

# Exploring the strategies used by Master Adaptive Learners in the planning of learning

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## ABSTRACT

**Introduction:** Due to changing health care system a learner has to re-establish prior knowledge to address current issues. A Master Adaptive Learner (MAL) utilizes a metacognitive approach to enhance the self-regulated learning which leads to an adaptive expertise development.

**Objective:** To explore the strategies used by the Master Adaptive Learners in the planning of learning.

**Methods:** A qualitative phenomenological study was carried out in 2021 May till to November in University College of Medicine and Dentistry. A total of five interviews were conducted, the number was restricted due to data saturation. Purposeful sampling technique was used to select doctors on head of department's recommendations as learners demonstrating exceptional performance during ward rounds and daily duties. Questionnaire was validated and piloted to ensure clarity. Interviews were recorded and transcribed verbatim. Confidentiality and anonymity was ensured.

**Results:** Following themes were developed (1) Gap Identification: (a) Gaps in clinical practice (b) Gaps in teaching (2) Prioritization of Gaps: (a) Prioritizing the patient (b) Prioritizing gaps in teaching (3) Identification of Resources. (4) Self-Regulation: (a) Scheduling (b) Self-awareness (5) Motivation: (a) Intrinsic (b) Extrinsic

**Conclusion:** With the aim of providing a good healthcare system, the clinicians need a continuous learning- plan to effectively demonstrate adaptive expertise in routine practices. The current study concludes that the master Adaptive Learners use these five basic strategies that affect their planning and helps design learning opportunities to capitalize on these strategies through their role as coaches in the learning environment.

**Keywords:** Learning, Master Adaptive Learner, Techniques

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## INTRODUCTION

The health care System is undergoing constant changes, as a result of which clinicians are expected to make changes to their practice so as to be able to provide the good standard care to their patients (Mylopoulos, Kulamakan, and Woods, 2018). As a result, high-quality care is provided to the patient. When the clinicians come across the common patient problems, they typically employ the solutions that are learned through practise and experience. But when they are confronted with new challenges, the prior learned solutions may not work. The medical doctors are required to re-orient their prior knowledge to address the recent problems and to innovate solutions. This process enables the individuals to demonstrate an “adaptive expertise” which allows them to investigate and learn new concepts and to innovate strategies for an outcome (Cutrer et al., 2017).

The medical consultants, trainee residents, house officers and medical students can all miss valuable opportunities to learn when they are focused on getting their clinical work done. Focusing on developing strategies to be a Master Adaptive Learner will help the clinicians to be more intentional about learning (planning), this will enable them to look for opportunities to combine learning with work (learning), they will be able to exhibit a feedback-seeking behavior (assessing) and will use their knowledge of the system to present change (adjusting).

No specific local data is available that shows us how these learners adjust their learning and how do they plan the strategies for their learning once they become consultants.

A Master Adaptive Learner (MAL) is an individual learner who uses a metacognitive approach to enhance the self-regulated learning process which leads to adaptive expertise development (McGlynn et al., 2003). The difference between the average routine expertise and the adaptive expertise has been chalked out by the medical educationists. Routine expertise includes the essential knowledge and practical effects that an expert has achieved overtime, as well as mastering performance of a skill to the extent that it becomes highly accurate. With the help of effective feedback, the clinicians' performance becomes automatic and they attain a stage of mastery (Ericsson.,2004). The adaptive expertise is different. A clinician uses the skill of adaptive expertise when he realizes that the everyday solution he is considering for the problem is not working and he has to reanalyze the situation and be innovative (Mylopoulos M, 2020). A Master Adaptive Learning Model (MAL Model) is used to explain the learning process. The four phases of MAL Model include planning phase, learning phase, assessing phase and adjusting phase (Cutrer et al., 2017).

## METHODS

This is a qualitative phenomenological study, a purposive sampling technique was used and semi-structured one-on-one interviewing was the technique of choice. The study was conducted at University College of Medicine, University of Lahore and the University of Lahore Teaching Hospital (ULTH) from May 2021 till November 2021. Study approvals was taken from ethical review board (ERB) of UCM/UOL Ref: ERC/17/20/11. A cohort of house officers, medical officers /PG

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trainees including the demonstrators and assistant professors and consultants were recruited.

**Inclusion criteria:** Medical doctors of the University of Lahore teaching Hospital and University College of Medicine and Dentistry, University Of Lahore identified by the heads of the respective departments, whom they feel demonstrate evidence of exceptional performance as learners during their routine ward rounds and daily duties with the following criteria were included in the study:

1. House officers, Medical officers or the trainees including the demonstrators and assistant professors and consultants from the five major clinical specialties, ie: Medicine, Surgery, Gyne/obs, Pediatrics and the Pathology Departments at the University of Lahore teaching Hospital (ULTH)
2. Trainees at any year of training (1<sup>st</sup> to 5<sup>th</sup> year)
3. Residents of who have completed their training but have not still appeared/passed the examination.
4. Both males and females were included.

**Exclusion criteria:** Following people were excluded from the study:

1. All those medical doctors who did not fit in the criteria of a Master Adaptive Learner.
2. Willing exclusion from the study at any level.

The participants were asked to answer the following questions:

Q: What are your current learning strategies?

Q: How do you identify a gap in your knowledge /skill?

Q: If you identify a gap, why do you prioritize certain gaps and how do you address it?

Q: Do you set goals for your own learning? If so, how to you plan to meet your goals?

Q: How do you identify quality resources to use for your learning?

A pilot study was done to address potential practical issues in the current research procedures and to identify flaws and limitations in the interview method.

### Pilot Study

The target participants in the pilot test were two medical doctors who have completed their basic MBBS degree and have FCPS diplomas in the subject of their specialization. The participants were selected based on purposive sampling and research objectives. The pilot interview involved three stages, pre-interview, during the interview, and post-interview stage. In the pre-interview stage, the researcher decided the participants for the pilot test interview session and the interview structure to be used. During the interview stage, the participants were briefed about the interview session, its process and permission was sought for the recording of the data until the closing of the interview. The interview started by having an informal conversation (greetings and introduction). To assure the confidentiality of participants, written consent was taken. Upon the closing stage of the interview, the interview session was summarized and questions or suggestions were invited from the participants. In the post-interview stage, the data from

the interview was transcribed verbatim, coded, and themed according to the research objectives. The pilot test interview provided the opportunity to clarify few questions to improve the interview protocol, and also aided in validating the semi-structured interviews that were used while conducting the actual interview research. The data from the interview was transcribed verbatim, coded, and themed according to the research objectives. Recordings of the interviews were transcribed and analyzed for emerging themes through the use of interpretative phenomenological analysis (IPA).

Planning is the first and the major phase of learning, and it includes three steps. In step one, the learner questions himself and identifies the gaps in his learning. This gap could be one of knowledge, skill or attitude (White, Gruppen, and Fantone, 2013). Step two involves prioritizing these gaps. Step three involves finding out the necessary facilities required for learning the skills. The significance of planning phase lies in the fact that it ensures that the learning efforts are aligned with areas in need of improvement (Magrabi et al.,2005).

### RESULTS

The study was carried out to explore the methods used by the Master Adaptive Learners in the planning of their learning. Total of five (n = 05) medical educators of the consultant and post graduate level participated in the study, these doctors were working in the University of Lahore Teaching hospital (ULTH). The number of participants in the study is depended on the data saturation.

**Table 1.** Characteristics of interview participants

Characteristics	Frequency
Gender	
Male	2
Female	3
Age groups	
35-50 years	4
51 years or more	1
Profession	
Medical Doctors	5
Specialities	
Pathologists	1
Paediatrician	1
Medical Specialist	2
Dermatologist	1
Academic Qualification	
M.Phil in the respective field	1
Fellowship in the respective field	3
PhD in the respective field	1
Type of Primary post-graduate Qualification	
Basic Sciences	1
Clinical Sciences	4

After a detailed analysis of our transcripts, the following themes emerged.

**1. Gap Identification:**

- a) Gaps in clinical practice (Knowledge deficits concerning patient treatment)
- b) Gaps in teaching (deficiencies in instruction)

**2. Prioritization of Gaps:**

- a) Prioritizing the patient first
- b) Prioritizing gaps in concepts while teaching

**3. Identification of Resources**

**4. Self-Regulation:**

- a) Scheduling
- b) Self-awareness

**5. Motivation:**

- a) Intrinsic motivation
- b) Extrinsic motivation

**Table 2.** Representative Quotes with related Themes and Sub-themes.

Theme	Sub-theme	Quotations
Gap Identification	Gaps in clinical practice	<p>P1: “during my practice, I started noticing that at times there was a deadend in my knowledge, and when I was looking at different patients, and then I had to refer my patients to my seniors, my different colleagues,”</p> <p>“you go to your attending and say I don’t know what to do anymore”</p> <p>P1: “during my practice, I started noticing that at times there was a deadend in my knowledge, and when I was looking at different patients, and then I had to refer my patients to my seniors, my different colleagues,”</p> <p>“you go to your attending and say I don’t know what to do anymore”</p> <p>P2: “If there is any problem I encounter during my practice then I need to follow the study guidelines, I consult them and I refresh my knowledge.”</p> <p>“At times I feel as if my knowledge has come to a standstill and don’t know what new can be done for my patient.”</p> <p>P5: “The first place I usually notice a gap is when I come across a case/patient where I seem to be struggling to find answers to the patient’s problems. That’s where a lot of questions come up that I wish I had more information on”</p> <p>“ Usually I approach my Senior Consultant to provide me with the next step in patient management.”</p>
	a) Knowledge deficits concerning patient treatment.	
Gaps in teaching	a) Deficiencies in instruction	<p>P3: “I call it gaps in my knowledge when I get stuck in some cases or a problem usually, when I feel a deficiency when a student asks me something, or my seniors or my any consultant asks me about a problem that time I feel that I must learn these things or about this topic or update my knowledge”</p> <p>“and if you are wrong you need to figure out why you are wrong”</p> <p>“usually while teaching my juniors if I get stuck on some concept that requires revision, I never feel ashamed in opening the book in front of them and we study the concept together.”</p>

Theme	Sub-theme	Quotations
Prioritization of gaps	prioritizing the patient first	<p>P1: “I started working on sorting out what is more important for my career development, which aspects of medicine which I was lacking, which need to be polished. I should work more on them”</p> <p>P3: “Well, for me as a clinician it has been easy to prioritize the gaps in my knowledge. The deadlocks in my existing knowledge that I face in my clinical practice i.e. the OPDs and wards, are given priority as they are related to my patient’s immediate treatment”</p> <p>P4: “Goals are very important, I feel that to attain my goals effectively, I should know what to aim at and prioritize according to its need. I think that the gaps encountered in clinical practice should be addressed first”</p>
	Gaps in knowledge related to the patient treatment	
Identification of Resources	Prioritizing gaps in concepts while teaching	<p>P4: “and the places where I hit a brick wall or a deadlock in my concepts related to the teaching and academics, can be met with secondarily. If I don’t know a concept in medical learning during my class, I always refer to my books and articles to update and share with my students. I never feel embarrassed to learn”</p>
	Gap filling by using the text books, WhatsApp groups, videos etc	<p>P1: “the first thing that comes to my mind, in fact, in most of the people’s mind, when we think about how to learn is- books, but I see things have changed a lot because of the increasing trend of e-learning. I’m now using online books, lectures, videos and papers for learning purposes.”</p> <p>P1: “the first thing that comes to my mind, in fact, in most of the people’s mind, when we think about how to learn is- books, but I see things have changed a lot because of the increasing trend of e-learning. I’m now using online books, lectures, videos and papers for learning purposes.”</p> <p>P1: “We have this WhatsApp group where we discuss different cases, since a few of them are already practicing with me in the clinical setting a few of them are not, so we all discuss and share different cases that we see every day.”</p> <p>P4: “I have become a smart-learner now, I know what to learn and what to leave for e.g. the latest treatment modalities that are new for me, I spend more time in studying about those, instead of the pathogenesis and the traditional guidelines of treatment. I have become an online learner and an e-learner now”</p> <p>P4: “we should also consider using different web portals, Twitter, podcasts and blogs for medical diagnosis and treatment, by attending online seminars and webinars we get a chance to learn and interact with the foreign medical specialists and learn from their experience then and there I believe, for the medical knowledge, sound and authentic websites are reliable only.”</p>

Theme	Sub-theme	Quotations	
Self-Regulation	Scheduling	<p>P1: "I have divided my time accordingly, I have this thing in my mind that I have to complete one topic and one quiz every day. And I prefer it to be in my job place, mostly because I would say, when I go home, there's not much time there"</p> <p>P2: "and the tagline of my course is five into five into five minutes, five hours for five days, for five months, I have scheduled my work hours and my study hours and try to focus and determine on my schedule, schedule the time actually I'm following always remember your focus,"</p> <p>P3: "I select a topic or any query then I usually allocate a specific time of the day, or sometimes on daily basis or sometimes weekly, or weekends I usually try to learn and try to read about those things that I encountered during the week."</p>	
	Self-awareness	<p>P4: "well as we advance in our careers our learning styles and requirements change I am at a consultant level, but feel a constant need of upgrading my clinical studies and concepts to meet up with the emerging trends and updates. There is a surge of new diseases and the treatment modalities are also being modernized, so to keep abreast with the medical developments I need to learn and study regularly to keep myself updated."</p>	
Motivation	Intrinsic Motivation	<p>P1: "So I recognize you can see I can recognize this gap by myself. And I thought that I need to work on it. So I got motivated that it's not a good impression, not a good thing that I have to refer my patients to my colleagues or my seniors, so I should work on it."</p> <p>P2: "I'm not following the shortcut steps. I'm, I'm following the turtle technique. I'm, I'm slow and steady wins the race. So actually, I'm fulfilling all the steps which are coming in my way. Not shortcutting anything"</p> <p>P2: "I am self-motivated learner, because my job and my profession demands it. Self-learning is the key. And it's a long term process in medicine, I think because you have attained your degree, and you have a certain level of postgraduate knowledge as well, in your free time, you are directed towards opening books again. So Yeah"</p> <p>P4: "I have a strong motivation to become the best doctor available. And for that I know that I will have to sacrifice more"</p> <p>P5: "learning is a very internally driven process. It's a decision you make within yourself to grow as a person, to keep yourself mentally stimulated, to constantly challenge yourself to learn more and enhance your knowledge."</p>	
		Extrinsic Motivation	<p>P4: "The environment in my department sets a path for our professional development and we all get very good time and motivation for upgrading our knowledge"</p> <p>P5: "I think also in our fields, , the nature of the problems patients keep presenting with keeps changing so rapidly, and there is always a lot of new research on diseases and treatments to keep ourselves updated with, so there is always more and more to learn in clinical practice." "also noteworthy is being ahead on the career ladder this ensures availability of better job opportunities, promotions and raises in salary can attain better placement in the departmental hierarchy."</p>

## DISCUSSION

Our thematic analysis employed the steps for the planning of learning and deduced a set of new themes and sub-themes. Gap Identification: The participants reported using the basic knowledge in the identification of a gap in their knowledge. They regarded every blank-spot or a break in the concepts, as the gap in the knowledge. Our study found out that the MALs identify these gaps in two basic sub-themes: a) Gaps in clinical practice, and the, b) Gaps in teaching. Since the study participants are all clinicians at the consultant level or at the post-graduate trainees' levels, so they have an active participation in daily OPD clinics, ward rounds, treatment clinics and along with this they play an active role in teaching their junior post graduate trainees and medical students in their departments. Usually when these learners face blockage in their knowledge they encounter this gap by either immediately consulting their senior colleagues on duty, or check it online through different medical forums or the Clinician's WhatsApp groups that they have joined. This enables them a quick response from their doctor friends or colleagues whose advice they trust and this also fills the gap in their knowledge. Second sub-theme that emerged was 'Gap in teaching'. Almost all the consultants are actively involved in the clinical- teaching sessions of the post-graduate, undergraduate, MLT (medical lab technologists) and nurses as well. They have reported facing certain gaps in their academic concepts too. To overcome these short- comings they always immediately refer to books or the online resources available on the topic. As soon as they have filled this gap, the MALs consider it their duty to transfer this updated knowledge to their students too. In contrast to our findings, in a study conducted by Linda Regan, Laura R. Hopson, and Michael A. in the Stanford University School of Medicine, California, USA; found that in order to identify the gaps in their learning the Master Adaptive Learners divided them under the few different categories: a) Performance- driven gap identification, and the b) community-driven gap identification (Regan L, Hopson LR, Gisondi MA, et al, 2019).

This study shows that the learners seek response from various members of the medical team in their department, such as, medical personnel, nurses, technologists as well as trainee doctors to fill up the cracks in their learning. The participants in our study identified the gaps predominantly through real-time patient care. They showed a response where they are always open in their discussions with their team members and other colleagues and have an open mind towards learning from their experiences in treating their patients actively. So our study states that one of the significant traits of a MAL in gap identification is that he should be open-minded and receptive to the idea of 'not knowing everything'. He places his knowledge gaps either in the clinical practice or as those gaps that he encounters in clinical teaching.

Prioritization of Gaps: Master Adaptive Learners are successful when they prioritize their learning gaps. This keeps their minds organized and they can easily devise strategies to overcome these gaps. Our study finds out that the gaps in the clinical concepts knowledge that is directly related to their patients' treatment, are given preference and are met with immediately by the Master



Adaptive Learners, whereas, the academic gaps are dealt with later on.

In another similar research by Laura Regan and Linda R et al in 2019 in USA stated that the MALs prioritize the gaps in their learning by following two major schemas ie: 'Triage' and 'Adequacy'. Participants report that given the tremendous amount of medical concepts material to keep in memory they always have to prioritize their learning in order to grasp all the concepts. A study published in the 'Annals of Family Medicine' in Volume 19, 2021, by Drew Keister, Folashade Omole & Dan Sepdham reported that the MALs possess the unusual ability of 'Adaptive Expertise'. It was reported in this study that the family physicians constantly customize their clinical practice to accommodate the complex and shifting needs of individual patients. During the COVID-19 pandemic, Departments of Family Medicine (DFMs) have demonstrated their MAL skills like, bringing flexibility, versatility, and creativity to medical schools to learning options for medical learners. This resulted in upgradation of their knowledge and improvement in the Master Adaptive Learning skills.

**Identification of Resources:** A MAL is open and willing to adapt every learning opportunity that comes in his way. Our study found out that almost all of the MALs reported the use of Text Books as standard learning materials. Master Adaptive Learners are well aware of the rapid and continuously expanding world of e-books and online learning used as free open access medical education tools. Majority of learners reported of listening to online talks and lectures of famous medical practitioners. This enables them free learning experiences at a convenient time. A participant reported using Facebook, Google space, clinical scenario worksheets, Zoom sessions with the senior consultants of International calibre. Another participant stressed the use of online resources like podcasts, talks and updated online disease guidelines, that are an immediate source of updating one's knowledge and they put us abreast of the international developments in the medical science.

**Self-Regulation:** The feature common in all Master Adaptive learners is Self-regulation. Two major sub-themes emerged from the discussions with this study participants, namely: a) Scheduling, and b) Self-awareness. The MALs report that the key to their success is that they are better planners and always schedule their work and self-study times. In a study by Cutrer et al. (2018) he noted that resilient learners are always successful in their careers. All of the participants reported being highly influenced by their learning environment in the University of Lahore Teaching Hospital (ULTH) wards and clinics on daily basis. According to them the learning environment is so charged and highly productive, that a learner is forced to stay on his toes and constantly upgrade his knowledge and clinical skills. Constant engagement with the post graduate trainees in different specialities, and the regular academic sessions with the undergraduate students enables a MAL to be constantly upgrading his knowledge and filling up the identified gaps on urgent basis.

Many of our study participants stated being self-aware and always scheduling their work-study plan. This concept aligns

with the point raised in another study by (Mylopoulos et al. 2018) in which he imposes the importance of useful hard work by the learners. Discussions with the learners has resulted in the fact that they have reported the attainment of characteristics like 'development of Resilience and adaptive expertise' in their personalities.

**Motivation:** Another theme that emerged from their interviews is a strong sense of 'Motivation'. The results show the following two sub-themes under the main theme of Motivation as the a) Intrinsic motivation, and the b) Extrinsic motivation

The participants in the study described the planning as an intrinsically motivated process where the learner has the ownership of this process and feels a primary obligation towards his patients to provide them with the best care. Whereas, the external factors like better job opportunities, promotions, good salary and a better placement in the departmental hierarchy are some of the external motivators that have been reported by the participants in this study.

**Recommendations:** For future recommendations, a clear understanding of the strategies of successful learners could both assist less-advanced learners to develop, as well as help educators to foster the optimal learning environment. Medical Educators should encourage learners to identify a personalized plan for when they will learn and fill up the identified gaps in learning, outside of a busy clinical schedule, in their own personal time.

It is recommended that in order to have a deeper understanding of the process adapted by the Master Adaptive Learners, the participants should be repeatedly assessed over an extended period with repeat evaluations. Moreover, the behavior of the research participants should be observed over time and results should be drawn on personal observations instead of the study participant reporting it himself.

**Limitations:** It is the recognized need of the medical field that the medical professionals are in a constant state of improvement in their practical skills and educational concepts. Here the strategies used by Master Adaptive Learners in planning their learning have been studied as a snap shot study. By studying this phenomenon longitudinally, we can develop a deeper understanding of this process. Our findings are based on participant self-reporting, not on observing their behaviors. We have conducted this research in Pakistani context which is on one hand is the strength of the study, but it can also limit its generalizability of our findings to other settings, such as international training programs, or those in more community settings.

**Future directions:** Researchers can extend study to other departments and institutions for a better overview and more samples. Longitudinal research method can be employed to observe the effects of applied recommendations. Data can also be collected from other medical colleges and more hospitals should be included.

## CONCLUSION

This study concludes that the common themes that emerged are 'Self-Regulation' – all the participants agreed that self-regulation

is essential for professional development. Two major sub-themes emerged from the discussions namely: a) Scheduling, and b) Self-awareness. The final theme that emerged from our study is a strong sense of 'Motivation'. The results show the following two sub-themes under the main theme of Motivation as follows: a) Intrinsic motivation, and the b) Extrinsic motivation. We maintain that by knowing about the ways the successful learners plan their learning the teachers can make use of these mechanisms. It is further hoped that by utilizing these abilities the learner will expand his Adaptive Expertise.

For physicians to deliver superior healthcare, they must consistently acquire knowledge and exhibit both standard and flexible expertise throughout their professional journeys. Hence, it is concluded that by identifying specific skills and habits used by Master Adaptive Learners while planning their learning, we can enhance our understanding of how they acquire adaptive expertise.

Impact of current study: By knowing about the methods and the strategies employed by the Master Adaptive Learners the less experienced learners can know about the ways and methods to be followed to achieve their learning goals.

## DECLARATION OF INTEREST

The author declare no conflict of interest.

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## AUTHOR'S CONTRIBUTION

**1 L.H:** Design and write up, Critical review and addition of important content.

**2 S.K:** Concept and data acquisition

**3 S.S:** Analysis and interpretation of data

**4 U.H:** Critical review