

# FOSTERING COLLABORATIVE PROBLEM SOLVING AND OTHER 21<sup>ST</sup> CENTURY SKILLS IN COLLEGE STUDENTS

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BY

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**The University of Texas at**  
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# BACKGROUND:

- Employers are constantly looking for employees that possess specific yet cross-cutting skills
- Current graduates are unemployable as they lack useful skills (<http://documents.worldbank.org/curated/en/892121467986247777/pdf/98451-BRI-Education-WEF-English-briefs-skills-Box393171B-PUBLIC.pdf>)
- University curriculum mostly theoretical emphasizing content over desirable usable skills
- Students tend to look for the easiest way to pass courses
- Unemployment and underemployment high among young graduates
- Senior students are disillusioned



# Rationale

- Educators and workforce experts alike often warn that our students, at all levels, need improved 21<sup>st</sup> century skills
- Without these skills, they will not successfully participate in the global economy
- They won't be adequately prepared for work, careers and life

<http://documents.worldbank.org/curated/en/892121467986247777/pdf/98451-BRI-Education-WEF-English-briefs-skills-Box393171B-PUBLIC.pdf>



# Value of education

- Education can equip learners with agency and a sense of purpose, and the competencies they need, to shape their own lives and contribute to the lives of others.
  - The Organization for Economic Co-operation and Development (OECD) launched The Future of Education and Skills 2030 project.
  - The aim of the project is to help countries find answers to two far-reaching questions:
    - What knowledge, skills, attitudes and values will today's students need to thrive and shape their world?
    - How can instructional systems develop these knowledge, skills, attitudes and values effectively?
- [http://www.oecd.org/education/2030/E2030%20Position%20Paper%20\(05.04.2018\).pdf](http://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf)



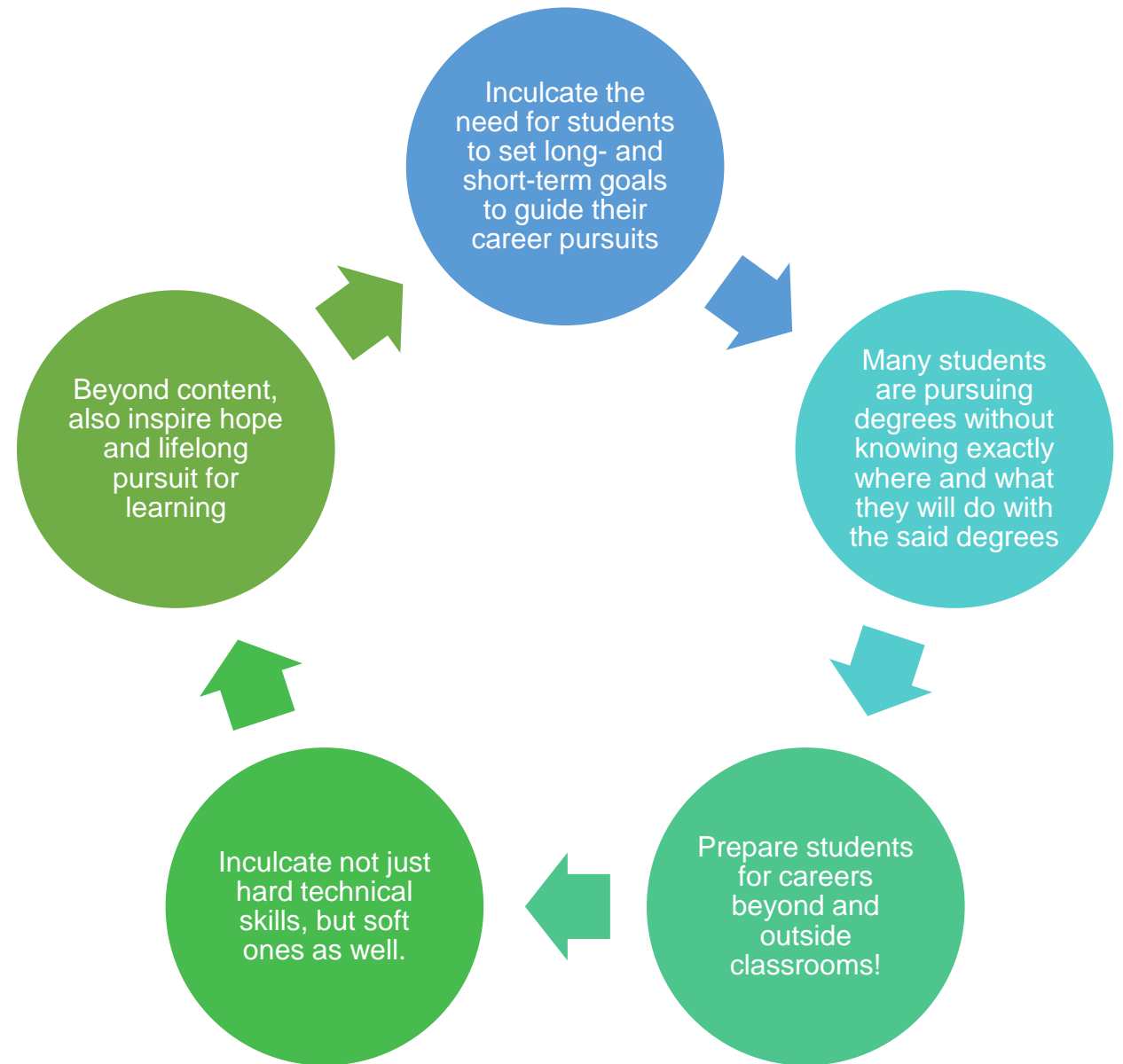
# Evolving Curriculum

- “In the face of an increasingly volatile, uncertain, complex and ambiguous world, education can make the difference as to whether people embrace the challenges they are confronted with or whether they are defeated by them. And in an era characterized by a new explosion of scientific knowledge and a growing array of complex societal problems, it is appropriate that curricula should continue to evolve, perhaps in radical ways”.  
[http://www.oecd.org/education/2030/E2030%20Position%20Paper%20\(05.04.2018\).pdf](http://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf)
- And Covid-19 has made a great point to us as educators
- We are currently preparing students for jobs and technologies that don't yet exist in order to solve problems that we don't even know or envision yet
- Curriculum is core to impacting students and potentially whole society





# Role of Teacher Education



# 4<sup>th</sup> Industrial revolution

- The information age we live in means we are bombarded with updates and have access to a great knowledge bank regardless of location.
- This can be a double-edged sword—yes, there is a lot more information easily obtainable in the world, however, due to the volume of the content, it is difficult to always get the full picture.
- More so, it is becoming increasingly difficult for education systems to keep up with the demand for high-skilled jobs.
- By the time one graduates from university, the content learned has already become outdated because many new jobs are invariably “invented”.



# Key questions

1. What kind of student do we encounter in our classes today?
2. What skills are needed for tomorrow?
3. How can we prepare for the uncertainty and insecurity of the dynamic workplace of today?
4. How can faculty foster CPS skills in learners?
5. What model can work for teacher education?
6. What should we expect from College Faculty Members in terms of teaching?





# Current students - in US

- Nearly a third of college students are independent from their parents.
- The number of students who have children or other dependents has increased to 27.5%. 15.2% of students with children may also be the sole provider of their children.
- 43.3% of students are attending school part time.
- A quarter of students work part time while attending classes, and nearly the same amount work full time while in school.
- 20% of college students are 30 years old or older.
- 62.6% of independent students were raised by individuals who didn't obtain a high school diploma.
- 51.2% of independent students may be considered low-income.
- 49.9% of students who are independent also report a disability.
- 78% of independent students took a year or more off before beginning college after high school.
- A little less than half of students attend a two-year community college.  
(<https://insights.digitalmediasolutions.com/articles/todays-college-students>)

# Common student issues that affect learning

- Problems May Include, But are Not Limited to:
  - Disorganization/feeling overwhelmed.
  - Eating right and staying healthy.
  - Failing to manage money.
  - Failing to network.
  - Homesickness.
  - Not resolving relationship issues.
  - Poor grades/not studying or reading enough.
  - Poor sleep habits.
  - Mental health challenges
  - Poor focus and concentration
  - Smartphone/Technology distraction/dependence etc

## 21st-Century Skills

### Foundational Literacies

How students apply core skills to everyday tasks

1. Literacy
2. Numeracy
3. Scientific literacy
4. ICT literacy
5. Financial literacy
6. Cultural and civic literacy

### Competencies

How students approach complex challenges

7. Critical thinking/ problem-solving
8. Creativity
9. Communication
10. Collaboration

### Character Qualities

How students approach their changing environment

11. Curiosity
12. Initiative
13. Persistence/ grit
14. Adaptability
15. Leadership
16. Social and cultural awareness

Lifelong Learning

Fostering life-long learning:  
Key skills  
(<https://www.tomorrowtodayglobal.com/2016/04/25/16-skills-21st-century-education/>)

# Collaborative Problem Solving:

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Collaboration is important not just because it's a better way to learn. The spirit of collaboration is penetrating every institution and all of our lives. So learning to collaborate is part of equipping yourself for effectiveness, problem solving, innovation and life-long learning in an ever-changing networked economy.

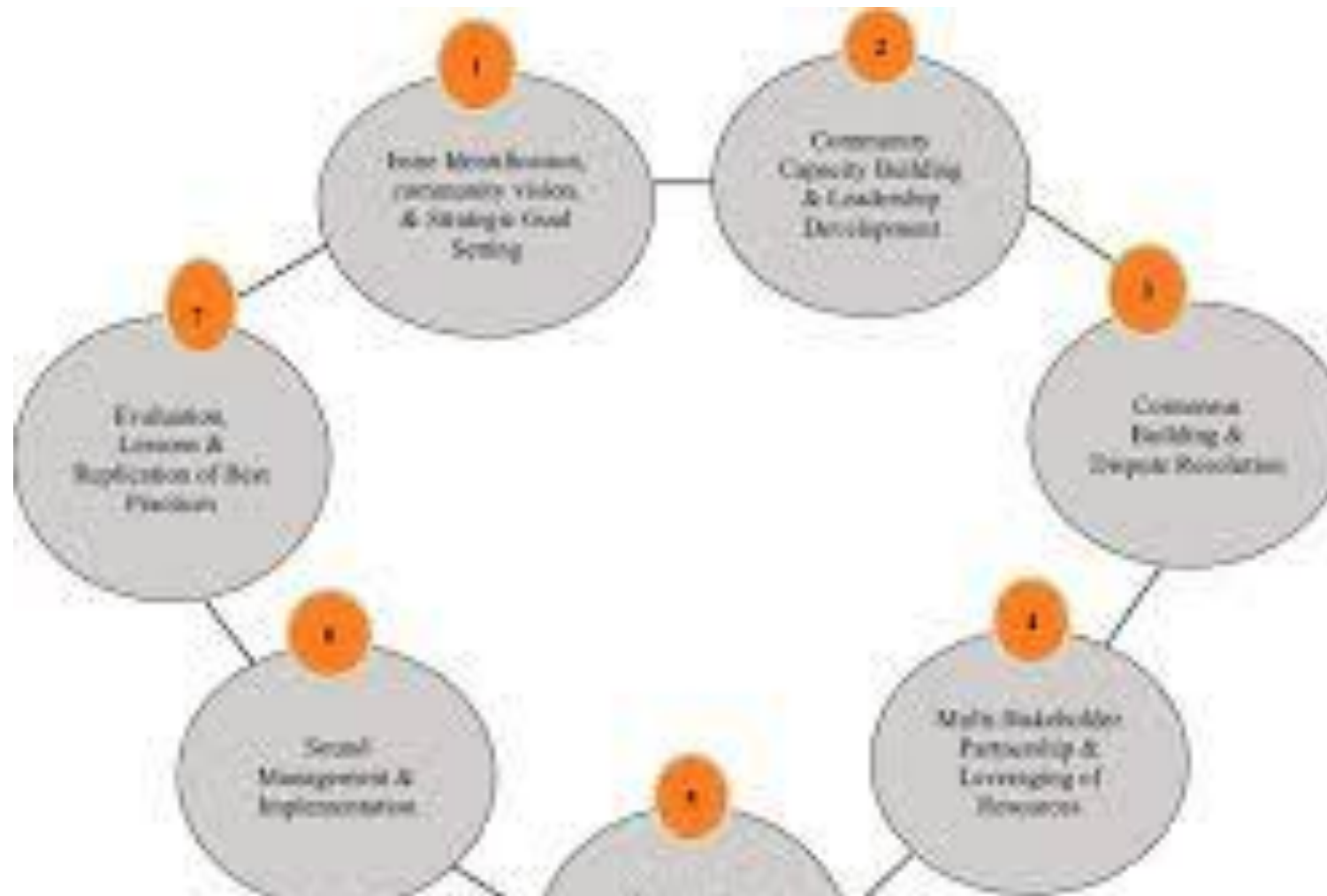
Don Tapscott

PICTUREQUOTES.COM

Entails working together to solve tangible problems

Requires creative and imaginative ways of thinking about issues and finding solutions

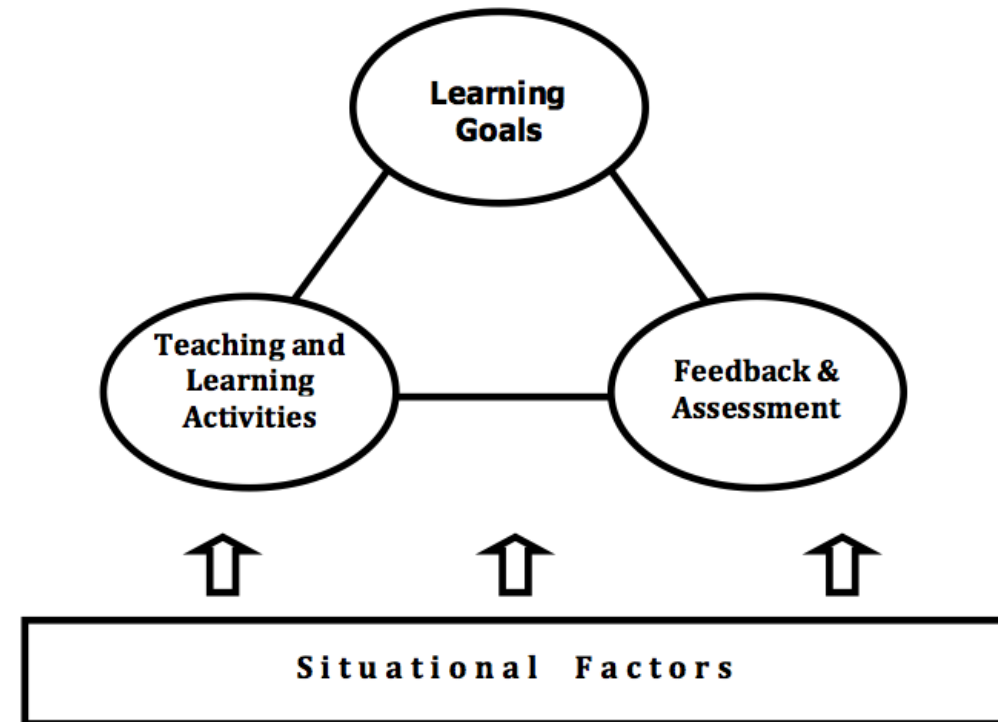
Taps into the critical thinking and communication capacity of different persons



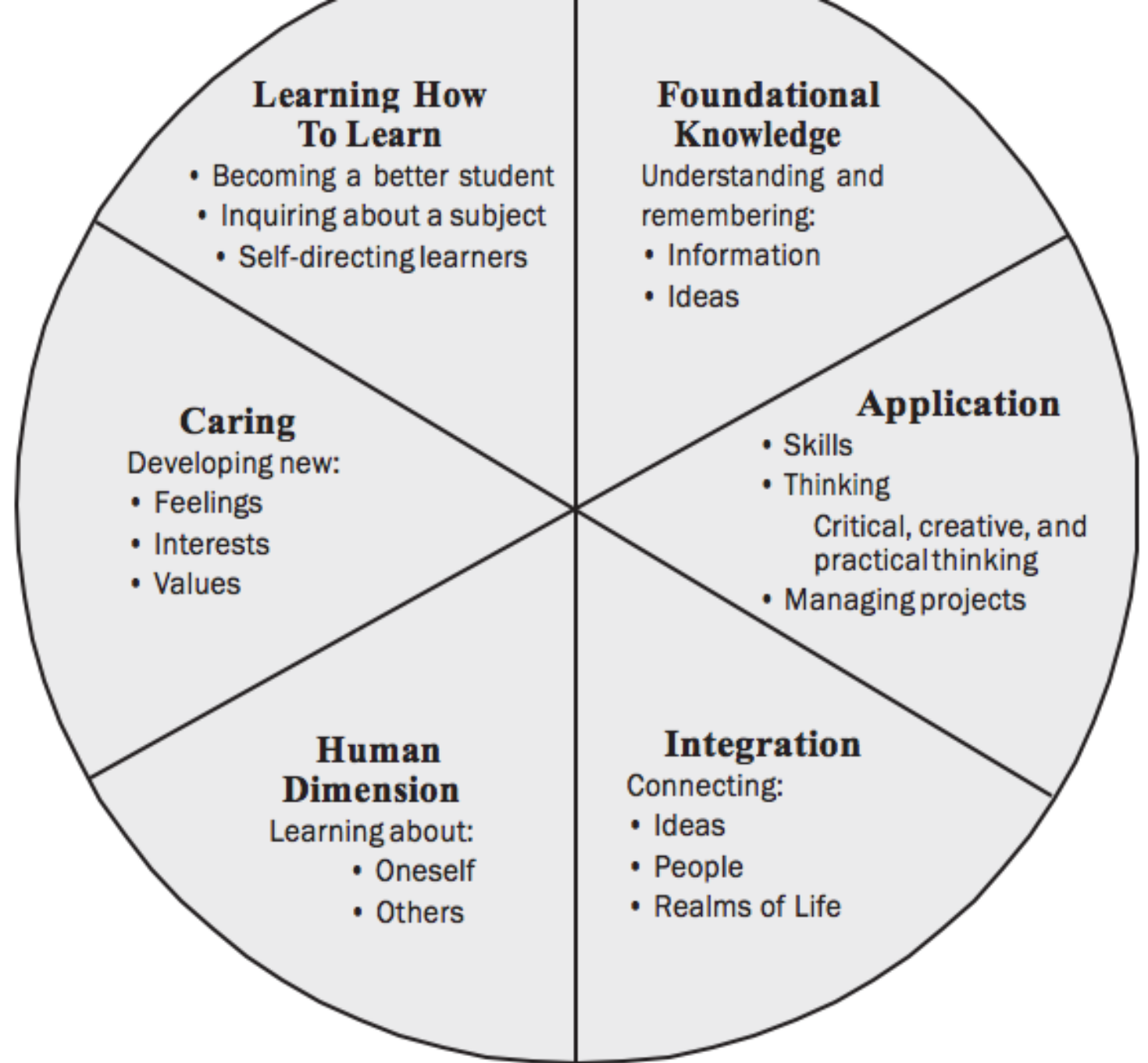
There are seven elements in the CPS Model: (1) issue identification, community vision, and strategic goal setting; (2) community capacity-building and leadership development; (3) consensus building and dispute resolution; (4) multi-stakeholder partnerships and leveraging of resource; (5) constructive engagement by relevant stakeholders; (6) sound management and implementation; and (7) evaluation, lessons learned, and replication of best practices

# Remember the fundamentals of course design

- L. Dee Finks' model of integrated course design provides a foundation from which to build an effective course and subsequently significant learning experiences for your students.



How do we foster CBS and other 21 century skills? Re-think our course learning goals (Fink, L. Dee,



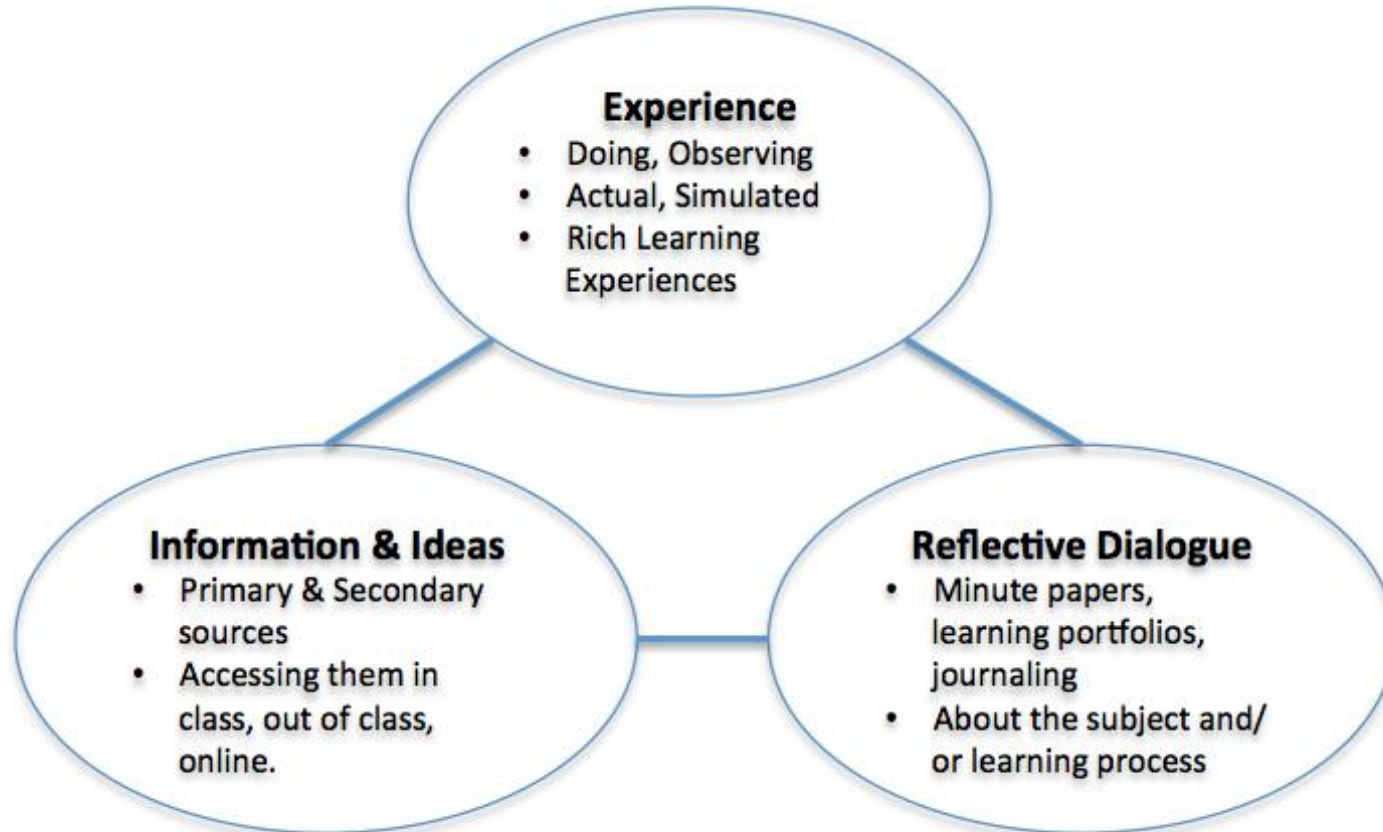
# Learning Outcomes

- To determine the appropriateness and relevance of each of the six types of goals for a given course or other learning experience, key questions need to be asked. Examples are given below:
- Foundational Knowledge: What key information (facts, terms, formulae, concepts, principles, relationships, etc.) is/are important for students to understand and remember? What key ideas or perspectives are important in this course?
- Applications: What kinds of thinking (critical, creative, practical) are important for students to learn? What skills are required? Should students be expected to learn how to manage complex projects?
- Integration: What connections should students recognize and make among ideas within this course? Among information, ideas, and perspectives from this course and those in other courses or areas? Between material in this course and the students' personal, social, and/or work life?
- Human Dimension: What should students learn about themselves? What should they learn about understanding others and/or interacting with others?
- Caring: What changes/values should students adopt? Should interests be affected? Feelings? Commitments?
- Learning How to Learn: What should students learn about how to be good students in a course like this? How to learn about this specific subject? How to become a self-directed learner (developing a learning agenda and a plan for meeting it)?





## A Holistic View of Active Learning

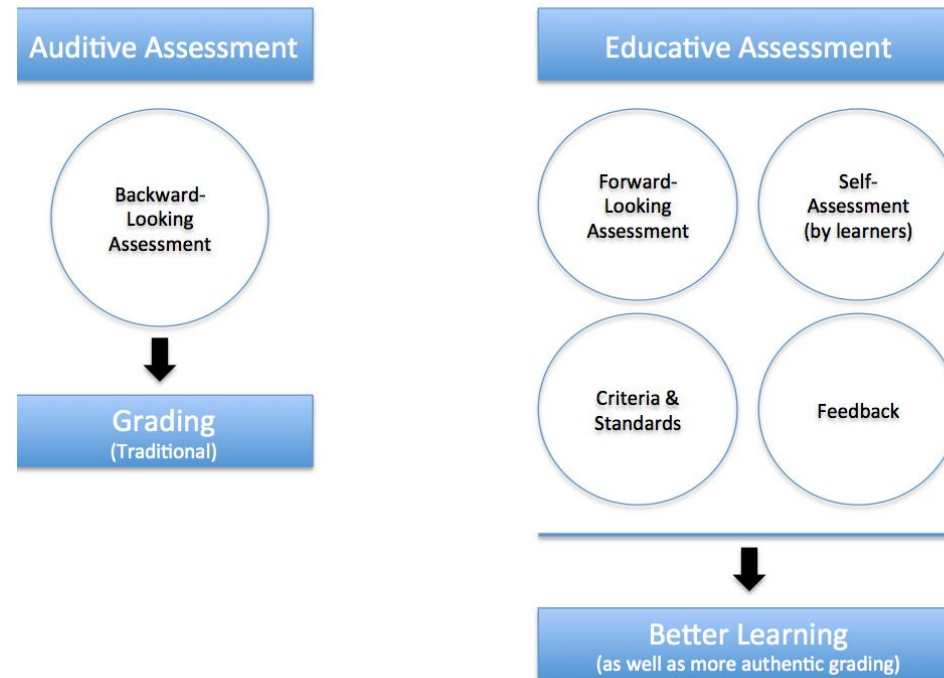


Students learn more and retain their learning longer if they acquire it in an active rather than a passive manner.

Bonwell and Eison (1991) describe active learning as “(involving) students in doing things and thinking about the things they are doing.” “Doing” refers to activities such as debates, simulations, guided design, group problem solving, and case studies. Thinking refers to reflections about the meaning of what students learn or about the learning process itself.

# Assessment for learning

- **Auditive Assessment:** Assessment, which only determines whether students learned correctly, rather than helping them learn, which educative assessment promotes.
- **Backward-Looking Assessment:** Assessment is constructed to determine whether students “got” the material they studied.
- **Forward-Looking Assessment:** Assessment is constructed to determine whether students are ready for some future activity, after the current period of learning is over



# 7 Principles for conducting classes

- Creates a natural critical learning environment that engages students in some higher-order intellectual activity: encouraging them to compare, apply, evaluate, analyze, and synthesize, but never only to listen and remember.
- Gets their attention and keeps it- some provocative actions, questions, or statements
- Starts with students rather than the discipline- what they care about, know, or think they know, rather than just tossing out the content
- Seeks commitment to the class and to learning
- Helps students learn outside class
- Engages students in disciplinary thinking- introduce scholarship to them. Makes them aware of the process, helps them understand, apply, analyze, evaluate pieces and synthesize or create works
- Creates diverse learning experiences to appeal to different learning styles ie. Visual, auditory, Kinesthetics, analytical etc



## Problem Solving vs. Decision Making

✦ **Problem solving** is the process of taking corrective action to meet objectives.

✦ **Decision making** is the process of selecting a course of action that will solve a problem.

## Six Steps of Effective Decision Making

✦ Step 1: Define the Problem or Opportunity

✦ Step 2: Set Objectives and Criteria

✦ Step 3: Generate Alternatives

✦ Step 4: Select the Most Feasible Alternative

✦ Step 5: Implement the Decision

✦ Step 6: Control the Results

# Fostering problem solving and Decision making



Examples: Wounded Warriors, American Heart Association and Animal Shelter

# Operation save eyesight in Togo, Africa

- Dear Colleagues,
- There is a common phrase that the eyes are the windows to the soul! This phrase describes the deep connection one feels when looking into another's eyes. However, several people are not able to enjoy the beauty of the universe for lack of sight. Yet, some of these eyes can be repaired at an affordable price. In Togo (West Africa), particularly, there are villages with a high number of people who have been deprived off sight and require help to restore. My students have therefore resolved to lent a hand to [www.sight.org](http://www.sight.org) to help restore sight to at least 20 people in Togo. Each eye surgery costs USD150. Help mothers see smiles on their kids' faces!
- Eyes are vital in how we view the world around us. Sight and vision are important because they allow us to connect with our surroundings, appreciate the beauty around us, keep us safe, and help maintain the sharpness of our minds. So help by donating here: <https://sight.org/sportmanag/> or here <https://sight.org/motordev/>
- Kindly let me know so that your contribution is acknowledged, The Swahili people say, "kidogo kidogo, huchaza kibaba", which means "little by little fills a bucket". Give however little and it will add up eg. USD 10. Skip that one lunch and help restore an eye and all that joy that follows.....
- Thank you,
- Njororai





# Engaging with the discipline





# A story: Rich man, worker and a tree!





# Recommendations

- Incorporate high impact learning activities in courses
- Establish links with community organizations, companies, institutions etc that provide internship and shadowing experiences for students
- Universities to launch Centers for teaching excellence to provide ongoing professional development for faculty members

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**“Asante sana kwa kunisikilisa”**

