Open University Malaysia Experience in Assessing Experiential Learning using Kolb's Model

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Abstract. As the world grapples with the pervasive effects of VUCA across various facets of life, including shifting job requirements, the question arises: To what extent can current education adequately equip learners to thrive in a VUCA world? Hence, this paper conducts a comprehensive assessment of learners' educational experiences within the context of a Master's project course. The research applies Kolb's experiential learning theory, encompassing four core dimensions: concrete experience, reflective observation, abstract conceptualization, and active experimentation. These dimensions serve as lenses through which the factors influencing student learning experiences are observed and analyzed. The objective of this study is to gain an understanding of how Kolb's experiential learning dimensions impact the learners' educational journey at Open University Malaysia (OUM). Employing a quantitative research approach, data collection relies on the Kolb's Learning Style Inventory (KLSI) survey instrument. A convenience sampling strategy was adopted, involving the distribution of the survey instrument to 92 postgraduate students affiliated with the Faculty of Technology and Applied Sciences. The responses of 42 students were captured and subjected to descriptive analysis. The findings of this analysis prominently underscore the pronounced influence of 'reflective observation' and 'active experimentation' as pivotal factors shaping students' learning experiences, surpassing the impact of the other two dimensions. These findings shed light on the potential to cultivate a dynamic learning environment that not only fosters holistic student growth but also equips them with the requisite skills to thrive in the future job environment characterized by VUCA challenges.

Keywords: Learning Experiences, Experiential Learning Theory, Higher Education.

1 Introduction

Unprecedented volatility, uncertainty, complexity, and ambiguity (VUCA) characterize the modern world. Higher education is one of the many industries being impacted by these dynamic and quickly altering conditions that are reshaping the global landscape.

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VUCA has had a significant impact on the higher education scene, disrupting established educational paradigms and requiring institutions to change the way they prepare students for their future roles in an uncertain environment.

The future of teaching and learning is immersive and interactive educational experiences or 2I2E in short. It combines the greatest learning technologies from Industry 4.0 and Education 5.0 to engage students from the current generation whose learning style is specifically suited to the digital age [1].

Experiential learning is a philosophy and technique of education that emphasizes learning via hands-on experience and reflection. Experiential learning, which has its roots in the writings of academics like John Dewey and David Kolb, asserts that learners gain knowledge and skills more effectively when they actively participate in practical experiences, reflect on their behavior, conceptualize insights, and apply newly acquired knowledge in practical settings [2]. By bridging the gap between theory and practice, this pedagogical strategy hopes to foster not just cognitive development but also personal and social development.

2 Literature Review

In response to how both academia and the global world are evolving, the convergence of VUCA and experiential learning in higher education is emerging. Traditional educational paradigms, which only transmit theoretical information, fall short in preparing graduates for the complexity of the actual world in the face of VUCA difficulties. Higher education institutions understand the importance of preparing students with adaptable abilities, creative thinking, and resilience as industries change, jobs become more flexible, and change is happening faster.

The requirements of the VUCA environment correlate amazingly well with experiential learning. Experiential learning allows students to experience the uncertainties, ambiguities, and complexity they will likely meet in their future employment by immersing them in practical, real-world circumstances. In order to improve their capacity for making wise decisions and navigating difficult circumstances, learners are encouraged to critically analyze their experiences, spot patterns, and draw lessons from them as part of experiential learning [3].

Experiential learning techniques are becoming more and more a part of the curricula at higher education institutions all around the world. Experiential learning techniques give students the chance to apply their theoretical knowledge in real-world situations. Examples include internships, co-ops, service-learning assignments, simulations, and case studies as well as capstone projects. Thus, educators hope to produce graduates who are flexible and capable of addressing VUCA difficulties with creativity and confidence. These can be achieved through the educational programs that are designed to address VUCA elements [4].

Volatility: Educational environments can experience rapid changes in curriculum, teaching methods, and technologies. Learners often encounter diverse and dynamic learning materials and resources. Adapting to these changes and managing volatility is a valuable skill developed through educational experiences.

Uncertainty: In education, uncertainty can manifest in various ways, such as unpredictable exam questions, shifting grading criteria, or evolving educational policies. Students learn to cope with uncertainty by developing critical thinking skills, problem-solving abilities, and adaptability.

Complexity: Educational learning experiences often involve tackling complex subjects and concepts. Students engage in multidimensional problem-solving, critical analysis, and synthesis of information, all of which prepare them to navigate complex challenges in their future careers.

Ambiguity: Ambiguity can be present in open-ended assignments or ambiguous instructions from instructors. Learners are encouraged to seek clarification, exercise creativity, and develop the capacity to manage ambiguity effectively.

As such, the Master's Project offered under the Faculty of Technology and Applied Sciences at Open University Malaysia (OUM) is considered as the capstone course for preparing learners for VUCA elements. The master's project course is supervised research so that learners can conduct a small project that will increase their depth of knowledge in some of the aspects of theory or practice in their field. The course exposes learners to independently use a methodology of research to enable them to design, formulate and implement research projects [5]. For this course, learners are guided by their supervisors to implement their projects which include researching, reading, and writing as appropriate to the project. At the end of the master's project, learners submit a written report and make a presentation (which may include demonstration of the deliverable).

This master's project enables learners to use their practical skills, interpersonal skills and digital as well as numeracy skills which are all very much useful in organizations. Apart from that, learners also learn information management and lifelong learning skills. Thus, for this reason, we have chosen master's project learners to share their learning experiences throughout the study of their program, as the master's project is offered at the culmination of their learning experience at OUM.

Kolb's Experiential Learning Model, which is a well-known framework that explains how people learn and acquire knowledge through first-hand experiences. This approach, created by David A. Kolb [6], places a focus on the value of active participation, reflection, and application in the learning process. The model has four stages, each of which corresponds to a distinct learning style:

Concrete Experience (CE): In this level, the learner actually engages in a situation or action. Learners participate actively in scenarios from real life, interact with their surroundings, and engage in hands-on learning. This could involve engaging in practical tasks, role-playing, experiments, or any other activity that puts the learner in direct contact with the subject.

Reflective Observation (RO): Following the practical experience, learners take a step back to consider what transpired. They look at their observations and experiences from many angles. They can better grasp the feelings, ideas, and effects of an experience by reflecting on it. It entails both an objective and subjective examination of the experience.

Abstract Conceptualization (AC): During this phase, learners interpret their reflections. They develop ideas, generalizations, or rules to help them conceptualize and interpret their experiences. To develop a deeper understanding, this stage entails relating the practical experience to previously held beliefs, theories, or conceptual frameworks.

Active Experimentation (AE): After developing concepts or hypotheses, learners put them to the test in new scenarios. They experiment with various methods and evaluate their theories by applying their insights and ideas to realistic circumstances. This phase encourages learners to take calculated chances, modify their knowledge, and pick up knowledge from their mistakes.

From this, the four distinct learning styles created are: Diverger, Assimilator, Converger, and Accommodator from this continuum. Most learners favor one of the four types over the others (see Figure 1). Kolb envisioned these learning styles as a continuum that one progresses through, but in reality, learners typically develop to favor and rely on one style above the others [6]. Therefore, while developing instructional materials, educators need to be aware of these key styles.

Accommodators (Active experimenter/concrete experience): The thought, "What would happen if I did this?" drives these learners. They search for importance in the learning process and take into account both what they are capable of doing and what others have done in the past. These learners are adept at handling complexity and can recognize connections between different system components.

Assimilator (Abstract conceptualization/Reflective observer): These learners are driven to provide a response to the query, "What is there to know?" They like information that is reliable and well-organized, and they generally appreciate professional expertise. They prefer to find the best solution to the issue at hand and aren't particularly at ease aimlessly investigating a system.

Convergers (Active experimenter/abstract conceptualization): These learners have an interest in learning the significance or "how" of a scenario. Understanding the specifics of the system's operation improves the application and usefulness of information.

Divergers (Reflective observer/Concrete Experience): These learners have an interest in learning the significance or "why" of a scenario. They prefer to have information provided to them in a precise, methodical, reasoned manner and enjoy reasoning from tangible, particular information and exploring what a system has to offer.

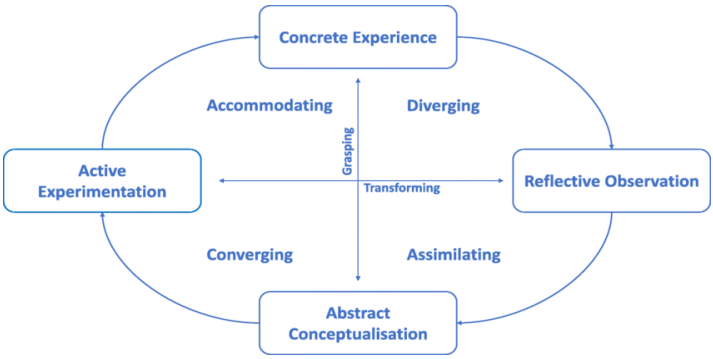

Fig. 1. Kolb's Experiential learning theory cycle (adapted from [2])

Experiential learning is a method of education that places a focus on understanding through first-hand experience, reflection, and application. It is a learner-centered paradigm that emphasizes getting learners involved in practical tasks and real-world scenarios in order to develop their knowledge, abilities, and insights. By promoting active engagement, critical thinking, problem-solving, and self-reflection, experiential learning goes beyond conventional classroom training. Although this idea has been studied by numerous authors, there is still no agreement on it; yet, the main finding is that everyone learns differently [7].

A study conducted in India on learning styles of management postgraduate learners shows that understanding a learner's preferred method of learning makes it simple for faculty to adapt their instruction to motivate the learner. Additionally, this will raise faculty members' understanding of different learning styles, enabling them to adapt their teaching methods and improve interactions between them and management learners [8].

This research studies the assessment of learner experiences as a measure of their educational experience whilst studying for a graduate program at OUM. The description of the methodology used for this study as well as the participants will be described next.

3 Methods

This study employed quantitative research approach. Learning styles have been measured using an adapted Kolb's Learning Style Inventory (KLSI) scale. The instrument was emailed to 92 postgraduate students enrolled in their final semester doing the Master's Project course. 42 responded to the survey.

The survey instrument was adapted based on the Kolb's Learning Style Inventory ver. 4.0 [9] and the study by [10]. In the survey instrument, two demographic inquiries are included, one pertaining to the program of study pursued by the respondents and the other concerning their gender. Subsequently, four questions are designated for each of the distinct learning style categories, namely, concrete experience, reflective observation, abstract conceptualization, and active experimentation. Respondents are presented with a Likert scale spanning from 1 to 5, wherein response options range from 'Strongly Disagree' to 'Strongly Agree. The responses were gathered using Google form and recorded in the Google sheet for further analysis. Descriptive analysis was utilized to provide a comprehensive overview and summary of the collected data.

4 Results and Discussion

The programs selected for this study are Master of Information Technology (MIT), Master of Facility Management (MFM), Master of Occupational Safety and Health Risk Management (MOSHRM), Master of Quality management (MQM) and Master of Project Management (MPM). They were given a learning style questionnaire consisting of sixteen questions. From a total of 92 surveys to complete, 42 of the learners sent a response. The response rate was therefore 45.6%.

Table 1. Responses for Survey by Faculty Programs

Program	Frequency	%	Cumulative %
MIT	12	28.6	28.6
MFM	1	2.4	31
MOSHRM	15	35.7	66.7
MQM	6	14.3	81
MPM	8	19.0	100.0
Total	42	100.0	

Table 1 shows the list of programs offered at the Faculty of Technology and Applied Sciences, and the number of respondents for each program. The most number of respondents are from the Master of Occupational Safety and Health Risk Management program (MOSHRM) at 35.7% and Master of Information Technology program (MIT) at 28.6%. Both of these programs are fairly technical, requiring the learners to take courses that require practical and digital skills.

There were 69% male respondents and 31% female respondents for this study (see Table 2).

Table 2. Responses for Survey by Gender

Program	Frequency	%
Male	29	69
Female	13	31
Total	42	100

Table 3 shows the analysis of the questions in the questionnaire by each learning style category.

Table 3. Analysis of Questions by each Learning Style

Variables		Statement	Agree	Strongly Agree	Average
Concrete Experience	1.	When faced with a new task or problem, I prefer to jump in and try different approaches rather than spend too much time analyzing it.	38.1	14.3	26.2
	2.	I enjoy engaging in hands-on activities that allow me to directly experience and interact with the subject matter.	45.2	42.9	44.05
	3.	I tend to learn best when I can physically manipulate objects or materials related to the topic.	33.3	42.9	38.1
	4.	I find it stimulating to learn through real-life examples and practical applications rather than abstract theories or concepts.	28.6	40.5	34.55

Reflective Observation	5.	After completing a task or activity, I take time to reflect on my experiences and evaluate what worked well and what could be improved.	38.1	33.3	35.7
	6.	I prefer observing and listening to others before forming my own opinions or taking action.	47.6	33.3	40.45
	7.	I find it valuable to take a step back and consider different perspectives and viewpoints before making conclusions.	42.9	40.5	41.7
	8.	I enjoy analyzing and interpreting the information gathered from my experiences to gain a deeper understanding of the subject.	47.6	42.9	45.25
Abstract Conceptualization	9.	I enjoy analyzing complex problems or concepts by breaking them down into logical components or principles.	59.5	21.4	40.45
	10.	I find it easier to understand new information when I can connect it to existing theories or models.	54.8	28.6	41.7
	11.	I prefer learning through textbooks, lectures or structured explanations that provide theoretical framework.	47.6	19.0	33.3
	12.	I enjoy creating conceptual maps, diagrams, or visual representations to organize and understand information.	38.1	40.5	39.3
Active Experimentation	13.	When learning something new, I like to experiment with different approaches or solutions to see what works best.	57.1	31.0	44.05
	14.	I enjoy brainstorming and generating innovative ideas or hypotheses related to the topic.	54.8	38.1	46.45
	15.	I learn best by actively applying the knowledge gained from my experiences to new situations or challenges.	40.5	45.2	42.85
	16.	I find it stimulating to engage in hands-on projects or activities that allow me to test and validate my ideas.	45.2	42.9	44.05

From Table 3 we can see clearly that the highest responses by the students are from the ‘reflective observation’ and the ‘active experimentation’. This data is summarized in Table 4, where the frequency of responses for these two learning styles are listed as the higher than the ‘concrete experience’ and the ‘abstract conceptualization’.

Table 4. Summary of the Kolb’s Learning Model Responses

Learning Model	Frequency	Percentage
Concrete Experience	120	71.4%
Reflective Observation	137	81.5%
Abstract Conceptualization	130	77.4%
Active Experimentation	149	88.7%

Concrete experience, reflective observation, abstract conceptualization, and active experimentation are the four stages of the cyclical process that constitute experiential learning. Based on the results shown in Table 3, this study gives specific attention to the experiential learning processes of reflective observation and active experimentation, as these two learning styles are the most dominant learning styles observed. The frequency is the summation of all the respondent's positive answers involving Likert scale Agree and Strongly Agree for each of the four questions for each experiential learning item.

Reflective Observation: The second phase of experience learning is reflective observation. After participating in a concrete experience, learners take some time to pause and consider what transpired. This entails thoroughly analyzing their actions, the results, and the feelings and ideas they had. Reflective observation considers not just what happened but also the learner's perception and interpretation of the event.

In this phase, learners ask the following questions to themselves:

- What notable occurrences or situations occurred during the experience?
- How did I feel throughout the event? What feelings did I have?
- What was successful, and what obstacles did I encounter?
- What have I discovered about my reactions and myself?
- What conclusions may I draw from my observations and considerations?

Reflective observation helps learners understand the value of the experience and promotes critical thinking. It enables them to draw comparisons between the experience and their prior information, preconceptions, and ideas.

Active Experimentation: The fourth step of the experiential learning cycle is called "active experimentation". Learners advance to the stage of active exploration after considering their experience and developing new perspectives. At this point, the learners apply what they have learnt to fresh circumstances. Based on the knowledge gained from the earlier stages, this might entail experimenting with various ways, testing hypotheses, and trying out new methods.

Putting theory into practice and deepening understanding through practical application are the goals of active experimentation. Learners might take part in pursuits like:

- experimenting with several approaches to an issue.
- putting new knowledge or methods to use in practical situations.
- experimenting with different approaches depending on prior knowledge.
- weighing the risks and results before acting.

Activities like field trips, research presentations, simulations, and guest lectures can all be used to deliver experiential learning for working adults/part-time learners. This type of learning also involves work experience, which would link concepts learned in the classroom to actual workplace situations and necessitate active communication between the educational setting and current employer and colleagues.

The important thing is to actively participate in learning by doing while being prepared to adapt and make adjustments in light of the outcomes. Active experimenting aids in comprehending and enables learners to hone their abilities and knowledge.

A dynamic learning loop is produced when introspective observation and active experimentation work together. Learners participate in experiences, ponder them to develop insights, apply those insights in other situations, and so on. This process results in more experiences and deeper learning. This iterative method encourages a deeper comprehension of the material and improves the growth of practical skills and critical-thinking capabilities.

These results show that the learner learning style does not jive with the Kolb's learning styles of convergent (abstract conceptualization and active experimentation), divergent (concrete experience and reflective observation), assimilation (abstract conceptualization and reflective observation) and accommodative (concrete experience and active experimentation). There needs to be an expansion of learning styles to include reflective observation together with active experimentation which brings together action and reflection and ultimately towards a balanced learning style.

A person who exhibits a relatively even preference for participating in all four stages of the learning cycle—concrete experience, reflective observation, abstract conceptualization, and active experimentation—is said to have a balanced learning style in the context of Kolb's Experiential Learning Model. This indicates that the learner values both practical experience and conceptual understanding and is at ease and capable of progressing through each step.

A learner who is balanced is likely to:

Accept Hands-On Experience: In order to learn personally, they prefer actively participating in novel experiences, experiments, and activities. They are willing to get their hands dirty and explore the practical side of a subject.

Value Reflection: They value introspection and give thought to their feelings, thoughts, and experiences. They reflect on the importance of their choices and results in an effort to gain insightful knowledge and comprehension.

Appreciate Conceptualization: To make sense of their experiences, they respect the process of developing ideas and models. They use conceptual frameworks and abstract thought to combine and generalize their observations.

Participate in Application: They are eager to put what they have learned to use in practical situations. They actively look for chances to put their theories, plans, and concepts to the test in various settings to evaluate how they perform.

A balanced learning style implies a well-rounded approach to learning, where the learner can take use of each stage's strengths to improve their overall comprehension and skill-building. They can choose from a variety of techniques to enhance their learning experience rather than being restricted to a particular method.

The majority of learners have a preferred learning style, which may skew more towards one or two of Kolb's stages. This is significant to keep in mind. A balanced learner, however, is able to move between learning methods as necessary, making them versatile and adaptable in a variety of learning scenarios.

5 Conclusion

In conclusion, higher education's integration of VUCA and experiential learning is a calculated response to the world's changing needs. This integration acknowledges the need for education to equip learners with not only a strong academic foundation but also the transferable skills, flexibility, and resilience needed to succeed in a complex and uncertain global context.

Two major learning styles were identified, they are the Reflective Observation and Active Experimentation among the postgraduate learners enrolled under the Master's Project. This indicates that these learners prefer learning through practical application to introspection because they prefer to actively experiment while observing reflectively. Most importantly, this study has shown that the Master's Project has employed a structured approach to learning from experience as discussed under KOLB's experiential learning theory. This can be beneficial in VUCA environments where adaptability and continuous learning are essential for success. Hence, by applying KOLB's model, students can become more resilient and better equipped to navigate the uncertainties and complexities of the modern world and ultimately befitting the job market.

The Faculty of Technology and Applied Sciences graduate learners were the only ones included in this study; no other faculties were looked at. The sample size is sufficient, however future OUM study may cover a wider population. This study can be further analyzed for the various learning styles of graduate learners across different genders and grade levels.

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