

Teaching-Learning in the Indian Literature

Thirukural:

தாமின் புறுவது உலகின் புறக்கண்டு
காமுறுவர் கற்றறிந் தார்.

Commentary in Tamil: தம் மனத்தை மகிழ்விக்கும் கல்வியினால் உலகம் மகிழ்வதைக் கண்டு கற்று அறிந்தவர்கள் மேலும் கற்கவே விரும்புவார்கள்.

(சாலமன் பாப்பையா)

Commentary in English: The learned will long (for more learning), when they see that while it gives pleasure to themselves, the world also derives pleasure from it. (By G. U. Pope, W. H. Drew, John Lazarus and F. W. Ellis)

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Editorial

Assessment in a Learning Outcome-based Education System

As educators in higher education system of India, one is provided with many inspirations and some strong pushes (like accreditations and rating agencies) to adopt a “Learning Outcome-based Education System (LOBES). LOBES presents a fundamental shift in the approach to education process, which is to say one is no more required to “cover” the units / portions in a course. The idea is to shift the focus to what the learner had acquired by the learning experience. One works on the basis that what is “observable” (and assessable) is the indicator of what is acquired by the

learner (in their mind) through the learning experience. This required adjustment in curriculum framing, teaching process and evaluation process. The Revised Bloom’s Taxonomy (RBT) was implemented with belief levels close to cult-like in articulating course learning outcomes and in designing question papers. Such a change was introduced with little or scant understanding or discussions on factors which had strong causation effects on L.O.s or at least correlations for the specific course.

Assessments remain a challenge in higher education, more so with need to distinguish one learner from another in the face of intense academic competition. With these constraints in place, assessments had to move away from “portion covered” to “learning outcome”. A learning outcome-based assessment requires the focus to be on the learner to express their level of competence. In other words, an assessment is taken as a tool to provide the necessary proof of a successful achievement of the level of competence by the learner.

Current practice of assessment in majority of the higher education landscape involves two components: two-to-three continuous assessments and one end-semester summative assessment. Given the goal of assessment within LOBES as outlined above, one now needs to rethink the need for two different components in the assessment of a student achieving the intended LO. The continuous assessments, often framed as formative assessments, are thought to provide feedback for the learner on the level of achievement and educator on the effectiveness of the pedagogy adopted. If viewed in this way, formative (continuous) assessments should NOT be used in assigning the final grade of the student – because the aim of such a formative assessment is only to facilitate learning.

However, if continuous assessment is viewed as a mode of assessment where the student is evaluated on the achievement of (part of the) intended learning outcomes (and not as a “formative”), then, we run the risk of having the end-semester summative assessment as a redundant process because they both assess the same. It is important that one thinks about these issues in the design of a system of education.

As we think about and explore these issues, let us also revel in the pedagogical strategies adopted in various courses by our colleagues and their reflections that this newsletter carries. Particularly, we appreciate the contribution from Mahaboob Subhani, a PhD student in the School of Mechanical Engineering, for his article and as well as for the *Videos to Ponder* column!

--- *Editors.*

Bridging the Gap-Need and Emphasis of Bridge Course for 1st year Students of Integrated B.Ed Programme

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Introduction:

Students of first year integrated programme were so excited to attend the orientation course conducted on 7th August. As an English faculty, I started the first day's class by asking students to introduce themselves and narrate an interesting episode in their school life. Some students were able to communicate in English, while most of them found it difficult and were struggling for words. Students were also having the same difficulty in Tamil. They expressed that they had difficulty in grammar part in Tamil. In maths, students had problem in understanding of Matrix, factorization and algebraic expressions though they have learnt the same in class XII. Hence, the problem was felt as a need to be addressed instantly through Action research by Tamil, English and Maths faculty. We three thought why don't we conduct Bridge course for a period of 10 days and provide some basic tips in improving the same. As it is

usual to conduct bridge course in schools for a month, we came up with the idea of conducting the same for our students.

Objectives of Bridge course

1. To teach basic strategy in English language communication
2. To enable students to understand 'Parts of speech' in English
3. To enable students to understand some basic features of Tamil Grammar
4. To provide basic nuances in understanding basic math concepts
5. To evaluate students at the exit level of bridge course

Procedure followed in English:

From 8th August till 18th August, a Bridge course was conducted in English and Tamil and Maths for 1st year B.A. B.Ed. students and in Maths for 1st year B.Sc. B.Ed. students. In English students were asked to give a one minute talk titled 'My Talking time' where some interesting topics like 'My favourite super hero, 'pets cats or dogs?', pine apple in pizza, yes or no, 'favourite social media app', 'Tea or Coffee, no to both, what do you drink?' 'Current song on repeat in your playlist, 'Go to star bucks order, 'I phone or Android, why? Why not?' 'What is something from your childhood you wish to come back? etc. Students were informed their schedule and they were very excited to speak as the topics were chosen by them. Then the need was felt to understand 'Parts of speech' in grammar and students were given language game to identify the naming word, substitute for noun, adverb, adjective, conjunction, interjection etc. As the instructional strategy of game was followed these sessions went very vibrantly. Then basic form of formal and informal letter writing techniques was introduced. It was observed that students were feeling comfortable after the bridge course session.

Procedure followed in Maths:

In Maths, students have the habit of remaining passive in the class. The first topic being 'matrix' students found difficult though they learnt in class XI and XII. The strategy of grouping students by

assigning rows and columns and students were asked to correlate using day-to-day situations like traits of people, population, habits, infant mortality rate. They were asked to gather data and classify it. They were guided to conduct basic survey in the class like income and family budget of parents of their class. etc. As students were guided to correlate using real life examples. they understood this basic structure, and gained confidence in this concept. They were further guided that they could use matrix in linear transformation in computer graphics, robotics, physics and other fields. Students were given pretest on 8th August and their scores were recorded. Then the post test was conducted on 18th and the score was tabulated.

Procedure followed in Tamil:

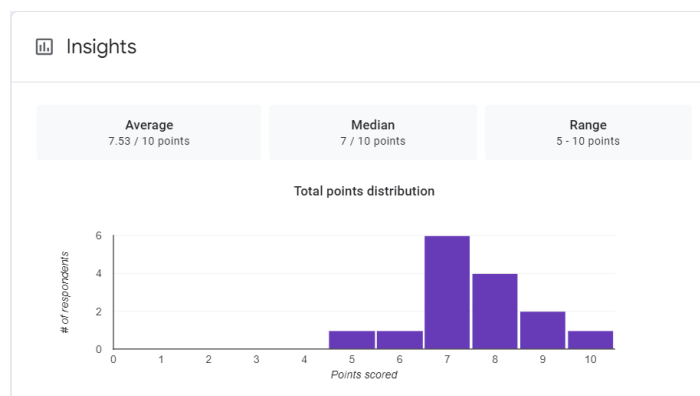
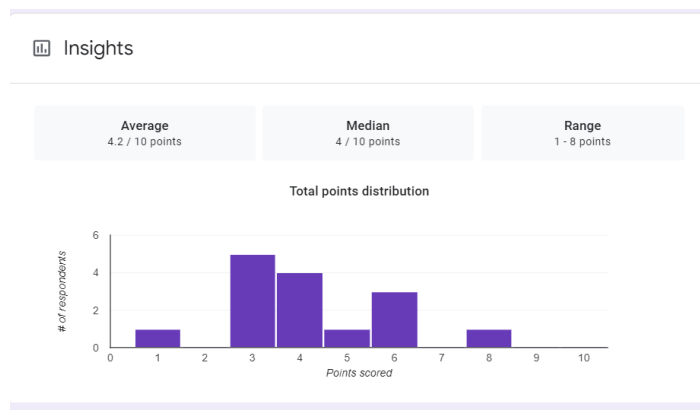
Grammar, if taught with activities, will enable learners to understand basic grammar. Hence, the following strategies/techniques were adopted to explain grammar.

- Story telling: Thinai, pal, enn, edam
- Grammar tree: Eluthzhu, sol, porul
- Written exercises/worksheets: vallinam, melliam, edaienam
- Identification of verbs: past, present and future tense markers
- Training in case markers: Ai, All, .KU, In, adhu, kann
- Basic grammar exercises: Identification using word grid and word puzzles

Impact of the Bridge Course:

- Students were free to speak on the topics given in English as they were general and interesting for their age.
- Students were happy as gaming strategy was used to teach 'parts of speech'
- Students gained familiarity when the concept of matrix was introduced where students were asked to form their group and they were assigned rows and columns
- Students were able to understand the concept of matrix when they were guided to correlate with real life situations for application

- Students showed deep enthusiasm in using techniques like grammar tree, story learning, word grid and word puzzle for learning basic Tamil grammar.



Conclusion:

Bridge course is an essential prerequisite for any period that warrants transition in the learning phase of students. At the entry level of college students have fear associated with the new environment. So, it is imperative to address this issue instantly. The period of conducting the course could be decided by the faculty concerned according to the need and availability of time. If the bridge course is conducted in the well-structured manner, it could provide opportunity for teaching staff to plan the instructional strategy and methodology to be followed as it is diagnostic in nature.

Performance Enhancement of Students – A Study

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After my reentry to SASTRA in Aug 2022, I have taught Engineering Thermodynamics (MEC 205) during the odd semesters of 2022-23 and 2023-24. Engineering Thermodynamics is offered during the 3rd semester in the Mechanical Engineering curriculum. On both occasions, roughly around 15% of the class were very committed, 65% were average, and 20% required additional guidance and support. The students requiring additional guidance, were little weak in fundamentals and had fear for English language. Some students were underperforming due to lack of confidence arising from their poor performance in 1st year. It must be mentioned that in this group, a few were meritorious students from the Diploma program. As an instructor, it is my duty to bring up the performance of the class.

Initially, I started giving regular home work to boost their performance. As part of my experiment, giving home works on a regular basis “marginally” helped to enhance their performance. It appealed to me that they needed extra personal contact hours for deeper understanding and to boost their confidence. In this regard, I started conducting optional help sessions for the students during their free hours every week. Students from my class started using this opportunity, and some started involving themselves better in the classroom. Also, in the current semester, I introduced giving slip tests during the last 8 minutes and this even helped to improve their performance. Slip tests were conducted in-between the CIA exams, and it was intended to test their understanding of concepts. The table below provides a quick comparison between the performance of 2022-23 and 2023-24 groups. Though the comparison is between two different groups, the students in both groups were initially very similar. Since students’ participation in CIA-III wasn’t very high, the results from CIA-III are not reported herein.

Table 1. Comparison between Engineering Thermodynamics students in 2022-23 & 2023-24

	MEC 205 – 2022-23 With HWs	MEC 205 -2023-24 With HWs, help sessions & slip tests
Class average after CIA-I	19.8/50 85% of class took CIA I	36.8/50 97% of class took CIA I
Class average after CIA-II	27.0/50 91% of class took CIA I	31.33/50 98% of class took CIA I
Overall average	23.4/50	34.065/50

Students require personal attention, encouragement, and they must believe that they can do well in the subject. Once we help to establish confidence, the students automatically start taking initiatives. The personal experience that I’m sharing is not out of the ordinary, but it clearly shows that if a faculty member is prepared to make extra effort, the students are also motivated to do better. It can’t be said that the same techniques will yield similar results in the future. Being in academics, we learn to adapt, and it is a continuous learning experience.

Teaching with Videos

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In 2020, when we began an online semester, I decided to make videos to help the students in my Compressible Flow course. These videos would be in addition to the regular classes.

What were my guiding thoughts when making these videos?

First and foremost, I wanted to help the students learn, but I saw no point in trying to copy the in-person experience. *This medium is different; treat it as such.*

Be considerate of the students’ situation.

I assumed the students would not all have the same computer and Internet facilities as I had, so I made the videos short (the longest was about 20 minutes). I did so in part by writing everything beforehand — including the equations — and in part by speaking a little faster than usual while recording. Short videos were easier for students to stream or download. Also, if they were looking for a specific idea,



it would be easier to search in a 20-minute video than a 40-minute video.

Take advantage of the medium.

However, much I wrote or drew on a slide, I showed it little by little, as one cannot do in a book. Doing so helped the students digest the ideas more slowly. Some of the slides would have seemed quite intimidating if I had showed everything at once.

Let the students take charge of their learning.

Although I kept the videos short, I didn't expect the students to understand each video in one viewing. I expected each student to decide when to pause, rewind and replay.

Encourage students to learn in multiple ways.

Along with watching the videos, I wanted the students to read their textbooks [two were prescribed for this course]. Only, students might not have that much experience reading textbooks, and might not even know how to do so. So, at the end of each video, I recommended looking up specific sections in textbooks. That was another reason to keep the videos short: after watching them multiple times, students would still have time to spare for reading.

Recognise the limitations of videos.

I could not come up with a good way to teach the use of data tables in a video. Instead, I used our online meetings, when we would each have a copy of the tables, and go over them together. Also, I saw little point in writing out solutions and posting them online. Some of our online meetings were tutorial sessions, during which we worked through problems together. [Plus, I made sure to cite the book, chapter and problem number, as further incentive to look up the books.]

How were the videos received?

At one point during that semester, I paused making videos because I found it to be too much work. Then during one meeting, a student asked, "Why aren't you sharing more videos? They have been a great help." That was all the encouragement I needed. More recently (Odd Semester 2022), I made the videos again for a SWAYAM course. One student later said that mine was the only course for which he looked up the textbook. Just what I had hoped would happen — though I would like him to do so for other courses also.

What have I learnt?

Videos can be a supplement, not a substitute for meeting regularly. In my experience with a course on Aerodynamics during the Even Semester of 2022, it helps to meet two or three times (not once) a week to discuss the videos. Even online meetings can help. *It's all right to be imperfect.* I tried to keep the videos free of mistakes and background noise, recording over and over as necessary. So much effort is not always feasible, and may not even be desirable. If I can make a mistake in class and correct myself, why not in a video? And is it a problem if a motorcycle is heard, as long as my voice is not drowned out?

I continue to make videos for other courses, though not for an entire syllabus. And it's still a lot of work, but enjoyable all the same.

Role Play as an innovative Pedagogy towards enhancing students understanding of Grammar

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Introduction: Teaching of Functional Grammar to any age group is really a challenge to teaching faculty in English. Students do not show any deeper insight into learning of grammar, irrespective of their age. So, all teaching faculties keep their fingers crossed and go about with some customary practices. This generally causes boredom for students. As a part of Part-II English for Semester II, the Grammar lessons in the form of functional Grammar have to be taught for Students of B.A., B.Ed integrated programme. The Grammar units comprise of 1. Agreement of the Verb with the Subject, 2. Pronoun Antecedent Agreement, 3. Modal Auxiliaries, 4. Common Errors in English and 5. Tightening of Rambling Sentences with reference to simplicity, clarity and precision. As a faculty of English and Education, I find it very interesting and is fond of adopting novel teaching techniques. I used all my prowess of teaching with the help of presentations, follow-up exercises, continuous feedback from students through their oral answers, creating situations on these topics etc. But from students point of



understanding, I had my own doubts if these concepts reached all levels of learners. As these students are to shoulder an onerous responsibility as they have to teach them to students of grade VI to X when they become language teachers. Of course, I am sure 90% of students have understood all these topics. But what about the other 10%? Having got this doubt, I started exploring various possibilities to deepen students understanding. Therefore, I started to Action Research in this area. When I taught the one act play 'The Trial of Billy Scott' by Mazie Hall, the sudden impulse struck me why don't I use this play to deepen and enhance the understanding of students in the aforementioned grammar units? I started to orient them that they have to enact this role play as marks will be awarded for internal component of assessment. Students readily agreed when it came for internal marks. I have used the strategy of role play in teaching and learning of English language and social science and have found them always effective.

Review of Literature:

1. According to Ur (1996, 131) defines role play 'All sorts of activities where learner imagine themselves in a situation outside the classroom, sometimes when they play the role of someone other than themselves and they have to use language appropriate to this new context'
2. Another expert Qing (2013) stated that 'role play is defined as the projection in real life situation with social activities'
3. Ments (1999) states that 'the concept of role-play acts as a short hand way of identifying and labelling a set of appearances and characteristic of a particular person within a given situation' In other word role play is an activity that is done by playing a character in a story. It is used as a technique for teaching a language where in learning process be a fun for students
4. Ur (1999, 54) states that 'the use of role play has added tremendous number of possibilities for communication practice' the applying of role play in learning speaking gives the students more opportunities to practice communicating orally.

5. Salies (1995) published an article titled 'Teaching a language realistically Role play is the thing'. She has stated that role playing is the ideal technique to teach language because it prepares learners for unpredictable nature of real life communication" It also teaches appropriate language use, and boosts self-confidence. The author argues that role playing prepares learners for realistic communication, adding emotions, inventiveness and listener awareness to language teaching.

Statement of Research:

This paper is intended with the idea that every language teacher is confronting especially in English. Students irrespective of the fact whether they are in school, college or teacher education programme find grammar lessons a grey area. So, the very need for action research is felt in this area. The idea of deepening the understanding of functional grammar topic, it was decided to follow the technique of Role Play as students show interests in assuming a role in their disguise. Moreover, the particular play 'The Trial of Billy Scott' was chosen as it serves the purpose of creating and deepening the understanding of topics 1. Agreement of the Verb with the Subject, 2. Pronoun Antecedent Agreement. 3. Modal Auxiliaries, pronoun, adverb, preposition etc as they form the part of characters of the intended play. So the Action research on role play titled 'The Trial of Billy Scott' was chosen

Implementation of the Role play:

Students volunteered to take up role of their choice from the play as 1. Judge, 2. Prosecution attorney, Defense attorney, Bailiff, Mrs. Good English, Vernon J. Verb. Adam adverb, additive adjective, noun, conjunction and interjection. Many sessions were earmarked for rehearsals. Students thoroughly learned their dialogues and the play was executed. Students acted with enthusiasm and became a part of the role they played. The action research was a real remedy for deepening of students understanding in the above-mentioned grammar topics. They were asked to give their reflections in the form of writing and also

submitted the google form which had questions from the grammar topics.

Impact of Implementing Role Play

It is beyond doubts that role play provided a deep insight for student teachers especially in understanding of grammar portions prescribed for them. It provided stimulation in improving their speaking skills. As they had to learn their dialogue bi-heart it boosted their morale and confidence. Student teachers, who generally remain passive in the class otherwise, now had no option, except to participate. It provided them additional benefit for securing internal marks with ease. Role play technique is more effective than the conventional method of teaching grammar lessons. Because the learning environment was more fun based, all student teachers participated enthusiastically. Finally, it is emphatic to state that using this technique to enhance the speaking skill of learners will be really joyful as suggested by NEP 2020.

How to make the students attentive in the last hour?

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Managing a classroom effectively, especially during the last hour of the day, can be challenging. However, with the right strategies and techniques, you can maintain a positive and productive learning environment. Here are some tips for classroom management during the last hour.

Plan engaging activities: There are several methods such as design activities, group discussions, hands-on activities or project-based tasks to maintain their focus that are interactive and capture students' interest. In addition to that you may also plan to play five minutes videos related to moral values, professional ethics and current technology etc., can help students stay engaged and make the learning experience more enjoyable. Avoid passive learning methods during this time to keep students actively engaged.

Provide structured tasks: In faculty meetings, our Dean always insists that faculty members give equal weight to subject content preparation and delivery. Furthermore, he used to emphasise that the plan for content delivery is critical in classroom management. For that, break down the last hour into smaller segments and provide students with clear instructions for each activity. Having a structured plan will help students understand the expectations and stay on track.

Incorporate movement breaks: Incorporating short movement breaks or brain breaks can help students stay energized and focused. These breaks can include stretching exercises, quick games, or even a short walk around the classroom. Faculty should know how to manage the time effectively and make them stay motivated.

Reinforce positive behaviour: Recognize and praise students who are following instructions and actively participating. Positive reinforcement can help create a positive classroom culture and motivate other students to engage as well.

Maintain a calm environment: During the last hour, students may feel fatigued or restless. Create a calm and peaceful classroom environment by regulating noise levels, using soft lighting, and providing comfortable seating arrangements.

Reflect on the day: Use the last few minutes of the day to reflect on what students have learned or achieved during the class. Ask them to share their thoughts, key takeaways, or questions from the day's lesson. This helps reinforce learning and provides closure to the class.

Remember that each classroom and group of students is unique, so it may be necessary to adjust these strategies based on their needs. Consistency, clear communication, and building positive relationships with your students are key factors in effective classroom management.

Exploring the integration of skills and concepts

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As teachers, we assess the students' learning through continuous internal assessments that mostly focus on conceptual fundamentals, problem-solving, and its application in the real world. Since the theory has more weightage in their score, either internal or external, students obviously focus on that to get higher grades. It comes to skill-oriented learning, such as laboratory exercises, which, in general, give less weightage and result in less attention towards learning. Most of the students will only utilise the lab hours allocated in the particular semester, and much of the time goes to doing lab exercises as per the instructions given by the lab instructor. There is no alternative to that since the instructor needs to complete the course within the stipulated time. In such a scenario, students were also advised to complete the respective exercise within the given time. Mostly, students practice either during lab hours or before the end of semester practicals. In their free time, they don't focus much on exploring the tools in the software (though the freedom is given to utilise them in the lab-free hours), which might be due to less weightage in the grading system. Somewhere, if we are able to give scope to explore further and not deviate from the respective course, it will be a win-win situation for students and the faculty.

Here, I have taken the advantage of the assignment component. My objective was that the assignment should not be a regular type and deviate from the course, and they should enhance their skills with modelling in software. I teach a course, "Electric & Hybrid Vehicles", to the final year Mechanical Engineering students. There are multiple layouts of power trains, and they are represented in 2D (shown in Figure 1 & Figure 2). It is a bit difficult to understand the power flow from one component to another w.r.t the operating conditions. One needs a lot of imagination skills to understand its configuration. So, I have asked the students to convert the 2D layouts into 3D. Unless they understand the configuration and different tools to model and assemble the components

in the software, they cannot produce it in 3D without compromising its features. To be honest, with mere expectations, I have given the assignment. I have given them the freedom to explore to the extent they wanted to. The outcome is shown in Figure 3 and Figure 4. A few students stepped further, and the outcome is shown in the video ([Link](#)). The outcome of this assignment was resulted in:

- Better understanding of a configuration given in 2D
- Imagining its 3D features
- Enhancing their software proficiency

In this way, I have tried to integrate the skills and learning of the chosen course. Such that students can be engaged with software frequently. After the submission, I took the student's feedback in an anonymous form for confirmation of the outcome. The following were the comments by the students:

- I learned about the layout of a hybrid vehicle. This project helped me to learn about real-life EV configuration in terms of battery placement and engine power delivery. I was also exposed to some new tools in Creo software during this project's completion
- Designing a drive train allowed me to understand the construction of the drive train. In terms of software Proficiency, I am now a little bit more confident to work on SolidWorks.
- It helped me understand the placement of components and their synchronised working
- we had to design the motors, battery, and wheels, which made us think more about the 3D design of a 2D image.
- The assignment first allowed me to explore various configurations available in a hybrid vehicle so that we could choose the most suitable one. Then, the 2D to 3D conversion helped me to understand a 2D diagram in a better way. Finally, I was able to learn some new tools in the Creo software.

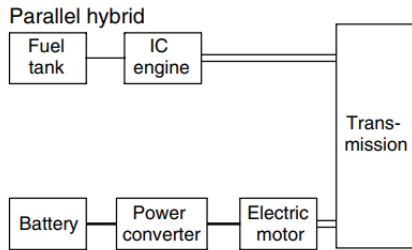


Figure 1. 2D parallel hybrid configuration

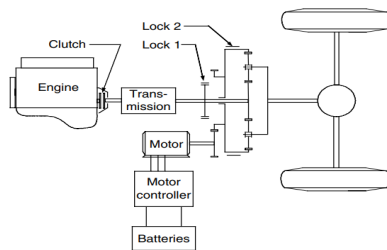


Figure 2. Hybrid electric drive train with speed coupling of planetary gear unit

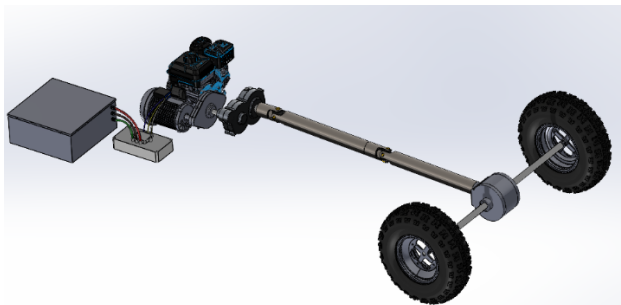


Figure 3. 3D version of Figure 1

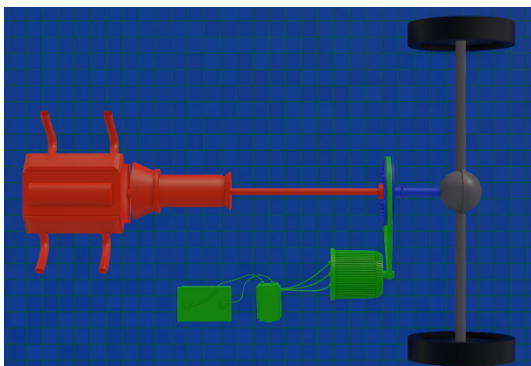


Figure 4. 3D version of Figure 2

Learning to Digress

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It is important to understand the learning process involves understanding new concepts. But very often students fail to understand that any problem should be analyzed from more than one perspective. Both students and teachers fall into the trap of teaching and learning new or related ideas when the original idea has not been explored completely. When difficult problems are discussed in the class, it is necessary that the student expects that the teacher not only puts forward his viewpoint but also other valid viewpoints related to the topic being discussed. This approach not only meets the expectations of the students but also the expectations of the teaching community.

The second question is related to the learning process is the expected learning outcome from learning a new concept. Always the material being taught should relate to another concept that has wider applicability. The learning process will be effective only if the student appreciates the relevance to a bigger concept and learns to benefit from it.

Learning outcomes aside, the pleasure of unraveling the mysteries behind learning a new concept that has stood the test of time itself is enough motivation for the student. We can cite examples from Mathematics, Physics and other sciences. A proof for the Pythagorean theorem $c^2=a^2+b^2$ can be obtained from the formula for Euclidean distance in Geometry. But this is wrong since the proof for Euclidean distance formula depends on the Pythagorean theorem. A proof for Pythagorean theorem which depends on the Euclidean distance and a proof for Euclidean distance formula which depends on the Pythagorean theorem are wrong. Neither the Pythagorean theorem nor the Euclidean distance formula have been proved. Cyclic Arguments do not succeed!

Another possible proof for the Pythagorean theorem may use the Trigonometric formula $\sin^2+\cos^2=1$ which also relies on the Pythagorean theorem for proving the correctness. Hence the Pythagorean formula is a fundamental result which must be proved

without relying on the results derived from it. For those who want to cherish the process of going through the various proofs for the Pythagorean theorem, the webpage <https://www.cut-the-knot.org/pythagoras/> provides more than one hundred proofs (mostly geometric) of the Pythagorean theorem. Knowing any one proof may be sufficient to know how fundamental the Pythagorean theorem is!

In my opinion, learning a new concept is never complete unless one learns where to apply it. Nowadays, we always create documents electronically but what will be accepted in practice is when the document is printed on paper. This does not mean electronic documents are not reliable, only that they are not accepted as the preferred medium in real life. But the electronic domain offers enormous possibilities for creating, processing and storing documents which can be used for information dissemination and learning.

Similarly, whenever we learn any new idea, we should always remember and cite the source of the idea. Claiming someone else's idea as our own will only lead to disaster. In this information age with the proliferation of electronic devices and goods, there is no shortage of information, but there is a shortage of new ideas. Many times, when we read an article, we always try to get the main idea behind that article. This is the essence of learning from information. Learning to distinguish useful ideas from information is a necessary skill which one has to master in this information age.

We are constantly faced with the problem of creating something new in the chosen domain of specialization. But how do we recognize new ideas and concepts? Will somebody take our ideas and implement them? Will our ideas be accepted in practice? Your idea may not be sufficiently new or original to pursue in which case we do not have much option. If it is a technical article for a journal or an idea for a product, we should ensure that at no place we take contradictory stands on any issue. Another thumb rule is to verify how your results validate an original claim or idea by a pioneer in your field.

Computers can now be used not only documents but can be used as a tool speeding up many of the tasks that take enormous amount of time. Computers can perform calculations, can be used to make presentations, and even converse with humans artificially. Computers of the future will do things more quickly, will solve problems more easily and accomplish tasks that are unimaginable now. Let our learning lead to a situation where we become not good at doing routine things more effectively, but learn to appreciate how learning routing things contributes to a well-established idea in our field.

Books of Interest

- (1) *The Skills of Argument* by *Deanna Kuhn*
- (2) *The Unnatural Nature of Science* by *L. Wolpert*
- (3) *Uncommon Sense* by *J. Robert Oppenheimer*
- (4) *How Humans Learn to Think Mathematically: Exploring the Three Worlds of Mathematics* by *David Tall*
- (5) *How We Learn: The Surprising Truth About When, Where, and Why It Happens* by *Benedict Carey*
- (6) *Make It Stick: The Science of Successful Learning* by *Peter C. Brown, Henry L. Roediger III, and Mark A. McDaniel*
- (7) *Curious: The Desire to Know and Why Your Future Depends On It* by *Ian Leslie*
- (8) *How Children Succeed: Grit, Curiosity, and the Hidden Power of Character* by *Paul Tough*

Videos to Ponder

1. Are IIT Profs good teachers?
<https://youtu.be/rDbKwPqNWIo?si=eSEvOy3tS2c2qlqZ>
2. What are teachers doing wrong in class?
<https://youtu.be/uxZgXku3V9w?si=91vo8Fauyi2uUU3U>

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](https://scbt.sastra.edu/teaching-learning-news-letter.html))

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