1. The Need for Significant Learning Experiences

According to L. Dee Fink [1] when examined from the outside our present teaching practices appear to be not only adequate but even quite good: the demand for our services remains high, percentage of graduating high school students that choose to come to college is above 50% and continues to rise[1], the percentage of adults enrolling in some kind of higher education program also remains strong and growing, and American higher education continues to be very attractive to students from around the world. But when examined from the inside and when we look at the quality of student learning (via, for example, extensive/multifaceted studies of college students' performance) we find a more disturbing picture: data collected suggests higher education is currently turning out graduates who neither have a good general knowledge nor know how to engage in the kind of complex thinking and reasoning that society today needs.

Fink thinks that the basic problem is in part with the faculty members: although they sincerely want their students to achieve higher kinds of learning, they continue to use a form of teaching that is not promoting such learning: when interviewed they often make reference to higher-level learning goals, such as critical thinking, but they have traditionally relied (and most still do so today) on lecturing as their main form of teaching. Lecturing is cheap and easy for faculty members but it rarely induces significant learning. So old is the lecturing style of teaching that this fact has been known for hundreds of years: "The power of instruction is seldom of much efficacy except in those happy dispositions where it is almost superfluous." -- Edward Gibbon famously quoted by Richard Feynman around 1964.

According to Fink the key to quality in educational programs is for the teachers to change from presenters of information to facilitators of significant learning experiences. Such an experience has both a process and an outcome dimension to it. Processwise: (a) students are engaged in their own learning, and (b) the class has a high energy level. When results (impact, outcome) are concerned it needs to materialize in significant changes in the students, changes that continue after the course is over and even after the students have graduated, and ultimately enhancing their individual lives. This perspective emphasizes a learning-centered paradigm. Because being a good facilitator is much harder and much more time consuming than being a good presenter of information; without considerable support at the institutional level, or significant individual motivation, change won't come easy since faculty (like everybody else) will tend to optimize as best as they can their scarce resources of time.

2. Making Learning Happen

Can there be teaching without learning? No, so it makes sense to focus on learning. Ronald S. Brandt [2] gives more concrete characteristics of the contexts in which people learn best:

1. What they learn is personally meaningful
2. What they learn is challenging and they accept the challenge
3. What they learn is appropriate to their developmental level
4. They can learn in their own way, have choices and feel in control

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[1] The book was published in 2003

5. They use what they know to construct new knowledge
6. They have opportunities for social interaction
7. They get helpful feedback
8. They acquire and use strategies
9. They experience a positive emotional climate
10. The environment supports the intended learning

Compare these with David Perkins' seven principles of learning by wholes [3]:

1. Play the whole game
2. Make the game worth playing
3. Work on the hard parts
4. Play out of town
5. Uncover the hidden game
6. Learn from the team ... and the other teams
7. Learn the game of learning

3. Developing Learner-Centered Classrooms

Learner-centered paradigms acknowledge that students learn at different speeds and that they differ widely in their ability to think abstractly or understand and manipulate complex ideas. They consider this as intuitive and obvious a fact as acknowledging that students are not all of the same height at a certain age. Carol Ann Tomlinson [4] suggests that the principles of differentiated instruction make it is feasible to develop classrooms where realities of student variance (but aren't all classrooms in fact mixed-ability classrooms?) can be addressed along with curricular realities. She summarizes briefly at the beginning of her book what differentiated instruction is and isn't:

- differentiated instructor is not a return to the individualized instruction of the 1970s. It is more reminiscent of the one-room-schoolhouse (whose model of instruction recognized that the teacher needed to work sometimes with the whole class, sometimes with the small groups, and sometimes with individuals) than of the individualized instruction of the 1970s.
- differentiated instruction is NOT chaotic; effective differentiated classrooms include purposeful student movement, and some purposeful student talking, but they're not disorderly nor undisciplined and instructor maintains at all times complete control over all student behavior.
- differentiated instruction is not just another way to provide homogenous grouping; a hallmark of an effective differentiated classroom is the use of flexible grouping, which accommodates students who are strong in some areas and weaker in others.
- differentiated instruction is not just "tailoring the same suit of clothes" to all learners; it is in fact about getting "clothes" that are the right fit for every learner from the very beginning.
- differentiated Instruction is PROACTIVE
- differentiated Instruction is more QUALITATIVE than quantitative
- differentiated Instruction is ROOTED IN ASSESMENT
- differentiated Instruction provides MULTIPLE APROACHES to content, process, and product

- differentiated Instruction is STUDENT CENTERED
- differentiated Instruction is A BLEND of whole-class, group, and individual instruction
- differentiated Instruction is ORGANIC; students and teachers are all learners together. While teachers may know more about the subject matter at hand, they are continuously learning about how their students learn. Ongoing collaboration with students is necessary to refine the learning opportunities so they're effective for each student. Differential instruction is dynamic.

4. Designing Instruction to Facilitate Learning

Fink presents a taxonomy of significant learning that offers teachers a set of terms for formulating learning goals for their courses. He then identifies the four components of teaching: (a) all teachers need to have some knowledge of the subject matter, (b) make decisions about the design of their instruction, (c) interact with students, and (d) manage course events. This view implies that teachers who want to improve their teaching can do so by improving their competence in one or ore of thesw four aspects of teaching. Of the four Fink identifies the second component (b) design of instruction as a skill for which few college-level teachers have extensive training. So he identifies faculty knowledge about course design as the most significant bottleneck to better teaching and learning in higher ed.

The model of integrated course design that Fink introduces in his book wants to be: simple, holistic, practical, integrative and normative. Key questions that need to be answered when designing a course as a learning experience include: what are the situational factors, and learning goals for the course, what kinds of feedback and assessment should we provide, what kinds of teaching and learning activities will suffice, in terms of achieving these goals, and are the components connected and integrated (i.e., are they consistent with and supportive of each other)? Obtaining answers to these questions completes the initial phase of course design which Fink calls: "Build Strong Primary Components". Once you have strong primary components for your course, one needs to assemble those components into a powerful, dynamic whole. The two key steps in this process are creating a Course Structure, and selecting an effective Teaching Strategy. Then these two items have to be merged into an Overall Scheme of Learning Activities. The third and final phase consists of four taks that finish the design: put together a grading system, try to identify potential problems ahead of time, write the course syllabus and plan an evaluation of the course and of your teaching.

5. Feedback and Assessment Procedures

The third component of a course that a teacher must design is feedback and assesment. Traditionally the taking and grading of exams has been extremely onerous (and dreadful) for both teachers and students. One of the main reasons is that many teachers have a very limited view of the nature of feedback and assesment, according to Fink. Much as teachers need to expand their view of learning goals to include more significant learning, they also need to expand their view of feedback and assessment to include more educative assessment.

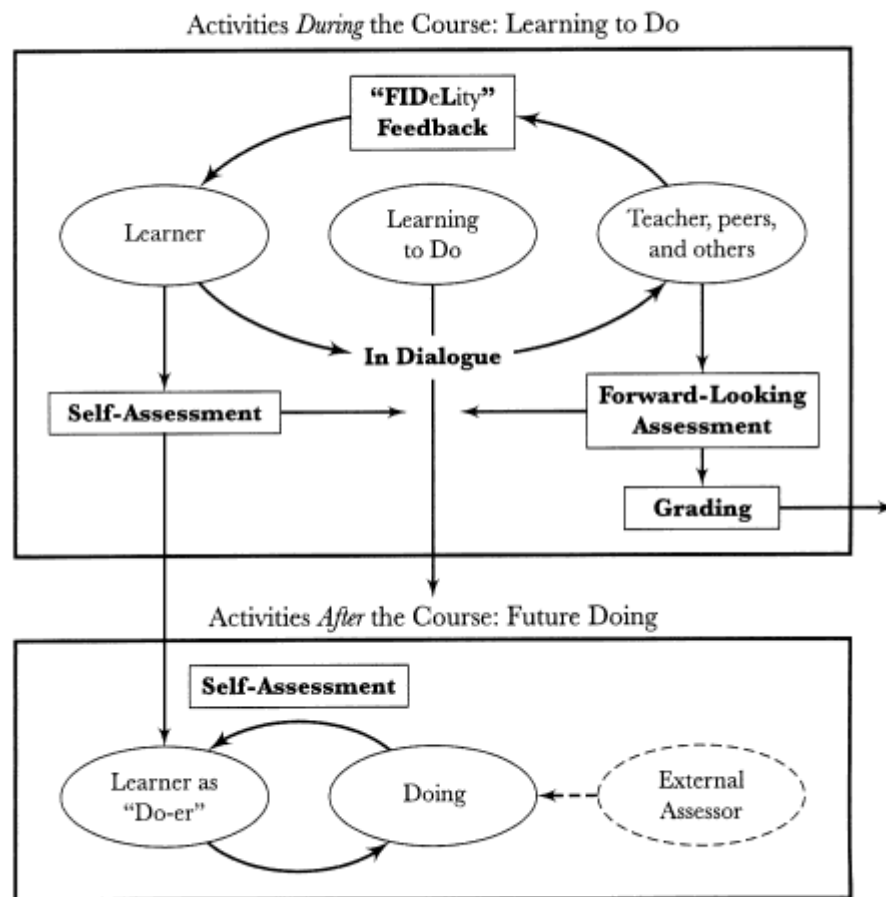Following [10, 11] we identify two types of assessment procedures:

- audit-ive assessment is backward-looking assessment, resulting in grades

- educat-ive assessment, by contrast, helps students to learn better.

Educative assessment has four primary components:

- forward-looking assessment (in which teachers look ahead to what they expect or want students to be able to do in the future; this prepares students for learning and informs the process of designing meaningful instructional activities)
- criteria and standards (must be clear and appropriate for every flavor of assessment used)
- self-assessment (authentic assessment becomes even more meaningful when it is linked to opportunities for students to engage in self-assessment)
- fidelity feedback (frequent, immediate, and discriminate; delivered with empathy)

FIGURE 3.6. EDUCATIVE ASSESSMENT (EXPANDED MODEL).

Activities *During* the Course: Learning to Do

"FIDeLity" Feedback

Learner

Learning to Do

Teacher, peers, and others

In Dialogue

Self-Assessment

Forward-Looking Assessment

Grading

Activities *After* the Course: Future Doing

Self-Assessment

Learner as "Do-er"

Doing

External Assessor

6. Selecting the Right Teaching Strategy

In his holistic model of teaching Fink mentions several powerful teaching strategies that can be selected in the intermediate phase of course design: Team-Based Learning (developed at Fink's own institution

by Larry Michaelsen), Problem-Based Learning, Accelerated Learning, etc. **The classroom of the future must seamlessly support all the current paradigms and (at the very least) not stand in the way of discovering new, better ones.**

We now describe one of these strategies (TBL) with an moderate emphasis on feedback and assessment innovations it introduces from the perspective of what has been said thus far.

A distinction has to be made from the outset between teaching technique and teaching strategy. A teaching technique is a specific teaching activity. Lecturing is a technique; leading a class discussion is a technique, as is lab work, using small groups, assigning essays, covering case studies and so on. These are all discrete, individual activities. A teaching strategy, on the other hand, is a particular combination of learning activities in a particular sequence. The goal is to find a combination and sequence of learning activities that work together synergistically and build a high-level of student energy that can be applied to the task of learning.
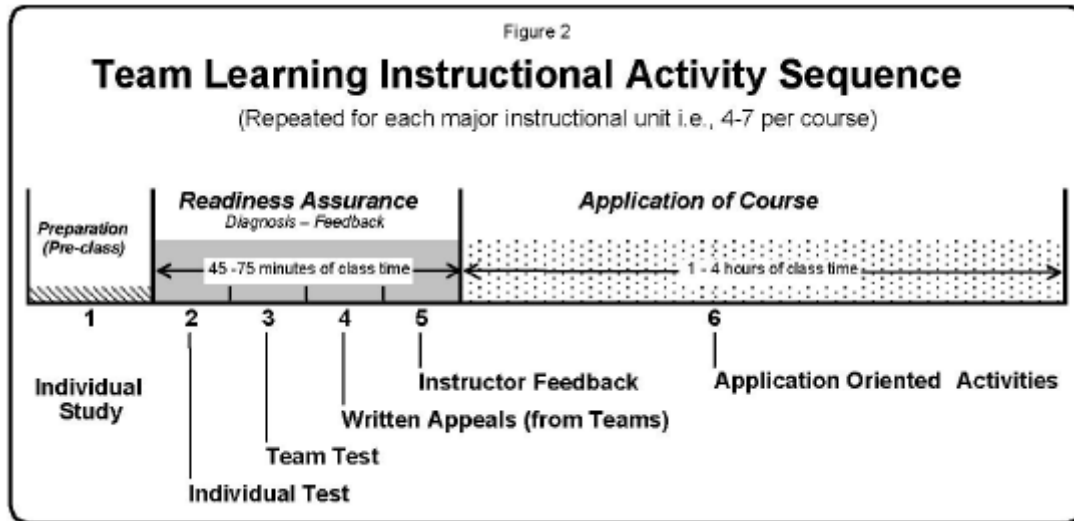
Team-Based Learning (TBL) is a sophisticated version of teaching with small groups that works at the level a teaching strategy [6, 7, 8, 9]. This teaching strategy uses small groups extensively but sets up a particular sequence of activities that transforms groups into teams and then uses the extraordinary capabilities of teams to accomplish a high-level of content and application learning.

Team-Based Learning - TBL (Michaelsen, Knight & Fink, 2002) dramatically shifts the focus of classroom time from conveying course concepts by the instructor to application of course concepts by student teams. In the TBL process, students acquire their initial exposure to the content through readings and are held accountable for their preparation using a Readiness Assurance Process (RAP). Following the RAP, class time is used to practice applying content in a series of team application exercises. The components of TBL are adaptable to many situations, and special resources, such as; scantrons and IF-AT cards are desirable but not essential.
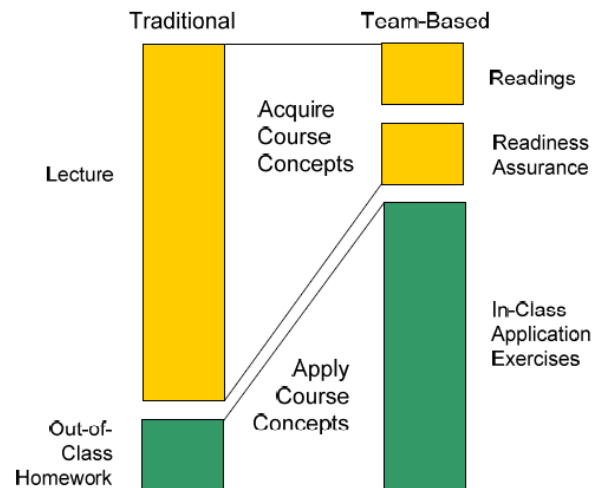
In TBL students read the related material on their own, then come to class and take a test on that material both individually and as a group. This "Readiness Assurance Process (RAP)," brings nearly all students up to a moderate level of content understanding quickly and effectively. Then students are able to spend a significant amount of time working in class in small groups, learning how to apply that content through a series of practice application exercises. Eventually students take a test that measures both their content understanding and their ability to use that content. Then the cycle starts over, focused on the next major topic in the course. By working through this sequence and getting frequent and immediate quality feedback on their performance, the small groups gradually evolve into and become something quite different: "learning teams".

Once these newly formed groups have jelled and become cohesive teams, the members become very committed to the work of their teams and teams become capable of accomplishing some very challenging learning tasks. The diagram below emphasizes the transformation/switch from a lecture-based instruction model to instruction in longer intervals of time dedicated almost entirely to learning.

Figure 2
Team Learning Instructional Activity Sequence
(Repeated for each major instructional unit i.e., 4-7 per course)

Michaelsen and Selby [5] emphasize that Team-Based Learning (TBL) as an instructional strategy is profoundly different from just "using teams" in a course. The four essential principles of TBL are:

Team Formation	Timely Feedback	Accountability	Assignment Quality
Teams must be properly formed and managed	Frequent and timely performance feedback is important.	Students must be made accountable for:	Designed to promote learning and team development.
• Create teams with diverse skills and abilities	• RAP informs individuals and teams on the quality of their pre-class preparation.	• Individual pre-class preparation	• Effective assignments should be based on decisions that can be reported in simple form.
• Make teams fairly large (5 to 7 members)	• Intra- and inter-team discussions provide for feedback.	• Contributions to team activities and assignments	• "Team problems" are often the result of assignments that do not require group interaction.
• Make teams that are permanent	• Peer review provides feedback on contribution to team performance	• Contributions to team functioning Create a grading and peer evaluation system for accountability.	

Key observation here is that as it is designed the RAP generates incredible synergy that guarantees: accountability of students for in-class preparation, realism and accountability in interacting with the rest of the team, and eventually accountability for high-quality team performance. RAP is probably the single most important factor for which TBL works and teams are more than just groups.

To help ensure "treatment fidelity" in the social science sense and to protect the integrity of TBL as a method they have trademarked TBL. They claim that the trademark helps the TBL community keep people from doing something they would advise against but still calling it "TBL," then having an unsuccessful experience and telling others that "TBL doesn't work."

To this end they provide a course scorecard (optimized for TBL) that highlights its main features:

Primary Content Objective	The focus is to use content rather than cover content
Team Formation	Team is selected according to criteria, not student-selected Team composition: diverse, not homogenous Transparent process
Student Orientation/Introduction to TBL	Explain rationales to students Grade weights are student set
Readiness Assurance Process	Appropriate frequency (usually this means high frequency) Test important knowledge table of content level Don't waste time testing trivial knowledge at index level Feedback is instantaneous using IF-AT's [see 12] Student appeals are possible and welcome Must be clearly linked to the activities that follow
Application Activities & Assignments	The problem must be significant (authentic, challenging) All groups work on the same problem Deliverables ask teams to make a specific choice requiring complex thinking; the report is simultaneous (all teams present in the same day); report must be very short, pithy
Individual Accountability	Accountability to instructor via Individualized Readiness Assurance Tests occuring at the beginning of RAP. Accountability to peers: peer evaluation
Team Accountability	Team assignments impact individual course grade Feedback on team assessments must be immediate

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