The Concept of Self-directed Learning: Implications for Practice in the Undergraduate Curriculum

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ABSTRACT

Self-directed learning (SDL) is a modality where learners are expected to take responsibility for their own learning, diagnose gaps in their learning, frame their own goals and resources for learning, implement appropriate learning strategies and evaluate learning outcomes. Flexibility and creativity in designing assignments for students to work individually or collaboratively are the keys to promoting SDL. The recent competency-based curriculum document from the National Medical Commission does not elaborate the concept or implementation of SDL, leaving it open to individual interpretation. We, herein, discuss the concept of SDL, address common misconceptions surrounding SDL, and elucidate strategies by which SDL skills can be inculcated in medical students using pre-existing opportunities in the curriculum. Flipped classrooms, reciprocal teaching, technology-enhanced methods, problem-based learning, and group projects are excellent ways of promoting SDL. SDL requires efforts and policies both at the teachers' level and at the institutional level; and is an important input to achieve the goal of being a lifelong learner by the Indian medical graduate.

Keywords: *Competency-based curriculum, Indian medical graduate, Lifelong learner, Medical Education, Self-directed learning*

The concept of self-directed learning (SDL) is probably as old as mankind. One of the best-known examples of SDL is the story of *Ekalavya* from the Indian epic, the *Mahabharata* [1]. Each one of us has had our own *Ekalavya* experiences, where we have learnt a skill or an art all by ourselves, without a teacher or the pressure of examinations. We charted out our targets all by ourselves in both formal and informal situations, created our own learning goals, made decisions about what and where to learn from, developed our own time frames for learning, and eventually, decided the levels of proficiency or expertise which satisfied us. Institutionalization of SDL, on the other hand, is a relatively recent phenomenon.

While the term has existed in general education, and the 1997 Medical Council of India regulations [2] did mention self-learning, its importance in medical education in India was emphasized in 2019, when the Medical Council of India mooted a new curricular model. Since the term 'self-directed learning' first appeared in the amended Regulations on Graduate Medical Education (GMER) [3] and dedicated time allocated, it has become the new buzz word. However, in the absence of any guidelines, many teachers and students find it difficult to apply the concepts of SDL in routine undergraduate teaching.

WHAT IS SELF-DIRECTED LEARNING?

The most popular and accepted definition of SDL is that given by Malcolm Knowles in 1975 [4]: *"Self-directed learning is a process in which individuals take initiative, with or without the help of others, in diagnosing their own learning needs, formulating goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes."* While Knowles [4] identified the five cognitive activities that need to be undertaken when following an SDL process, Sargeant, et al. [5] added another element, which is the willingness of the learners to drive their own learning (**Box 1**).

Educational psychologists view SDL as a complex process which comprises psychological characteristics, personal characteristics, and personal actions. These include components such as self-efficacy, intrinsic motivation, self-assessment, beliefs, learning styles and ability to set goals.

SDL is rooted in the application of critical thinking, self-management skills, social skills, communication skills, analytical skills, and research skills. So, learners with good SDL skills will be able to independently find resources egged on by their curiosity to learn, connect newer concepts with their previous knowledge, monitor their comprehension, inquire about things they do not understand, synthesize what they have learnt, and apply that learning in a practical context. As can be seen, these are skills which transcend specific disciplines, but are necessary for the overall personal and professional development of a learner.

MYTHS ABOUT SDL

Myth 1 – SDL means self-learning under directions of a teacher: In essence, all learning is self-learning. Even when a teacher gives a lecture, it is the student who is learning. However, SDL is not synonymous with self-learning. Telling students to sit in the classroom or library and read a chapter is not SDL. What makes self-directed learning different is the *locus of control*. In SDL, it is the learner who takes the initiative and controls the direction of learning. 'Locus of control' refers to learners' belief in their abilities to control life events [6]. Individuals who have a predominantly internal locus of control believe they have the power to direct and control the events which affect their lives [7]. On the other hand, individuals who have an external locus of control believe that events in their life are controlled by factors such as fate, chance or fortune, which are beyond their control.

To help learners become self-directed, responsibility for learning must be gradually shifted from the teacher to the student. Teachers must purposefully move the onus of learning from (a) teacher-as-model, to (b) joint responsibility of teacher and learner, to (c) independent practice, and (d) application of knowledge by learner [8-10]. It is quite like teaching a child to ride a bicycle, where you gradually run alongside, steady her when the bike wobbles, and eventually allow her to ride independently minus any scaffolds. Our task as teachers will be to gradually nudge students to shift their locus of control internally, so that they enjoy the learning process and move towards deep learning, rather than become exam-oriented rote learners who are satisfied by superficial learning.

Myth 2 - The teacher has no role to play in SDL: The term 'self-directed learning' does not imply that there is no need for a teacher. Let us recall Knowles' [4] definition here, where he talks about learning 'with or without help' from others. One of the key skills of self-directed learners is to know when to seek help or support [4]. A learner may choose to learn on his own, or with the help of others, or to learn with others. It is the student's prerogative to ask for help if required. When a learner seeks help, a teacher must be available or accessible to help. The teacher's role is that of a facilitator of knowledge, rather than a dispenser of content. They ensure that the learner does not deviate from the intended learning objectives.

Myth 3 – SDL is a teaching strategy: Self-directed learning is an underlying principle of adult learning. It is not a teaching strategy or a special session. The idea of providing protected time for SDL perhaps was to provide time in the schedule for informal learning. Using this time to ask students to 'sit quietly and do SDL' is inappropriate. In a lighter vein, this misconception can be compared to the erroneous belief that medical

education is only for medical education departments, or preventive advice is to be given only by preventive medicine departments. Nothing could be more damaging to the cause of SDL. SDL should be conceptualized as a set of skills which need to be inculcated by students and requires special training like other skills [11]. SDL as an approach needs to percolate into the way the students learn, and learner autonomy must be promoted irrespective of what teaching strategies we use. Restricting it to a few sessions would be extremely counterproductive.

Myth 4 – SDL means learning alone: Learning can happen in different settings. The social interaction between peers in an educational environment is key to constructing one's own learning. This is the concept of 'community of inquiry' [12], where collaboration and sharing enable cross-pollination of ideas, shapes understanding and helps learners to construct their own meaning out of content. Teachers need to find opportunities to allow students to explore different contexts in groups where they see the functioning of health professionals or understand processes and systems.

TEACHING AND ASSESSMENT STRATEGIES

Assessing readiness for self-directed learning

Readiness is a combination of ability and intrinsic motivation. Signs of readiness for SDL include self-discipline, being organized, ability to work autonomously, ability to communicate well, openness to accept feedback, and ability to self-reflect. Readiness is situational—a student maybe self-directed in one subject, and maybe a dependent learner in another. It may even be task specific. A student may "not be able" or "not willing" or "not motivated" to do a certain task at hand. Learners are at different stages of readiness for self-directed learning (**Fig 1**) [13].

Gerald Grow [10] proposed the Staged Self-Directed Learning (SSDL) model which suggests that teachers can help or hinder students advance through the stages of increasing self-direction by providing them feedback after assessment. This is done by giving them greater autonomy and training them to shift to an internal locus of control. In **Table I**, we have summarized the various teaching and assessment strategies that one can be utilized for different stages of self-directed learners according to the SSDL model [10].

Mismatch between learner SDL level and teaching style

Problems arise when the teaching style does not match with the learner's stage of self-directedness. Say for example, if stage 4 learners are taught by an authoritarian teacher, some learners might still function and retain their autonomy; lack of challenge might cause others to retreat into boredom or resent such teaching.

Teachers require to balance their teaching styles with the students' level of self-direction, and to gradually empower them to reach higher levels. A 'good teacher' is not one who delivers exorbitant content, but one who can be flexible and alter teaching styles according to the learner needs. Specific teaching strategies work for teaching students at each stage, and several different strategies can work. Unless flexibility in methodology is allowed, SDL cannot be achieved to its fullest potential.

PUTTING SDL INTO PRACTICE

Several instructional strategies have been shown to be useful in promoting SDL. Many concepts included in the new curriculum, such as the student-doctor concept, [14-15] early clinical exposure, [16] problem-based

learning, [17-18] case-based learning, [19] reflective practice, [20] or the flipped classroom concept, [21-22] have self-directedness of varying degree.

Fig. 2 summarizes different strategies by which SDL can be promoted in the undergraduate curriculum. Additional ways to incorporate self-directedness into educational practice are suggested below.

Identify pre-existing opportunities in the curriculum. Students who are exposed to problem-based or case-based learning, group projects, community visits, flipped classroom models etc. already have some experience of self-directed learning. These tasks can be honed further to promote higher levels of self-directedness. For example, some institutes have a village adoption scheme where students are allotted families in the community to follow-up throughout their course. Here students are asked to explore and perform different tasks (e.g., conducting a dietary survey, collecting data about immunization, gathering information about ventilation or sanitation in the households etc.) within their adopted families. Such tasks allow students to learn on their own in the community context.

Clarify the learning goals: One of the challenges which students face in SDL is not knowing "what to learn" and the other is not knowing "when to stop". Once teachers explain the relevance of the topic in the beginning, it motivates students to pursue learning. Students must be introduced to the learning goals of the task or assignment, made aware of what is expected of them, how they will be assessed, and given deadlines of submission. These individual or team assignments must give learners the flexibility to choose their own learning methods and give them the freedom to be creative and express themselves.

Help students identify gaps in their learning: Use of knowledge maps (in the form of mind maps and concept maps) not only help in creation of additional knowledge, but also identify gaps in learning [23]. This is an important step in developing metacognitive skills. The construction of knowledge maps demands a lot of content knowledge, and deep understanding of concepts. When working in a team to develop these maps, students learn analytical skills, communication skills and collaborative skills, thus fostering SDL.

Gradually shift the onus of learning to the student: The clerkship or *student-doctor* phase allows student to learn about the continuity of health care [15]. This concept allows the student to first observe, then work under supervision, and then gain skills to function independently. The *flipped classroom*, which is increasingly finding favour in health sciences education, shifts from passive learning to accelerated learning. It fosters skills at cognitively demanding levels such as analysis, synthesis, and evaluation [24,25].

Design challenging tasks appropriate to the learner level: The Daloz mode [26] talks about the need to have the right mix of support and challenge to enable the growth of students. For example, instead of simply listing out principles of correct prescription writing, they could be asked to critically appraise actual prescriptions and learn about the common errors. One could move to more complex group tasks where an audit of appropriate antibiotic usage could be done.

Gradually allow the learner to become autonomous: The difficulty level of the tasks can gradually be increased as the learners progress over various stages of the undergraduate course. At the early stages, more didactic teaching might help to scaffold learning, and students might be given a list of recommended reading. As they progress to higher classes, they might be expected to search for their own resources and demonstrate their understanding through assignments (using the concept of "assessment as learning"). A problem which

teachers could face is dealing with different levels of learners in the same class. One way of managing this is to give students some options or variety in assignments. Not all tasks will be equally complex, but they will all be designed to fulfil the same learning objectives.

Design collaborative tasks: As explained earlier, learning cannot occur in isolation. So, the design of the course must incorporate collaborative activities which allow student-student interaction. When collaborative tasks are given, it is preferable to have a mix of learners at different levels in the groups. Peer teaching helps. Also, seeing some students achieve a task improves learners' beliefs in their self-efficacy. *Group research projects* with a teacher as a facilitator, where students themselves decide which subject they wish to explore, is an excellent way to propagate deep learning at higher levels. By providing a tangible output, projects make assessment of SDL easy.

Another way to encourage SDL through collaboration for lower levels of self-directed learners is to practice *reciprocal teaching* [27]. Reciprocal teaching involves a two-way dialogue where reading sessions are carried out in small collaborative groups. Reciprocal teaching promotes enquiry, metacognitive skills, self-monitoring, immediate feedback, and critiquing skills. Small group teaching, group discussions, tutorials and integrated sessions are the best place to introduce reciprocal teaching.

Give students freedom to learn at their own time and pace: Teachers need to learn to give up control and allow students autonomy. Getting students to develop their own learning goals, question what they have learnt, find their own learning resources, developing learning contracts, writing reflections, giving them tasks to work on autonomously— all have elements of SDL.

Give opportunities to practice SDL: SDL is a set of skills which require practice to make it a habit [11]. Teachers need to design tasks which allow students to gain proficiency by providing opportunities for deliberate practice.

Problem-based learning (PBL): PBL is one of the best examples of using SDL skills. Here the tutor tries to push students to the brink of their knowledge, from where they construct new knowledge. It must not be confused with problem-solving, which is perhaps why many presume that SDL can be restricted to a session. Many excellent reviews describe how the PBL process fosters SDL skills [28-30]. The learning strategies used in these methods emphasize active learning, self-assessment, metacognition, and reflection. It can be pointed out here that it is not necessary to implement the 'classical' models; and even partial implementation (with partial benefits) may be useful.

Flipped classrooms: Flipped classrooms involve a kind of reversal in the sequence of teachers' and students' roles, thereby promoting SDL. Here students are given some pre-reading material or asked to search their own material prior to class. Pre-reading might be given in the form of handouts, PowerPoint presentations or case-based triggers. Whenever available, technology can be invoked, and online quizzes or videos can be provided. [22] This preparation helps students self-regulate their learning, select appropriate study material, develop their own study strategies, and learn to pace their learning. The classroom time is used to elaborate difficult concepts, have collaborative discussions, or clarify doubts. After the classroom time, students could be asked to apply their knowledge to some tasks. Best practices and tips for using flipped class to promote SDL have already been described [22,25].

Use technology to promote SDL: Technology can strengthen SDL skills in several ways [31]. It can provide interesting, interactive, and pedagogically useful platforms, which can amplify the benefits of learning. Record keeping and retrieval can be made easier with optimal use of technology. Assessments with defined criteria help in ensuring that the learner's progress is documented over time. It is important to celebrate progress and achievement, rather than being focused only on the final examination marks.

Encourage reflective practice: Allowing students to reflect about the process of learning is an essential component of SDL. *Reflective practice* helps learners link new knowledge with the old, promote higher order thinking and take on further responsibility for their learning. Reflections can be either used as standalone interventions, or over time, these can become part of student learning portfolios. *Portfolios* are systematic collections of work done by the student with evidence of their learning [32]. A major feature which distinguishes portfolios from logbooks is the element of reflection, which promotes metacognitive skills. Use of portfolios as learning and assessment tools has been described earlier [33]. Since the new CBME curriculum mandates the use of logbooks, adding an element of reflection to promote SDL should be easy [32].

Provide honest and specific feedback: Students often over-estimate or under-estimate their potential. Students with higher self-efficacy beliefs tends to have higher goals than those who have low belief in their worth [34]. It is here that honest and explicit feedback helps them understands the reasons for their success or failures better, and this enhances their self-efficacy beliefs [35-36]. Furthermore, a safe non-threatening learning environment, where it is acceptable to falter, and fail is essential to bolster self-efficacy.

Develop learning contracts: Another technique which can be used to enhance SDL skills is a learning contract. A *learning contract* is a form of an agreement that a student makes *with herself*, to learn [37]. The student writes a document which specifically states what and how she will learn in a defined time in the presence of a teacher. Both the student and the instructor agree to this plan of action. This is not a commitment to work for an instructor; the instructor is only a witness to the contract. Writing and adhering to learning contracts is an easily adaptable intervention. We feel that this should be increasingly used in our system after training of teachers and students in framing a learning contract. The Foundation Course can be a useful opportunity to achieve this. We have provided some examples of learning contracts in **Web Table I-IV**. These contracts include not only knowledge but also skills, attitudes, and communication competencies.

CHALLENGES IN IMPLEMENTATION

Whenever a change is introduced, resistance is expected. Regulatory norms might not be sufficient to implement change. Faculty training is mandatory to erase any misgivings that they might have with losing control or adopting an unfamiliar approach. Secondly, one might encounter dependent students who are so used to directed teaching that they might be reluctant to move towards self-directedness. This might be a flaw in our education system which needs to be corrected [38]. One way to do this will be to structure the course in such a way that learners are gradually empowered over time to take up responsibility towards their own learning.

One must be conscious that learners might be at different levels of readiness towards SDL. Pushing only one educational strategy in the form of SDL might not work in a context where learners are not used to

working autonomously. Hence teachers will have to use a mix of teaching-learning styles until all students are comfortable with working on their own.

When designing courses which use the principles of SDL, it is important to plan for flexibility. When learners are given an opportunity to learn autonomously, each learner will experience it differently. As long as they adhere to the learning objectives defined in the course, learners are free to use different formats to demonstrate that they have actually learnt something. Self-directed learners need time, opportunities, and freedom to explore. These must be built into the educational environment.

Promotion of SDL is not a task which can be successful if only one or few teachers veer students towards self-directedness. It requires a collective effort of the entire institution as a policy. This holds true in our circumstances where students might not have been exposed to SDL in their school years. The transition to self-directedness in these learners must be done in a phased manner, gradually nudging them towards SDL. These expectations need to be communicated and clarified right in the beginning of professional courses. In fact, right in the Foundation course, learners can be oriented towards the concept of metacognition (awareness and understanding of one's own learning), self-regulated learning (ability to understand and control one's learning environment), and SDL (taking charge of their own learning process), and provided with guidance on how they might learn skills of time management, and project management. In all, the educational environment determines whether students will embrace SDL.

CONCLUSION

SDL is a set of skills that can be taught, learned, and acquired. It is not a teaching strategy, but a philosophy to be imbibed. The SDL process needs personal and environmental characteristics for identification and correction of gaps in understanding [11]. SDL is a habit of practice. Teachers need to provide opportunities for students to inculcate this habit. Restricting SDL to only a few sessions or only for knowledge-based tasks is an error, which needs to be avoided. The educational environment should be tailored to allow flexibility in methodology to achieve SDL goals.

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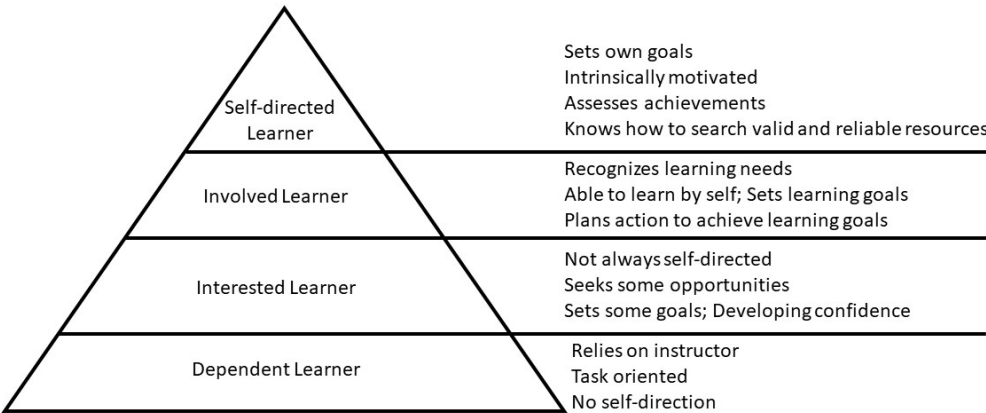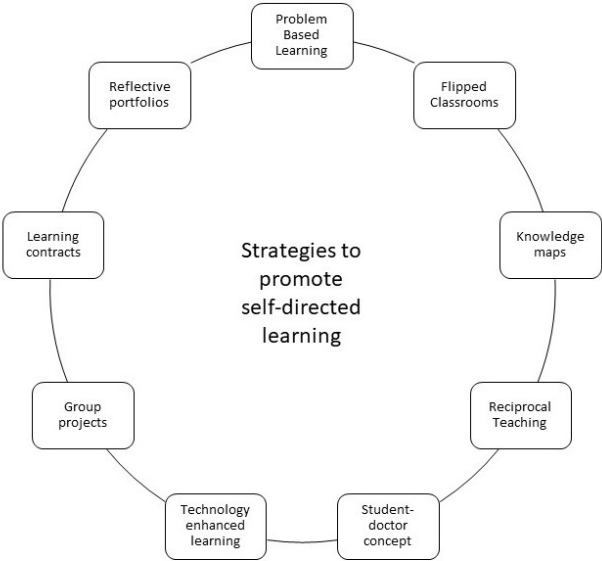
Levels of self-directed learners

Adapted from Grow's SSDL model (1991)

Fig. 1 Levels of self-directed learners.

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Fig. 2 Some strategies to promote self-directed learning.

Box I: Activities to be undertaken during a self-directed learning process

- Diagnose one's own learning needs
- Formulate goals
- Identify resources for learning
- Choose and implement appropriate learning strategies
- Evaluate learning outcomes
- Willingness to drive one's own learning

Table I Teaching and Assessment Strategies to Use with Different Levels of Learners

Stages of SDL in learner	Teaching approaches to use	Assessment strategies
Stage 1: *Dependent learner* The student is a dependent learner. They need explicit instructions on what to do, how to do and when to do something. They prefer teachers who are credible authorities or coaches who will "make them learn".	- Establish purpose and relevance of the session - Share learning objectives with learners - Organize content clearly - Formal lectures, structured tutorials work; some may require one-to-one coaching - Think aloud. Allow students to see your cognitive and metacognitive processes. - Talk about common mistakes - Modelling and demonstration: when teaching structured content or skills, e.g.: steps of resuscitation. - Notice whether learners are understanding. Pay attention to the individual learner - Gradually move learners away from dependency by involving them in design and content of learning	- Formative assessments can include summarizing and questioning to check for understanding - Ask students to reflect on learning - Give well-designed assignments with defined assessment criteria - Be strict about deadlines - Give frequent, timely, constructive feedback, correct errors immediately - Reward success and uplift self-esteem
Stage 2: *Interested learner* The student is an interested learner like moldable clay. Approachable teachers with a charismatic personality work well with these learners. Learners will respond well to personal interaction. The first part of the interaction involves explaining concepts and the next part involves getting the learner to express their own understanding and exhibit their learning.	- Bring motivation and enthusiasm into the classroom - Teaching here is directive, but also supportive: pay attention to both content and process of learning - Listen carefully to what students are saying; keep a two-way dialogue happening with learners - Strategies such as lecture followed by demonstration or discussion, or assignments given after an introduction to the topic work here. - Anticipate misconceptions and correct them - Use scaffolding: use questions to check for understanding; use prompts to build bridges with background knowledge; provide cues to allow students find their own answers - Teacher-led discussions work; teach the group process - Set high standards	- Introduce the topic followed by an assignment where students have something hands-on to do - When providing feedback, gradually phase out praise (extrinsic motivation) and phase in encouragement (which builds intrinsic motivation) - Maintain records of students' progress
Stage 3: *Involved learner* The student is an involved learner with her own experiences. Teachers and students share decision-making, with students increasingly taking over this role. They see themselves as	- Make learners conscious of learning strategies, tools and techniques which work best for them. - Use student-led discussions. Listen to them, draw them to share their ideas and	- Individual or group projects with faculty facilitator - Give students open-ended assignments which require them to apply their knowledge and create something new. E.g.: designing a management plan in a certain

participants in their own learning. The teacher's role here is that of a facilitator of learning. Gradually students must be helped to transition towards independence through use of collaborative learning and teamwork.	experiences - The teacher works with the learners as an equal, stepping in and out of the group when required - Give open-ended scenarios which encourage problem solving; Increase task complexity - Encourage activities which require critical thinking such as seminars and group discussions - Encourage collaborative activities which encourage students to relate their own experiences to the course content - Let students make mistakes; teach learners to be accountable for individual work as well as to the group - Form learning contracts with them	patient context - Provide them written assessment criteria and checklists to monitor their own performance - Ask questions which require students to find evidence to support their claims or justify their answers - Provide records of learner progress
Stage 4: *Self-directed learner* Students takes responsibility for the direction of their learning. They set their own goals and are able to monitor and assess their own performance with or without the presence of teachers. They have metacognitive and self-regulative ability, as well as, time management and project management skills. They are able to gather required information and critique the quality of the resources. A teacher's role for these autonomous learners is that of a consultant. Note here that self-directed learners need not be loners. They have to acquire collaborative and social skills to work in teams.	- Delegate independent work to students; supervise them - Allow students to monitor their own learning - Set a structured challenge and leave the learner to carry it out on their own - Emphasize tasks which are important in the long-term outside the class - Encourage collaborative work between learners - The relationship between the students and the task takes precedence, rather than the teacher-student relationship. - Focus on the product rather than the process - Teachers need to be available to suggest changes, supervise or monitor progress, but essentially, they empower the learner to be independent.	- Provide broad templates of what is expected as the final assessment product - Individual assignment or self-directed group project - Dissertation and internships are other examples of independent work - Supervise students by holding meetings to check progress, discuss problems, monitor group work and give timelines

Web Table I Competency Addressed: Abdominal Examination

PE 26.7   Perform examination of abdomen, demonstration of organomegaly, ascites etc.

PE 29.12   Perform examination of the abdomen, demonstrate organomegaly

Timeline: One week

Learning Objectives	Learning resources	Evidence	Criteria for assessment	Action plan for future
1. To gain appropriate knowledge about the contents of abdomen, and placement of various organs in it. 2. To be able to examine the abdomen of children of various ages in a compassionate and systematic manner, and describe the findings correctly 3. To be able to detect any organomegaly ascites, or palpable masses with appropriate examination technique and describe the findings	1. Read the clinical methods book and view authenticated videos available offline/online related to correct procedure of examination of abdomen 2. Observe examination of abdomen by faculty/ residents in pediatric OPD/wards 3. Ask my seniors/peers to help me in identifying abnormal abdominal examination findings in hospitalized patients 4. Practice abdominal examination on bedside as desired and record video (with patient permission)	1. Demonstrate my examination technique to peers/tutors, at bedside 2. Get my recordings reviewed by peers/tutors and obtain their feedback 3. Write my reflections on the process (in the logbook)	1. Tutor/resident will validate my examination techniques directly (at bedside) or review my video recording and give feedback 2. Compare how I perform in an OSCE station on examination of abdomen and demonstration of organomegaly/ ascites (compared to a standardized itemized checklist or assessed on global rating scale by a skilled examiner)	1. Practice in more complex patients

Web Table II Competency addressed: Intravenous Cannulation

24.16 Perform IV cannulation in a model

Timeline: Two weeks

Learning objectives	Learning resources	Evidence	Criteria for assessment	Action plan for future
1. To gain appropriate knowledge of surface marking of common veins used for IV cannulation, and demonstrate them 2. To be able to identify and select the age-appropriate device for cannulation, and 3. To demonstrate preparation of cannulation site, with all aseptic precautions 4. To correctly insert IV cannula in a model, fix it, and dispose waste as per standard guidelines	1. Revise surface anatomy of superficial veins by visiting the Anatomy Museum and learning resources (textbook). Practice on peers 2. Observe all devices being used for IV cannulation in the Pediatric Emergency/wards 3. View videos on preparation of site, and aseptic precautions which are available online or offline 4. Retrieve/prepare a checklist for correct procedure on insertion and waste disposal 5. Visit the skills lab and practice insertion and fixing IV cannula on model	1. Record my practice sessions 2. My reflections on the exercise 3. Observing free flow of blood after insertion, on a model 4. Obtain Feedback from peers/tutors on my recordings	1. Validation by tutor of my recording and filled up checklists on at least 3 occasions 2. OSCE station used by the department during next round of OSCE	1. Practice IV cannulation in real patients under supervision 2. When confident perform IV cannulation independently in real patients

Web Table III Competency Addressed: Communication with Patients

AETCOM 23: Demonstrate ability to communicate to patients in a patient, respectful, non-threatening, non-judgmental and empathetic manner

Timeline: One week

Learning Objectives	Learning resources	Evidence	Criteria for assessment	Action plan for future
1. To gain appropriate knowledge and skills to communicate with a patient. 2. To use appropriate communication skills.	1. Observation of my communication by residents/ senior residents of the department. 2. Role plays with peers 3. Facility for recording (my mobile!) 4. Kalamazoo consensus statement regarding communication	1. Review of recording of my communication with peers during role plays using checklist given on page 85 of AETCOM booklet. 2. Feedback from peers/tutors/ patients 3. My reflections on the exercise	1. Tutor/ senior resident will review the recording and provide feedback using checklist 2. OSCE station used by the department during next round of OSCE 3. Comparison with Kalamazoo criteria	1. Compare progress in my OSCE scores over time 2. Practice communication in more settings

Web Table IV Competency Addressed: The Role of the Physician in the Community

PE 35.1 Identify, discuss, and defend medicolegal, socio-cultural and ethical issues as they pertain to health care in children (including parental rights and right to refuse treatment)
Timeline: 2 weeks

Learning Objectives	Learning resources	Evidence	Criteria for assessment	Action plan for future
1. To gain appropriate knowledge about children's rights, parents' rights and responsibilities 2. Learn laws related to care of children 3. Ethical issues in healthcare of children 4. Common social and cultural issues related to children in Indian context	1. Books on ethical issues 2. Journals 3. Internet resources 4. From legal experts related to child laws 5. From social activists dealing with issues related to children	1. Identify issues in children in care homes 2. Write a case study raising the problems and solutions 3. Feedback from peers/tutors/'patient' 4. My reflections on the exercise	1. Tutor/Sr. Resident will review case study and reflections and provide feedback	1. Discuss some of the issues with health activists and see how they approach and deal with simple and complex cases