Teaching-Learning Newsletter

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Teaching-Learning in the Indian Literature

Thirukural:

கற்க கசடறக் கற்பவை கற்றபின்
நிற்க அதற்குத் தக.

Commentary in Tamil: கற்கத் தகும் நூல்களைப் பிழை இல்லாமல் கற்க; கற்ற பிறகு கற்ற கல்விக்கு ஏற்ப நல்ல வழிகளில் வாழ்க. ***(சாலமன் பாப்பையா)***

Commentary in English: *Let a man learn thoroughly whatever he may learn, and let his conduct be worthy of his learning.* ***(By G. U. Pope, W. H. Drew, John Lazarus and F. W. Ellis)***

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Editorial

Need for outcome-based education with inclusive learning

A paradigm shift in education towards outcome-based learning, which changes the focus from a teacher-centric approach to a learner-centric and positions the teacher/instructor as a facilitator of learning. This outcome-based methodology emphasizes the overall learning process and empowers students. The major benefit of outcome-based learning is its ability to gauge students' progress *via* program outcomes, course outcomes, program-specific outcomes, etc. In spite of such a multitude of benefits, rigorous implementation of outcome-based learning program could be detrimental if it is adhered to a classroom environment with heterogeneous learners' group who possess a range of cognitive and emotional intelligence levels.

To address the aforementioned lacuna, outcome-based education with inclusive teaching/learning can be adapted. Inclusive learning is not an alternative to the outcome-based learning. Rather, it tackles the shortcomings associated with the outcome-based learning. Inclusive teaching/learning is a process that supports all learners irrespective of their cognitive skills and learning abilities/disabilities. Inclusive learning provides a conducive environment for all students to achieve their full potential.

According to Einstein, "Everybody is a genius. But if you judge a fish by its ability to climb a tree, it will live its whole life believing that it is stupid." An inclusive learning approach assures the learners that they are valuable, regardless of any differing abilities. In such an environment, the learners feel free to share their interests and setbacks with the teacher and with each other. Moreover, they can also feel comfortable discovering their own paths, challenging themselves and striving for their personal best. Such a setting fosters originality in the next generation of learners rather than making them generic. In inclusive learning, the role of the teacher is to establish guidelines for respectful interactions among the learners and active participation of all sections of students. Teachers may ask questions such as Who are my students? How can I design environments where everyone participates, not just the most capable or poised individuals? How can I evaluate and instruct in a way that values and acknowledges the diversity of knowledge forms? Answering such questions provides the road map for inclusive learning that ultimately leads to the successful implementation of outcome-based education.

This edition of the newsletter shares insights into some pedagogical practices that may prove useful as an

answer to such larger questions. It includes an article that outlines experiential learning as the foundation for learning & growth in engineering education by Mrs. Grace Monica, a PhD student from SASHE. In addition, it also includes articles on how to develop critical thinking, ways to utilize games to solve problems, strategies for actively engaging students in online learning, and effective learning through five-minute summaries.

--- Selva Ganesan.

Experiential learning in engineering education

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Abstract
Experiential learning entails learning by engaging in activities, with experiential education encompassing the methodologies and frameworks that facilitate this approach. With the recognized advantages of Experiential Learning, Experiential Engineering Education (EEE) initiatives, such as design courses, are progressively being incorporated into undergraduate programs. This article provides a summary of experiential learning in the context of Engineering education, along with some suggested classroom activities.

Introduction
Searching for different pedagogical practices that initiate student's passion for learning and increase the learning outcomes effectively is one of the main goals of many people in teaching communal. "Experiential learning is a dynamic and reflective process where students figure out their liberal arts education through its application to a real-world context to advance their personal and professional development", and such learning occurs in multiple, stimulating ways and formats, both to introduce students to possible areas of interest and technical skills. It also helps them further deepen their knowledge.

Definition of Experiential Learning
Various terms have been used to label the process of learning from experience. John Dewey (Dewey and Dewey 1915) discussed "learning by doing," while Wolfe and Byrne (1975) used the term "experienced-based learning." The term "trial and error" learning is used to explain inductive learning processes. The AACSB Task Force (1986) used the term "Applied experiential learning," combining the learning from the "real-world" Situation with the necessary conditions for the application of concepts, ideas and theories to the interactive setting. The term "experiential learning" will be used here, but it is intended to cover the same domains as the other terms.[4]

Experiential learning in engineering education
Experiential learning, synonymous with learning through experience, is frequently contrasted with traditional or didactic learning, in which students assume a relatively passive role through listening to or reading about others' experiences. In the realm of engineering education, a comparable notion is often articulated as 'active learning,' 'learning by doing,' or 'hands-on learning,' all of which denote an active engagement of the learner. Such active engagement of the learners is essential to acquire the fundamental Engineering principles.

For example, Computer programming operates on a distinct plane: while understanding the fundamentals of code structure and logic is essential, true efficacy in learning is achieved through the development of software applications, often through trial and error and the subsequent debugging process. It resonates similarly in the field of engineering, particularly in tasks such as CAD(Computer-Aided Design) modelling. Acquiring a foundational understanding of the software equates to learning its 'grammar,' yet the creation of applications such as mechanical components or systems demands a deeper level of engagement and proficiency, which can be effectively attained through real-world application development. Real-world applications offer tangible feedback necessary for the enhancement of one's skills, self-assurance, confidence, and memory retention.

Siddique et al. suggested that Experiential learning within a project-based design course diverges from conventional closed exercises by applying science and engineering to open-ended problems, aiming to foster creativity and innovation. Specifically defined as 'learning through reflection on doing,' experiential learning embodies a constructive, reflective methodology grounded in the process of action, results, feedback, and reflection. Kolb's work

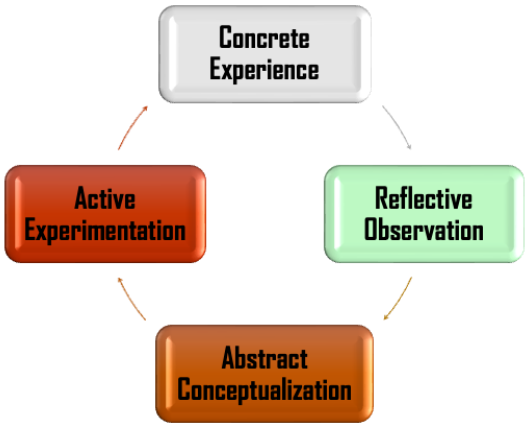
introduced a widely recognized model of experiential learning, comprising four cyclical stages.

• Concrete experience: Take out the meaning of experience.

• Reflective observation: Try to describe and draw conclusions from experience.

• Abstract conceptualization: Generalizing the findings from observations to create a model or theory.

• Active experimentation: Test and bring a new experience and create new learning cycles.



Kolb's experiential learning cycle. Adapted from Kolb DA. Experiential Learning: Experience as the Source of Learning and Development; Prentice-Hall: Englewood Cliffs, N.J, 1984; ISBN 978-0-13-295261-3

Designing Classroom Activities

In experiential classrooms, the structuring of project frameworks can be facilitated through Dewey's "Pattern of Inquiry" (Dewey, 1938). Dewey's Pattern of Inquiry underscores that thinking occurs not only after an experience but also throughout the entirety of the experience. Typically, learning activities commence with the curiosity of learners, progressing through a five-step spiral cycle of inquiry: 1) posing questions; 2) exploring solutions; 3) generating new knowledge as information is gathered; 4) deliberating on discoveries and experiences; and 5) reflecting on newly acquired knowledge. Progressing through each step naturally engenders new inquiries to initiate the subsequent cycle of inquiry. Classroom engagements may commence by tasking students with addressing a problem relevant to their lives to capture their interest. It is imperative to empower students to design their own learning activities as a fundamental aspect of initiating a learning project, thereby ensuring they perceive it not as an assigned task but as a meaningful endeavor. Just as Wurdinger (2005) underscores, learning projects should stimulate critical thinking, strategic planning, and the execution of ideas to create personally significant outcomes.[1]

Designing External Experiential Activities

The fundamental principle guiding external experiential activities involves the utilization of reflective observations from experiences synthesized across various real-world contexts (Moon, 2004, p. 167). This principle can be effectively implemented by integrating Dewey's Pattern of Inquiry into an experiential framework aimed at aiding students in comprehending their experiences. Moon also provides guidance for educators in planning student activities within external experiential settings, which include: engaging in workplace tasks, interacting and collaborating with individuals, self-evaluating their performance, engaging in discussions and receiving feedback from peers, developing project implementation plans, and organizing individual activities.[1]

Some suggested Activities

- Electronics Engineering
  1. PCB Design & Fabrication
  2. Geometrical Shape Detection and Recognition using Python in Image Processing
- Computer Engineering
  1. Mobile App development
  2. Gaming and animation
- Civil Engineering
  1. Design and Analysis of truss bridge
  2. Reinforcement detailing of structure elements
- Mechanical Engineering
  1. Design and testing of a custom plate type heat exchanger
  2. Dissection of professional mountain bicycle and engineering design challenge

Conclusion

Experiential learning prioritizes hands-on experience, offering avenues to nurture professional skills, broaden academic understanding, and foster ethical principles. To comprehensively instill these values in engineering education, it's imperative for engineering schools to facilitate real-world engagements, thus enhancing students' prospects in the job market. Incorporating

experiential learning projects into engineering education programs equips students with a comprehensive array of values, enabling them to gain valuable experience at every stage of learning.

References:

1. Nguyen Van Hanh & Nguyen Huu Hop,"*Experiential Learning Projects in Engineering Education*".International Engineering and Technology Education Conference IETEC'17,ISSN: 1843-6730, 2017
2. Kolb, D "Experiential Learning as the Science of Learning and Development." by, Englewood Cliffs, NJ: Prentice Hall,1984
3. Zahed Siddique, Amy Bradshaw, Patricia Hardré and Farrokh Mistree ," *Experiential Learning Based Engineering Curriculum to Develop Meta-Competencies*." ASME International Conference on Design and Design Education, Washington, D.C. Paper Number DETC2011-48258,2011
4. James W. Gentry "What Is Experiential Learning?"

Client-server implementation of the Tic-Tac-Toe game

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I would like to describe how games can be used to teach Programming and Problem-solving using Computers. The particular game that I am going to describe is the tic-tac-toe game that interested our students in the CSE302 Computer Networks class when the class was offered in the 2022-23 odd semester. Students implemented this game using socket programming over a Local Area Network. Several implementations of this game was implemented by students as part of the Project based assessment for this course. Students implemented the server and the client with a Graphical User Interface or they implemented the client and the server in different computers. The clients and server programs can used to implement a human player playing against another human player or a human player playing against the computer. If students had implemented it in any one of the above ways, it was considered sufficient to meet the requirement of the course, since the aim was to demonstrate communication over a network.

The games is played using crosses and noughts (X or O) in 3 x 3 grid. If any of the player gets three crosses or three noughts in a row, the game ends with the player getting the three-in-a row (or column or diagonal). It would be of interest to know that the game will always end in a draw if played by equally smart opponents. The aim of the game is to get three noughts or three crosses in a sequence in a 3 x 3 grid.

The game will always end in a draw if the following strategy is used. The player playing first concentrates on getting three (nought or a cross) in a row. The player playing second always tries to prevent the opponent from making a triple. Can you always guarantee that this strategy will result in a draw? How many possible games can be played using a 3x3 grid? How many of them will be wins? How many of them will be losses? How many games will end in a draw?

To evaluate the total number of games we can proceed as follows: For the first move, there are 9 possible positions. For the second move we have 8 possible moves, and so on until all squares are filled. This means that the total number of games equals 9x8x7x6x5x4x3x2x1 = 9! = 362880. But not all games end in the ninth move. The number of games that end with a win in the fifth move, sixth move, seventh move, eighth move and ninth move are 1440,5328,47952,72576, and 81792 respectively. The number of games that end in a draw are 46080 (https://www.se16.info). The total number of possible games is 255,168 instead of 362,880. Of the 255,168 games, 131,184 are won by the first player, 77,904 are won by the second player and 46,080 are drawn.

Another way to analyze the board configuration is by looking at each cell-whether it is empty, contains a cross or contains a nought. There is a total of 3^9=19683 possible board configurations. The dataset contained in https://github.com/datasets/tictactoe/blob/master/data/tictactoe.csv provides 958 board configurations that results in a win for the cross which starts first.

Another way to analyze the board is to consider that each square can have only a nought or a cross. Hence the possible configurations will be 2^9=512 which is much less than the previous analysis. But this configuration will not include games that have ended earlier than the ninth move. Hence finding out how

many were wins for crosses, how many games were wins for noughts and the number of draws will be difficult to analyse if we just consider only two symbols in the analysis. To analyze using only two symbols, we can slightly change the rule of the game as follows: Both players continue to play until there is a win. Once a win is achieved by either player, he fills up the remaining empty squares with his symbol. The player who has achieved three in a row and who has the most symbols on the board wins. If no player has three in a sequence, then the game has ended in a draw.

A computer can be programmed to play tic-tac-toe game using heuristic methods. A particular implementation of the Computer program in https://www.half-real.net/tictactoe always wins or draws the game. Although this game seems extremely simple, it serves as an example of how a particular problem should be analyzed. The research in computing is driven by the limitation of enumerating all the possibilities and finding the best possible solution using heuristic or approximate methods. Even with high performing systems, doing a complete search of all the possibilities is not the recommended approach for finding the best optimal solution for a problem.

A similar although a more difficult problem was solving the Rubik's Cube using the minimum number of steps. It was shown by a group of researchers that the number of moves required to solve the Rubik's cube from any configuration is exactly 20 (https://www.cube20.org). Computer Science Research has focussed on finding heuristic game strategies for well-known games like the Towers of Hanoi and the 15-puzzles that could be implemented easily in a personal computer (https://en.wikipedia.org/wiki/15_puzzle).

If students wish to implement games like Tic-Tac-Toe, their aim should be to analyze the game configurations and how to implement a strategy to win the game. Both the optimal and heuristic methods may be considered in the implementations which aligns with the approach adopted by Computer Science Researchers to solve computationally difficult problems.

Enhancing the learner's learning experience for an asynchronous course

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In face-to-face classes, there are numerous spontaneous moments of contact where we can collect feedback from our students and understand how they are doing. Students engage in questioning both before, during, and after class, and we can deduce their distress by merely seeing their facial expressions. This prompt and casual feedback allows us to modify our classes immediately. Managing an asynchronous online course across many platforms is a significant challenge in comprehending learners' needs and effectively engaging and improving their learning experience. We implemented the enhancements to asynchronous classrooms to promote proactive communication and create a classroom-like learning atmosphere in online courses. Since implementing these novel strategies, I have received promising responses from my students. They express a heightened sense of connection with me as their teacher, an improved comprehension of the course material, and a clearer understanding of their own learning progress.

Guide students with a personal touch

The act of guiding student attention is easily evident in face-to-face classes. The situation becomes more intricate with asynchronous courses. Written statements often attract less attention and are prone to being forgotten. It could be managed through

- Video-based(with webcam on) webinar session. The course being taught by a teacher rather than being online provides a personalized element
- Providing a weekly guide with a brief introduction of the topic, materials to be sourced and read, ready for following assessment/webinar quizzes, and further reading links.
- Providing links to any video resources that students should view, as well as any handouts that accompany it. Describe what is in each video so that students understand what to expect.

- Providing a link for practice assignments and the instructor's email contact for further clarification.

Actively engage learners and solicit feedback

This could be made possible through,

- Spot Quizzes using QR code.
- Polls
- Pulse checks (appreciation, emoji etc.)
- Discussion responses through a role-play or providing a case, let
- Participation with experience sharing by students
- Minute papers (A minute paper is a short task that instructors can use to assess what their students are learning in each lesson)
- Entry or exit tickets (This can be used to initiate a class-wide conversation or to stimulate individual introspection, and it allows each student to identify areas where they excel or struggle)
- Think-pair-share exercises (Think-pair-share is a learning approach that encourages participation, concentrates attention, and engages students in understanding the reading material)

To conclude, providing online asynchronous learning that simulates a personalized human experience rather than a unidirectional encounter with a computer necessitates meticulous planning. We have discovered that communication in asynchronous courses necessitates a higher level of careful consideration and intentionality compared to face-to-face classes. Based on our intended communication points, we noticed that a larger number of students procrastinated in seeking assistance disregarded email notifications, were perplexed about deadlines, and experienced excessive frustration due to a lack of interactions. By implementing these strategies, students have avoided numerous errors. They will appreciate and comprehend the fact that they are engaging in active and attentive learning through online platforms.

Harnessing natural curiosity for honing critical thinking abilities in graduate students

Bhaskar Chandra Mohan Ramisetty, Dipita Guha, Gunjan Guha, Vigneshwar Ramakrishnan

Learning to think critically, frame hypotheses, design experiments are abilities that a graduate student picks up implicitly in the PhD journey. So far, these have been individual pursuits and a graduate student realizes/understands these towards the fag end of the PhD journey – in a typical Indian university. However, wouldn't it be much more useful if these skills could be developed/honed at the beginning of the PhD programme itself? With this thought, a workshop on "Critical Thinking in Biology" was organized as an 'experiment'. The workshop was aimed at tapping the natural curiosity which must be a non-negotiable attribute for every researcher. Curiosity-driven thinking, if innate to a researcher, augments their aptitude to foster critical and creative thinking abilities that facilitate hypothesis framing and experimental design in their research.

For this, we started off the workshop with a 'game' that allowed the students to ask the facilitator the question (strictly in the format) 'Do you like X', where X is a single word. This 'game', inspired from https://youtu.be/oOdFfpUQIqA?si=ffLPhyLO3XJVlUhg, helps students understand scientific inquiry – the process of making hypotheses to explain observations, and further testing hypotheses by making additional observations. Framing hypothesis is a creative act and this game helped in stimulating the creative juices of the participants.

This was followed by giving students the question "How do wasps find their nests?". A brief background about solitary wasps and an image of their nests, which are almost identical, were discussed with the students. The objective of the task was to prod the participants into thinking what would be the differentiator that lets wasps correctly select their own nest rather than trespassing into a neighbor's nest (which looks the same as that of its own). Students came up with multiple hypotheses – mostly involving visual cues and olfactory sensing. It was interesting to see that some hypotheses actually involved apparently outlandish propositions but were indicative of 'out-of-the-box'

thinking, a much-required avenue for research. Once the participants had put forth their hypotheses, they were asked to design experiments to test their hypotheses. Students came up with innovative experiments. Since the workshop time was limited, the facilitators only interjected with a dose of logic in the design of experiments and not on actual experimental constraints and realities.

In the subjective experience of the facilitators, the students got a taste of the creativity involved in science along with a dose of logic in the design of experiments. It is hoped that when this workshop is rolled out as a full-fledged course, more concepts in scientific inquiry such as null hypothesis, control experiments, deductive vs inductive logic, sample size, generalization etc., can be fleshed out. The workshop that started as an 'experiment' garnered enthusiastic participation from research scholars across different arenas in biology and if the levels of the on-the-spot creative thinking could be considered as 'data generated', then the proposed objective of inculcating critical thinking holds a lot of promise!

5-Minute Reflection: A student driven activity for effective learning

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With the dawn of classes for the even semester of academic year 2023-24, I went to JVC207 classroom with exuberant joy and gaiety to teach 'CHE109 Chemical Engineering Thermodynamics' for one another time but for a new set of students. The first day of my class, January 9, 2024 was indeed splendid for it paved way for a student driven activity to bring out participative learning in the course. In this article, I present the joy of a course instructor of being the witness and a part of this student driven activity, that continued unabated for about 4 months from January to April 2024.

Thermodynamic classes are generally regarded as classes lacking energetic flavor even though a lot on internal energy is spoken in those classes. Course instructors need to constantly innovate to break the loss of vital classroom learning energy (learning entropy always increases more rapidly in thermodynamics classrooms). Hence, as a measure to try out alternative strategies, I asked my students to list what they consider as bottleneck to their own learning. What came out of this first-class exercise was a fascinating document, where students listed issues and suggested ideas which they considered as possible solutions to address their issues. My only act in this activity was to curate those issues and ideas as an academic document. At the end of the day, I consolidated and shared the document with the class. The document can be accessed here.

This was not a first day emblematic exercise, but rather I wanted to take the document with little more serious towards possible implementation. Second day, we deliberated the ideas listed in the document and zeroed-in on '5-Minute Reflection' by students as an activity to be implemented on trial basis as part of the course in this semester.

What is 5-Minute Reflection?

At the end of each class, a student volunteer would summarize the learning that happened in that class in their own words. Typically course instructors would revisit the contents taught during the class at the end of the class as pointers for the students. Instead, in this case the reflection was ought to be done by the students themselves at the end of the class.

How were students chosen for the reflection activity?

The concept of 5-minute reflection as an active learning activity is not novel, and is perhaps known to many who would read this article. However, what makes it challenging is in its sustained implementation. How to sustain the activity or in other words how to choose students daily who will speak at the end of the class? The BIOT4B came up with a simple idea – they openly called for volunteers who could take up this 'collective burden' for the sake of holistic good of the class and would thus be ready to do the 5-min reflection. In the first instance, I had 11 people who had volunteered for the 5-minute reflection session. This gave me a lot of hope to sustain the activity, as at least for 11 classes, which would translate to about 4 weeks we had volunteers who do the '5-minute reflection'. If no one else volunteered, then I thought to repeat the cycle with the 11 volunteers. Essentially each volunteer would have to speak for about 4 times during the semester, and this seemed to be workable.

Observations from 5-minute activity

I started the activity with the student who proposed the idea of 5-min reflection activity, as a befitting acknowledgement to the student. Students who volunteered for the talk, took it sportively and with great sincerity. As student volunteers knew beforehand the sequence in which they had to speak, I could see that they were 'little' more attentive on the day of their '5-mintue reflection'. Volunteering students had jotted down points very meticulously in their notebook so that they can read that during their 5-reflection session. A few students used their own examples to convey the concepts discussed during the class. A few students used board to explain the concepts taught during the class. Students who were listeners could relate their own understanding to what their peer spoke as part of the reflection activity and they also got inspired to volunteer for the activity. When students speak, it also helped me as a course instructor to see how they understood what I spoke in the class, rather how they constructed the concept that I tried to explain. This possibly gave avenues for me to better think on construction and delivery of concepts. However, I did not pursue on these avenues rigorously after the reflection activity but might do so in my future editions.

Did the activity sustain?

Initially I had only 11 volunteers for the 5-minute reflection activity which could probably run for about 4 weeks. However, as we progressed, more students came forward to take part in the activity. We had 26 students who volunteered for the '5-minute reflection' activity towards the end of the course.

Feedback from Students

Feedback from a few students are as follows

I could listen to the summary of the concepts taught on the day.

I could implement my communication skills while I come out to speak. I was able to overcome my stage fear when I did that.

You learn better and you think intuitively if you have to explain it to others

From a listener's perspective - The reflection helped me at some points. The key points which I missed during lectures are stated by the speakers and thus helped (in exam point of view)

As a speaker, I got to understand me, where I stand when it comes to instantly grasping and explaining verbally. As a listener, I first thank all those who chose to be a speaker, to share whatever they have grasped from the lectures, exposing to me to different viewpoints. I remember and appreciate; my classmates could give relatable examples to certain teachings. (Elephant, coffee, etc.) Overall observation: how a person can or should use the given 5 minutes, to convey their own learning pointers from the pool of information heard.

In any class, I am usually able to stay attentive consistently for the first 45 minutes. However, the day that I had to speak for the reflection, I found myself paying extra attention since I wanted to present well and have still retained that particular lecture in my memory. I feel that I should always strive to be this attentive which will help me recall concepts easily.

Scope for Improvement

We made a conscious decision not to make any comment (even if that is constructive) on the reflection. Though as a reader, you might think that this is not a good idea, we collectively as BIOT4B choose not to comment on the reflection. The genesis for doing so is that since students were doing the reflection for the first time, they ought to make mistakes or may not be very accurate in their articulation. The objective of the activity was more to facilitate students to speak based on what they listened and not rectify their statements. I would be grateful if you can the '5-minute reflection' as part of your course and also provide comments to the student volunteer based on what they spoke in the class.

To sum up, it was a refreshing semester to have taught Chemical Engineering Thermodynamics and I only wondered semester ended so soon, for otherwise I could have cherished the reflection given by all student of BIOT4B. My best wishes to the students of BIOT4B for making a memorable semester with chemical engineering thermodynamics.

Books of Interest

(1) *Learning to imagine* by Andrew Shtulman
(2) *The importance of being Educable* by Leslie Valiant
(3) *Iterate: The secret to innovation in schools* by Justin Reich

(4) *Failure to disrupt: Why technology alone can't transform education* by Justin Reich
(5) *Older and wiser* by Jean E. Rhodes

Videos to Ponder

(1) The Cognitive Science of Teaching and Learning https://youtu.be/M7UyUfOXHug?si=11ouKn0WSMCRpX7r

(2) How can cognitive science inform the future of education? https://youtu.be/rbhQ_euH7Ac?si=Vvy0t6waTkapZ0Da

(3) The teacher and the teenage brain https://youtu.be/AdU7m7VnIN4?si=CEedMsuw8zAhn8PN

Forthcoming issues

We welcome articles for this newsletter from all of you along various dimensions of the teaching-learning process. A call for articles will be made once the semester begins. However, you don't really have to wait until then to plan for it. You can send in your articles at any time in the semester to stl@scbt.sastra.ac.in

(Previous issues of the STL articles can be accessed through https://scbt.sastra.edu/teaching-learning-news-letter.html)

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