from Teaching to Learning. San Francisco, California: Jossey-Bass.

Bradbeer, J. (1999). Barriers to interdisciplinarity: Disciplinary discourses and student learning. *Journal of Softskills in Higher Education, 23*, 381-396.

Bradford, M. (2000). Improving Learners' Team and Personal Skills. Cheltenham, UK: Softskills Discipline Network, Cheltenham and Gloucester College of Higher Education.

Brown, G. H. (1999). A group-learning approach to academic and transferable skills through an exercise in the global positioning system. *Journal of Softskills in Higher Education, 23*, 291-301.

Buheji, M., & Buheji, A. (2020). Planning Competency in the New Normal– Employability Competency in Post- COVID-19 Pandemic. *International Journal of Human Resource Studies, 10*(2), 237. https://doi.org/10.5296/ijhrs.v10i2.17085

Burkill, S., Corey, D., & Healey, M. (2000). *Improving Learners' Communication Skills in Softskills.* Cheltenham, UK: Softskills Discipline Network, Cheltenham and Gloucester College of Higher Education.

Byrne, Z. S., Weston, J. W., & Cave, K. (2018). *Development of a Scale for Measuring Learners' Attitudes Towards Learning Professional (i.e., Soft) Skills. Research in Science Education, 50*, 1417-1433.

Cacciolatti, L., Lee, S. H., & Molinero, C. M. (2017). *Clashing institutional interests in skills between government and industry: An analysis of demand for technical and soft skills of graduates in the UK. Technological Forecasting and Social Change, 119*, 139–153. https://doi.org/10.1016/j.techfore.2017.03.024

Cimatti, B. (2016). *Definition, development, assessment of soft skills, and their role for the quality of organizations and enterprises. International Journal for Quality Research, 10*(1), 97–130. https://doi.org/10.18421/IJQR10.01-05

Cornali, F. (2018). *Training and developing soft skills in higher education.* 961–967. https://doi.org/10.4995/head18.2018.8127

Cowan, J. (1998). *On Becoming an Innovative University Teacher: Reflection in Action*. Milton Keynes, UK: Open University.

Goleman, D. (1995). Emotional intelligence. New York, NY: Bantam Books.

Editor, C., & Medriano, R. (2021). *Tesol International Journal*, 16(4).

Editor, C., & Medriano, R. (2021). *Tesol International Journal*, 16(4).

Entwistle, N. J. (1991). *Cognitive Style and Learning*. In K. Marjoribanks (Ed.), *The Foundations of Student Learning*. Oxford, UK: Pergamon.

Fielding, M. (1994). *Valuing Difference in Teachers and Learners: Building on Kolb's Learning Styles to Develop a Language of Teaching and Learning*. *The Curriculum Journal*, 5, 393-417.

Fixsen, A., & Ridge, D. (2019). *Shades of Communitas: A Study of Soft Skills Programs*. *Journal of Contemporary Ethnography*, 48(4), 510–537. https://doi.org/10.1177/0891241618792075

Fixsen, A., & Ridge, D. (2019). *Shades of Communitas: A Study of Soft Skills Programs*. *Journal of Contemporary Ethnography*, 48(4), 510–537. https://doi.org/10.1177/0891241618792075

Garcia, E. (2014). *The Need To Address Non-cognitive Skills in the Education Policy*. *Economic Policy Institute Briefing Paper #386*, 1–36. Retrieved from www.epi.org, May 1, 2015

Garcia, E. (2014). *The Need To Address Non-cognitive Skills in the Education Policy*. *Economic Policy Institute Briefing Paper #386*, 1–36. Retrieved from www.epi.org, May 1, 2015

Gardner, H. (1999). *The Disciplined Mind: What All Learners Should Understand*. New York: Simon and Schuster.

Gibbs, G. (1988). *Learning by Doing: A Guide to Teaching and Learning Methods*. London, UK: Further Education Unit.

Gibbs, G. (Ed.). (1992). *Teaching More Learners Projects*. Oxford, UK: Polytechnics and Colleges Funding Council and Oxford Polytechnic.

Immanuel, G., Sankar, G., Saravanan, V., & Jose, M. (2021). *Significance of Interpersonal Skills and English Language Teaching*. *Materials Today: Proceedings*.

Immanuel, G., Sankar, G., Saravanan, V., & Jose, M. (2021). Materials Today: Proceedings Significance of interpersonal skills and English language teaching.

Jaser Khalaf Mahasneh. (2016). *A Theoretical Framework for Implementing Soft Skills in Construction Education Utilizing Design for Six Sigma*. Retrieved from https://pdfs.semanticscholar.org/0670/3c706beb903185969b2cb41a7aaeb5c1054a.pdf

Anderson, J. A., & Adams, M. (1992). *Acknowledging the learning styles of diverse student populations: Implications for instructional design*. In N. Chism & L. Border (Eds.), *Teaching for Diversity* (pp. 19-33). San Francisco, California: Jossey-Bass.

Mishra, D. L., Gupta, D. T., & Shree, D. A. (2020). *Online Teaching-Learning in Higher Education during Lockdown Period of COVID-19 Pandemic*. *International Journal of Educational Research Open*, 100012. https://doi.org/10.1016/j.ijedro.2020.100012

Nulty, D. D., & Barrett, M. A. (1996). *Transitions in learners' learning styles*. *Studies in Higher Education*, 21, 333-345.

Prosser, M., & Trigwell, K. (1999). *Understanding Learning and Teaching: The Experience of Higher Education*. Buckingham, UK: Society for Higher Education and Open University Press.

Race, P. (1993). *Never Mind the Teaching Feel the Learning*. *SEDA Paper 80*. Birmingham, UK: Staff and Educational Development Association.

Robotham, D. (1995). *Self-directed learning: The ultimate learning style? Journal of European Industrial Training*, 19(7), 3-7.

Robotham, D. (1995). Self-directed learning: The ultimate learning style? Journal of European Industrial Training, 19(7), 3-7.

Robotham, D. (1999). The application of learning style theory in higher education teaching. Unpublished article. Available from <http:/ /www.chelt.ac.uk/gdn/discuss/index.htm>.

Robotham, D. (1999). The application of learning style theory in higher education teaching. Unpublished article. Available from

Schmidt, H., Boshuizen, H., & Devries, M. (1992). Comparing problem-based with conventional education: A Review of The University Of Limburg Medical School Experiment. *Age and Ageing, 5*, 193-198.

Schön, D. (1983). *The Reflective Practitioner*. New York: Basic Books.

Schön, D. (1983). *The Reflective Practitioner*. New York: Basic Books.

Shepherd, I. (1998). *Teaching and Learning Softskills with Information and Communication Technologies*. Cheltenham, UK: Softskills Discipline Network, Cheltenham and Gloucester College of Higher Education.

Shepherd, I. (1998). *Teaching and Learning Softskills with Information and Communication Technologies*. Cheltenham, UK: Softskills Discipline Network, Cheltenham and Gloucester College of Higher Education.

Singh Dubey, R., & Tiwari, V. (2020). Operationalization of soft skill attributes and determining the existing gap in novice ICT professionals. *International Journal of Information Management, 50*(September 2019), 375–386. https://doi.org/10.1016/j.ijinfomgt.2019.09.006

Softskills for the New Undergraduate. (1999). *Tutor Guide*. Liverpool, UK: Liverpool Hope University College.

Succi, C., & Canovi, M. (2020). Soft skills to enhance graduate employability: comparing learners' and employers' perceptions. *Studies in Higher Education, 45*(9), 1834–1847. https://doi.org/10.1080/03075079.2019.1585420

Yu, L. E. A. (2015). Developing Soft Skills by Applying Problem-Based Learning in Software Engineering Education. In *Handbook of Research on Applied Learning Theory and Design in Modern Education* (pp. 405).

Zhonglei, M. (2004). A Problem-Based Learning Course For Fostering Generic Skills. *The China Papers.*

Mick Healey & Alan Jenkins (2000) Kolb's Experiential Learning Theory and Its Application in Geography in Higher Education, Journal of Geography, 99:5, 185-195, DOI: 10.1080/00221340008978967