Improving Self Directed Learning (SDL) through technology

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  Maharashtra university of Health sciences, Nashik
• Consultant , Persistent system Ltd
• Chair, National Bioethics Curriculum implementation; UNESCO Chair in bioethics Haifa
• Ex Dean, B J Medical College Pune and RCSM Govt. Medical College Kolhapur
• Ex Professor of surgery , B J Medical College Pune
Co Authors

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  Professor in Anaesthesia  
  B J Medical college Pune
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  Associate Professor in Ophthalmology  
  GMERS MC Gandhinagar
MEDICAL Education is Adult LEARNING
How is Adult learning different than kids learning?
Adults want to ...

- Learn it, then use it
- Learn only when it is relevant
- Solve problems to learn concepts
- Learn at their own pace
- Set their own learning objectives
- Preserve self-esteem
- Have different ideas about what is important to learn
Evolution of teaching learning

- Hard copy generation
- Digital world revolution
- Video revolution
  - Mobile
  - 3G network
  - U tube, Websurg
  - Khan academy.org
Knowledge Transfer a Growing Challenge

- Effective knowledge transfer is of paramount importance for the maintenance and advancement of our health care system.
Teacher ------ Facilitator

- Industry Model ---- Collaborative Model
- IT explosion has changed the role of Facilitator to give justice to this process
- Charisma and charm of teaching
The half of knowledge is to know where to find knowledge.

Quote over the entrance to Dodd Hall, FSU
Self Directed Learning (SDL)
Objectives

- Definition
- History
- Stages in SDL
- SDL in medical colleges
- Promote self directed learning in students
- Use of technology to improve self directed learning
Story of Eklavya
The Epitome of Guru Bhakti
“The hardest thing to get into the mind of the beginner is that the education upon which he is engaged is . . . a life course, for which the work of a few years under teachers is a preparation.”

"He who studies medicine without books sails an uncharted sea, but he who studies medicine without patients does not go to sea at all."

William Osler
Definition

• In 1975, Malcolm Knowles defined self-directed learning as 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.”
Self-directed learning is any knowledge, skill, accomplishment, or personal development that an individual selects and brings about by his or her own efforts using any method in any circumstances at any time”

(GIBBONS, 2002)
• Any knowledge, skill, accomplishment, or personal development that

• An individual selects and brings about by his or her own efforts

• Using any method in any circumstances at any time” (GIBBONS, 2002)
Allen tough / Malcolm Knowles


Malcolm Shepherd Knowles

Note: This is not the actual book cover
SDL, LIMITED TO ADULTS?........

Consider how much a child learns during his first year of life.
What is self directed learning (SDL)?

• The process of learning in which the learner assumes primary responsibility for
  - planning,
  - implementing
  - evaluating a learning project.

• Learner chooses what to learn and how to learn, and also decides
  – when to continue and
  – when to end the learning project.
Steps: How to impart to learners

- To set the learning objectives and goal
- To assess readiness to learn
- To engage in learning process
- To evaluate the learning & provide feedback
<table>
<thead>
<tr>
<th>Stage</th>
<th>Student</th>
<th>Teacher</th>
<th>Examples</th>
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</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Dependent</td>
<td>Authority Coach</td>
<td>Coaching with immediate feedback. Drill. Informational lecture. Overcoming deficiencies and resistance</td>
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<tr>
<td>Stage 2</td>
<td>Interested</td>
<td>Motivator, Guide</td>
<td>Inspiring lecture plus guided discussion. Goal-setting and learning strategies.</td>
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<tr>
<td>Stage 3</td>
<td>Involved</td>
<td>Facilitator</td>
<td>Discussion facilitated by teacher who participates as equal. Seminar. Group projects</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Self-Directed</td>
<td>Consultant, Delegator</td>
<td>Internship, dissertation, individual work or self-directed study-group.</td>
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</tbody>
</table>

The Staged Self-Directed Learning Model, G. Grow
GROW’S MODEL how teachers can promote SDL

- **Stage I**: dependent learner: teacher
- **Stage II**: interested learner: motivated but not informed of the subject matter
- **Stage III**: involved learner: more knowledgeable of subject matter and ready to explore with help
- **Stage IV**: self directed learner: plan, execute and evaluate their own learning with or with no help
<table>
<thead>
<tr>
<th>ROLE OF STUDENT</th>
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## Classical Andragogy

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<td>Consultant /delegator</td>
<td>Dissertation, internship /self directed study group</td>
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</table>
LEVELS OF SELF-DIRECTED LEARNING
SDL in Medical Colleges

• WHY???

• How???

• What we will achieve???
Medical schools have a moral obligation to prepare graduates who are “expert” self-directed learners.
Why in medical education

Knowledge that medical students acquire at school may become obsolete when they join for medical practice.

• Medical students are likely to work in different contexts during their professional career.

• Doctors thus need to keep learning and engaging in continuing education.
• The field of medical education has witnessed a change in a student’s role from passive to active learner

• this moves the centre of gravity away from the teacher and closer to the student
Advantages

• Learn more things and learn better than people who sit at the feet of teachers passively waiting to be taught
• Heightened curiosity
• Enhanced critical reasoning skills
• Better retention of acquired knowledge
• Enhanced ability to recognize knowledge deficits and need
• Greater enthusiasm for learning
• More initiative, ask more questions, more reading
• Concept should change from that of 'teacher' to that of
  – Facilitator
  – Motivator
  – Designer of the learning situation
  – Continuing co-learner
How??

• Integrate basic and clinical disciplines
  – Students to meet patients early

• Small group teaching

• Problem base learning
Prof. Dr. A. V. Jamkar
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**Director,
Post graduate programme, Research and Development,
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Problem Based Learning

What is problem based learning?

The Elements of PBL -

- **Problem:** Description of phenomena or events or a clinical scenario
  - ‘Triggers’ from problem cases define learning objectives
- **Tutorial Group:** Analysis of a problem under the guidance of a tutor
  - Group discussions on identified problems
- **Learning Objectives:** Concrete goals for study defined by the group decided by syllabus and Curriculum
- **Independent Self-directed Study by Students:** using multiple resources
Problem Based Learning
What is problem based learning?

Examples of trigger material for PBL scenarios

- Paper based clinical scenarios
- Experimental or clinical laboratory data
- Photographs
- Video clips
- Newspaper articles
- All or part of an article from a scientific journal
- *A real or simulated patient*: Case based Learning
- A family tree showing an inherited disorder
We should utilize the large no of patients for teaching.
Problem Based Learning
What is problem based learning?

- Characteristics of a PBL Tutorial Group
  - Small group teaching (8-10 students)
  - Rotary role playing by students
    - Chair
    - Scribe
    - Presenter
    - Time keeper
    - Group member
  - Facilitator (Tutor)
Problem Based Learning

What is problem based learning?

Generic skills and attitudes acquired during PBL Sessions

- Teamwork
- Chairing a group
- Listening
- Recording
- Cooperation and sharing of knowledge/information
- Respect for colleagues views, knowledge and person
- Critical review of literature
- Self-directed learning and use of resources
- Presentation skills
Traditional Tutorial

"Tutor"

"Students"
Problem Based Learning
Requirements for PBL Curriculum - 2

- **Faculty**
  - Knowledge of educational strategy and curriculum
  - Knowledge of methods of assessment and evaluation
  - Training on PBL
    - Small group facilitators instead of providers of information
    - Facilitating (not directing) PBL sessions i.e. talking less
    - Case design
  - Reduction in didactic lectures/Increase in tutorial sessions
  - Familiarity with ‘community medicine’
  - Familiarity with resources available to students
  - Availability of counseling
  - **Increase in workload**
Problem Based Learning
Requirements for PBL Curriculum - 3

- **Students**
  - Ability to take responsibility for own learning
  - Must acquire prior knowledge through private study
    - Adaptation to reduction in lectures and increase in tutorial sessions
    - Maximization of research resources available
  - Training on PBL
    - Small group teachings and dynamics
    - Participation in academic group discussions / Role playing
  - Clinical skills acquisition in Teaching Hospital and Community medicine’

- **Increase in workload**
Ausubel’s *subsumption theory*

“...The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly.”

Ausubel, 1968
Claimed Advantages Of Problem Based Learning

- Best Method of interactive learning
- Students use a deep learning approach
- Improvement of general problem-solving skills
- Meaningful Learning
- Development of self-directed learning skills
- Increased retention of knowledge
- Better Presentation skills
- It is more fun
- Resource utilisation
- motivation for studying
- lifelong learning skills
Getting Started

THE CASE

- Identify Problem
- Generate/Rank Hypotheses
- Explain Mechanisms
- Ask Questions/Predict Answers
- Get New Information
- Decision & Action Plan

PRE-EXISTING KNOWLEDGE

Reflection/Assessment

Independent Study
Learning Issues
Case Based Learning Process

Tutors took actual clinical cases in the ward.

All suitable cases from ward were taken

Acute cases admitted in emergency were also taken

Charted down learning objectives and were modified to meet the demands of the existing syllabus of the University

Session 1

The students were given the history of the patient with progressive disclosure. And after they hypothesized, they raised learning issues
Students examined Real patient in front of the facilitator

Tutor confirmed their findings and formatively corrected the students for clinical skills

Chairman allotted various learning issues amongst themselves

Students given investigation details

Students develop the hypothesis and decide about learning issue. Facilitator finalizes

List of faculty for integration from all the departments
Conclusion

Students’ determination of their own “level of ignorance” (Learning Issues), by themselves, is fundamental to PBL.
Students used all the resources including faculty from different fields to form a concise knowledge about the topic.

The faculty was acting only as facilitators and gave them a formed opinion based on experience.

Students also witnessed the actual management of the patient in the surgical wards and the surgical procedure performed.

Students prepare consolidated knowledge about learning issue allotted to them.
Students reported the problems solved to the group and the facilitators.

Tutor refined the knowledge in case required.

Consolidation of knowledge by Senior surgeon was done.

Develop a concept map of protocol for the disease.
The Iterative Process of PBL

Brainstorm-hypothesize

Read the problem

EVALUATE

Identify learning issues

Research-Learn (2-4) days

Consult the Faculty

Take the formed opinion

Return-Reread-Report-Review

Next CBL
Attitudes & Behaviors of Group Members
Change in Work Group Development

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<tr>
<td>Low</td>
<td>Amount of work</td>
<td>Morale</td>
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The greatest sign of success for a teacher is to be able to say, "The children are now working as if I did not exist."

- Maria Montessori
Self-Directed Learning

Ownership of Learning

Extension of Own Learning

Management and Monitoring of Own Learning

- Articulate learning gaps
- Set learning goals and identify learning tasks to achieve the goals
- Apply learning in new contexts
- Learn beyond the curriculum
- Explore alternatives and make sound decisions
- Formulate questions and generate own inquiries
- Plan and manage workload and time effectively and efficiently
- Reflect on their learning and use feedback to improve their schoolwork

Source: The ICT Connection [http://ictconnection.edumall.sg]
Reasons people engage in SDL

➢ Time management/family obligations
➢ Cost of traditional learning
➢ Transportation
➢ Learner’s own learning styles
➢ Prefer informal learning structure
Technology helps in SDL

- Author stream/Slide share
- Learning management system
- Free OER (Open Educational Resources)
- Personal Learning Networks
  - Social networks such as, Face book, Google group
- Video-conferencing tools
  - Skype and other…
- YouTube/iTunes
Give a man a fish and you feed him for a day.

Teach a man to fish and you feed him for a lifetime.

Make a man a better learner and he’ll have a varied menu for the rest of his life.
“None of the world’s problems will have a solution until the world’s individuals become thoroughly self-educated.”

Buckminster Fuller

www.LifeLearningMagazine.com
Role of teacher in producing expert self-directed, life-long learners

- Role model for SDL
- Use all available technology
- Incorporate ‘old’ and ‘new’
- Provide “authentic” environment to practice SDL skills

- Provide feedback and progressive challenge

- Create autonomy supportive environment
  - Take learner’s perspective into account
  - Provide opportunities for choice and provide information needed to make informed choices
  - Encourage learners to accept more responsibility
IMPACT OF TECHNOLOGY ON EDUCATION

Internet: Greatest impact
Bloom's Digital Taxonomy & the Communication Spectrum

In human history we have seen many different ages, the dark ages, the middle ages and more recently the space and information ages. We live in a time that might best be described as the communication age. We are always connected, always available and constantly communicating and collaborating across a spectrum of activities with increasing levels of complexity and creativity.

Creating
Evaluating
Analysing
Applying
Understanding
Remembering

Collaboration is not a 21st Century skill, it is a 21st Century essential.

We live in exponential times
E- learning

- Delivery of learning, training or education programs by electronic means which involves the use of a computer or any other electronic device to provide training, educational or learning material with the help of virtual learning environment.
e-learning: ELECTRONIC learning

- **e-learning**: Computers and interactive networks simultaneously.

- e-learning is also called Web-based learning, online learning, distributed learning, computer-assisted instruction, or Internet-based learning.

- In an electronic on-line multimedia learning environment:
  - interactive
  - learner-centered
  - Learner can be monitored & graded
Types of e-learning

➢ Synchronous learning
➢ Asynchronous learning
Learning and teaching takes place in real time (same time) while the teacher and learners are at different place.

VIRTUAL creation of classroom.

Examples include:

- Live online lectures
- Online CME’s
- Listening to a live radio broadcast
- Watching live television broadcast
- Audio/video conferencing
Teacher prepares the courseware material before the course takes place. The learner is free to decide when he wants to study the courseware.

Examples include:
- self paced courses taken via Internet or CD-Rom
- videotaped classes
- stored audio/video Web presentations or seminars
- recorded audio tapes
- e-mail messages
E-LEARNING TOOLS

• e-mail
• Audio chats
• Online forum
• Web
• Video conferencing
Scope of e-mail

➢ Every teacher & student should have an e-mail account
➢ Communicate with students
➢ Students can submit assignment
➢ Can upload / download attachments
➢ Create a paperless environment
➢ Efficient and cost effective
E-learning tools: Audio Chat

- Synchronous communication tool
- Communicate with students
E-learning tools: Online Forum

- Asynchronous discussion forum
- Teacher can create discussion groups
- Teacher could post a question and request students to comment
- Students can post their comments
- Can encourage community participation
- Feedback
Wide range of materials available
Resource centre
Sharing of resources
Supported by images, audio, simulation and multimedia
Teacher: facilitators
E-learning tools: Video Conference

- Can conduct a live lecture
- Communication with students
- Support by audio, chat and whiteboard
- Can be recorded and later be used for on demand lectures

* Latest is m-learning.
THE MEDICAL COUNCIL OF INDIA
(2008)

• Medical colleges must have a skills lab and adopt information technology in medicine.
• Colleges must have provision for e-library, computer room and Internet facility.
• Lecture theatres must have provision for e-classes / virtual classes.
Software application for the
• administration,
• documentation,
• tracking,
• Reporting
• delivery
Of e-learning education courses or training programs.

• Eg. TYRO.
Medical Education with Moodle

Course categories

- Ophthalmology (6)
- Moodle (1)

Available courses

- Stye, Chalazion, Pterygium
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<tr>
<th>Type</th>
<th>Document</th>
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<tbody>
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<td>Reproductive System</td>
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<td>Physiology Reviews</td>
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<td></td>
<td>History of Medicine and Environmental Science</td>
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</table>
WeBSurg on your iPhone!

Access WeBSurg’s content from: http://www.websurg.com/m/
http://www.orlive.com/
Features of LMS

- Embedded videos
- PPTs
- Quizzes
- viewing grades
- item analysis
- announcements
- schedules
- evaluation
- evaluation reports
DISSOLUTION OF TIME

DISSOLUTION OF DISTANCE
Collaborative teaching

- INDEPENDENT OF TIME AND GEOGRAPHY
- Mass production ----- --- -Mass customization
Definition of intelligence is changing

Intelligence is no longer the same as memory.
It is adaptability to change.
• Learning has become DEMOCRATIC
• First time in h/o civilization
Learning becomes personal

- Searching, browsing: use of computer power
- Information resources: new forms possible
- Services: new & new forms possible
- Costs: may save effort, money
• course content  Exchange
• course content  collaboration
• course content  innovation
  • Knowledge creation
  • Intellectual capital
ADVANTAGES OF e-learning

• Eliminates geographic constrains

• Reduces travel cost and time

• Option to select learning materials that meets the level of knowledge and interest of the learner

• Study wherever they have access to a computer and Internet

• Self-paced learning modules allow learners to work at their own pace
ADVANTAGES OF e-learning (cond.)

- Different teaching learning styles can be adopted and facilitation of learning occurs through varied activities.
- Development of computer and Internet skills that are transferable to other facets of learner's lives.
- Builds *self-knowledge* and *self-confidence* and encourages students to take responsibility for their learning.
- For research.

Medical Education Unit, GMERS MCG
Learn everything you can, anytime you can, from anyone you can. You will be grateful you did.

- Unknown
Limitations of e-learning

- Unmotivated learners or those with poor study habits may fall behind.
- Lack of familiar structure and routine may hamper learning.
- Students may feel *isolated* or miss social interaction.
- Instructor may not always be available on demand.
- Slow or unreliable *Internet connections* can be frustrating.
- Some courses such as traditional hands-on courses can be difficult to simulate.
LIMITATIONS e-learning (Contd.)

- Access, knowledge and comfort with the Internet is required

- Proper time management is necessary

*Giving more importance to the interface compared to the actual content.

*Copyright issues (where plagiarized materials are freely uploaded)
For effective medical e-learning

* **Study materials**
  ➢ have to be validated for construct and content
  ➢ Easily accessible.
  ➢ Easy to download.
  ➢ Easy to understand (written in a language suited to the level of the students).

* **Learning objectives** should be clear and the course designed to meet those objectives.
## E-learning

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</table>
Smart phones
Technology changes how we perceive the world
• A blog (a truncation of the expression weblog) = Diary type content sites
• ➔ discussion or informational site published on the World Wide Web and consisting of discrete entries ("posts") typically displayed in reverse chronological order (the most recent post appears first).
Description
This Yahoo! group is about surgical education specially made for medical students for Maharashtra University of Health sciences Nashik. By and large I will put all my notes in the files section so that you will be able to understand the topic of lecture better. And need not take down the notes in class. In addition I will put useful reading material. You can also upload any reading material on the site to make the site interesting.

Happy learning
Prof Dr Arun Jamkar
Vice Chancellor,
Maharashtra University of Health sciences Nashik

Message archive by month: (View All)
(Group by Topic)

Check out my photos on Facebook
Hi Jamkar, I set up a Facebook profile where I can post my pictures, videos and events and I want to add you as a friend so you can see it. First, you need to

Message History

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THURSDAY, JUNE 17, 2004

THE ADRENAL CORTEX

Embryology: Unlike the medulla, which is of ectodermal origin, the cortex of the adrenal is mesodermal in origin. It arises in a ridge, which appears just by the side of the mesonephros (Wolffian body).

Structure: The adrenal cortex is composed of large polyhedral cells, rich in lipoids, and the cells are arranged in three different layers, which, from outside inwards are named:-
1. Zona glomerulosa which produces Aldosterone
2. Zona fasciculate which is store house of Steroids
3. Zona reticularis which manufactures rest of corticoid hormones

Adrenal Cortical Hormones: The hormones of the adrenal cortex are all esters of cholesterol: the polyenic nucleus of
• Mobile applications

Soft copy of books are available
• Is a classroom in which students view the lecture components of the class at home, then work with the teacher in class on projects and what previously would have been called homework.

• Students watch lectures at home at their own pace, communicating with peers and teaching via online discussions.
Traditional Classroom

- Instructor prepares material to be delivered in class.
- Students listen to lectures and other guided instruction in class and take notes.
- Homework is assigned to demonstrate understanding.

Flipped Classroom

- Instructor records and shares lectures outside of class.
- Students watch/ listen to lectures before coming to class.
- Class time is devoted to applied learning activities and more higher-order thinking tasks.
- Students receive support from instructor and peers as needed.
E-Learning

- It is not a cup of web pages! It is a complex learning environment!
- We need a professional LMS system, which should be compatible with all e-learning modules.
- We need motivated students as well as teachers!
- And A LOT OF OPTIMISM 😊
Summary

- SDL requires motivation.
- Teacher becomes facilitator.
- Technology greatly helps in SDL.
- Judicious use of e-learning is needed.
Knowledge is not merely about information, data, facts and numbers....

‘Learn’ wisdom...?

http://conniecrosby.blogspot.it/2013/01/david-weinberger-on-nature-of-knowledge.html
THANK YOU