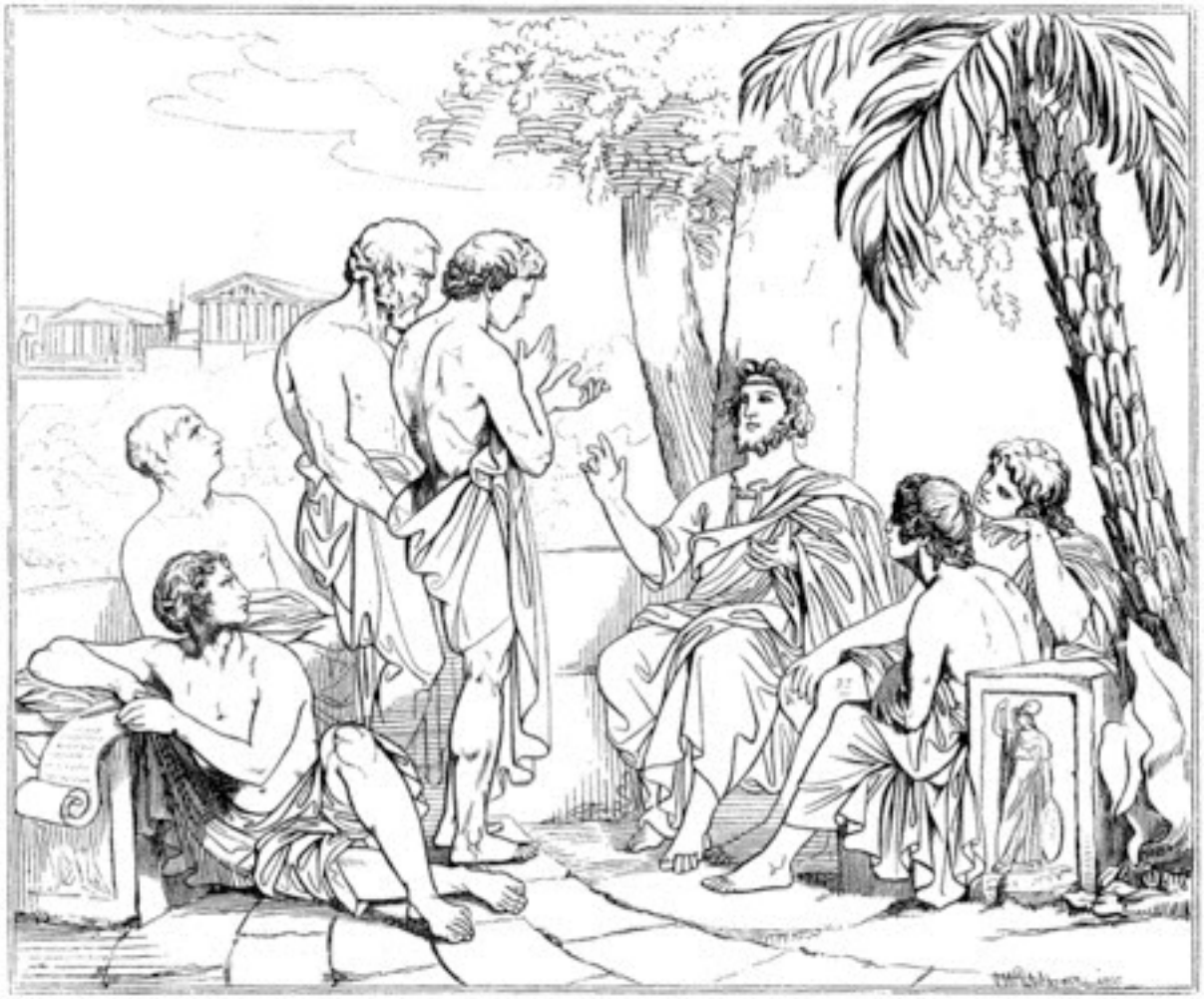
6 Theories of Motivation

References:

http://en.wikiversity.org/wiki/Motivation_and_emotion/Textbook/Motivation/Student_motivation_theories

John M. Keller: Motivational Design for Learning and Performance, Springer 2010 (Chapters 1 and 2)

Motivation: Old Topic in Philosophy



Carl Johan Walborn, 1879: Plato mit Schülern

- Plato:
  Three hierarchically organized motives thought to prompt human behavior:
- *Appetite:*
  Instinctual urges
- *Spirit:*
  Desire for one's preservation
- *Reason:*
  Desire for reason and Truth

Motivation

> "Motivation is generally defined as that which explains the *direction* and *magnitude* of behavior, or in other words, it explains what *goals* people choose to pursue and how actively or intensely they pursue them."
>
> J.M. Keller

- Motivation in E-Learning:
  - High dropout rates
  - Learners need to drive themselves (volitional behavior control)
- Tasks:
  - Initial generation of motivation
  - Continuous preservation of high motivation level
- Does the usage of multimedia *per se* increase motivation?

Who Is Responsible for Motivation?

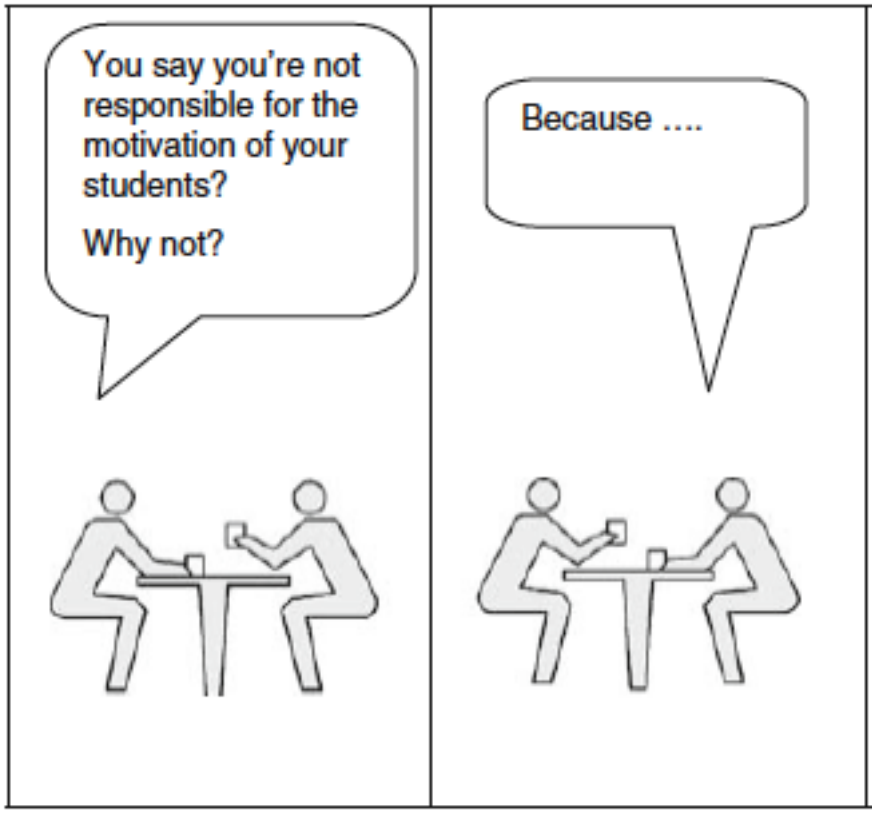


Figure 1.1. Coffee Shop Conversation.

What do you think the answer is?

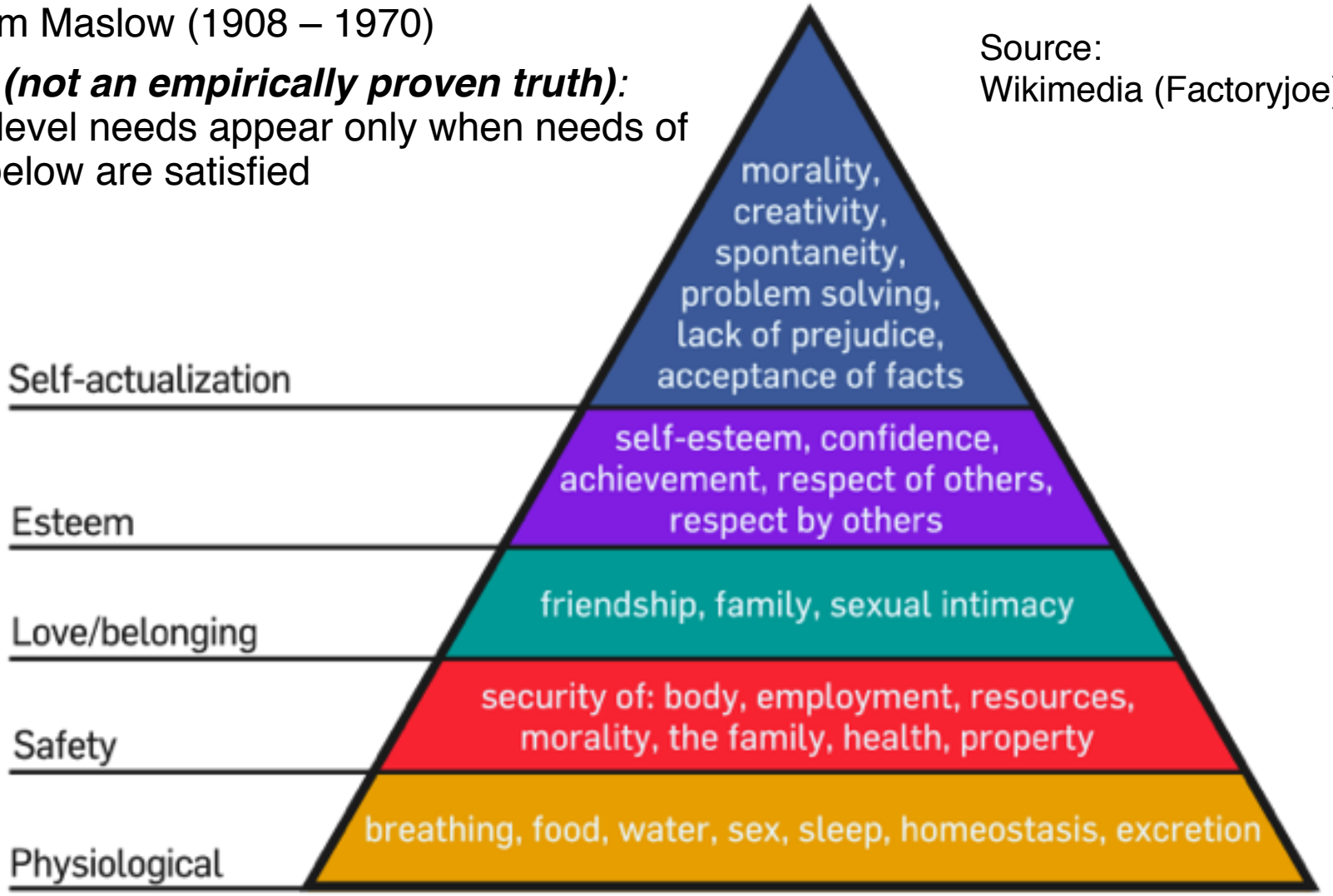
Source: Keller

Motivational Theories – Overview

- Theories grounded in human physiology and neurology
  - Physiological processes of arousal and regulation
- Behavioral approaches
  - Classical and operant conditioning
  - Incentive motivation
- Cognitive theories
  - Expectancy-value theories
  - Social motivation
  - Attributional and competence theories
- Studies of emotion and affect

Hierarchy of Human Needs (Maslow)

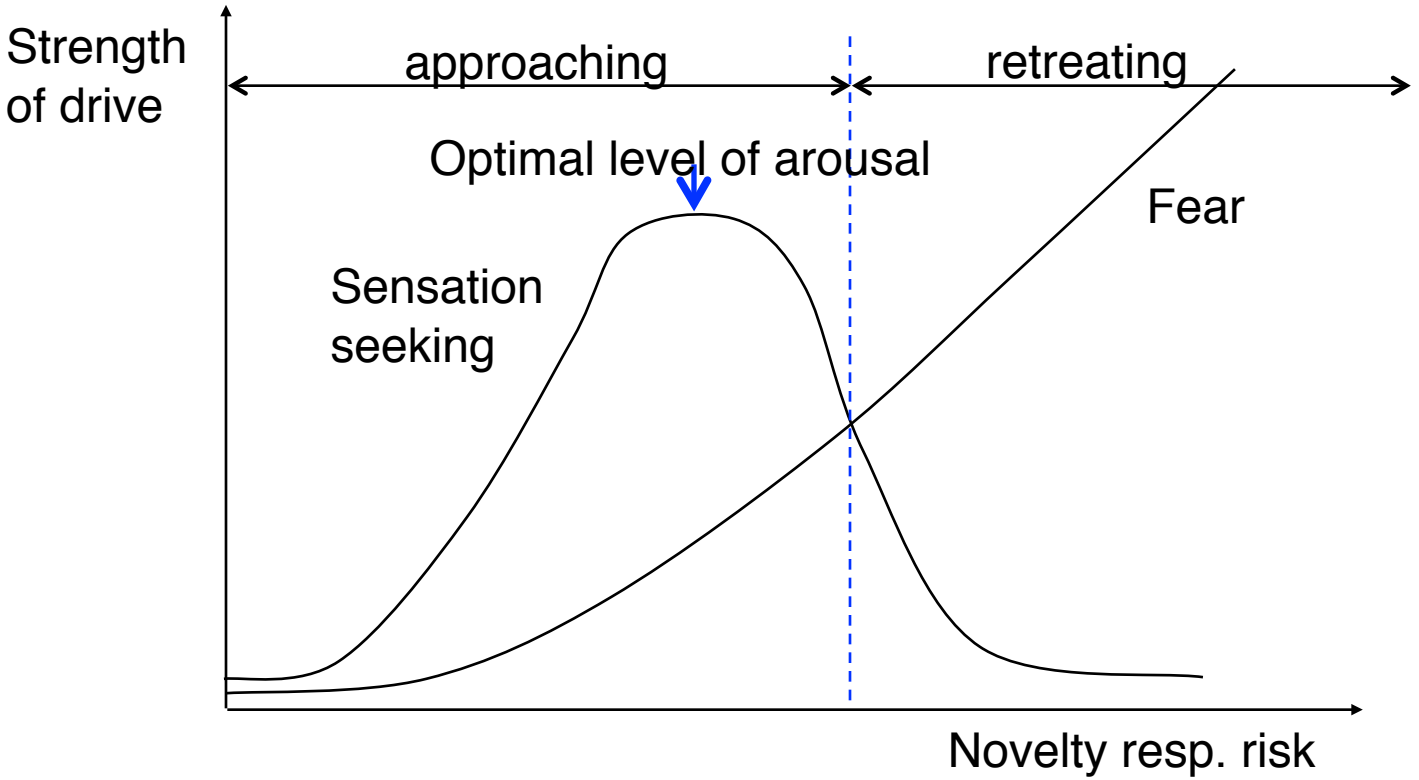
- Abraham Maslow (1908 – 1970)
- Theory ***(not an empirically proven truth)***: Higher level needs appear only when needs of levels below are satisfied



Source: Wikimedia (Factoryjoe)

Curiosity

- Curiosity:
  - Incongruence between perceived sensation and mental schemata
  - Novelty/risk
- Optimal level of arousal (Zuckerman):



Personality Characteristics

Table 1.2. The "Big Five" Personality Characteristics (Sources: McCrae & John, 1992, pp. 178-179; Paunonen & Ashton, 2001, p. 529).

Factor Name	Descriptive Characteristics
Extraversion	Active, assertive, energetic, enthusiastic, excitement seeking, outgoing (gregarious), positive emotions, talkative, warm
Agreeableness	Altruistic, appreciative, compliant, forgiving, generous, kind, modest, straightforward, sympathetic, trusting
Conscientiousness	Achievement-striving, competent, dutiful, efficient, organized, planful, reliable, responsible, self-disciplined, thorough
Neuroticism	Anxious, angry, depressed, hostile, impulsive, self-conscious, self-pitying, tense, touchy, unstable, vulnerable, worrying
Openness to experience	Artistic, aesthetic, curious, fantasy, feelings, ideas, imaginative, insightful, original, values, wide interests

Traits vs. States

- Trait:
  - *Stable* predisposition to behave in a certain way
- State:
  - Disposition to demonstrate a given motive or personality characteristic *at a given point in time* or in *specific* types of situations
- When designing a learning event:
  - Ideally, obtain information about student's motivational predisposition in similar situations
  - If not possible, may use trait-level measure of academic motivation

Volition in Achieving Goals

Preplanning and Commitment (Gollwitzer 1993):

- Weak intentions: Vague
- Strong intentions: Concrete, detailed planning, high commitment

Action Control Theory (Kuhl 1984):
Six strategies that help a person stay on task *(volitional self-regulation)*

- Selective attention
- Encoding control
- Emotion control
- Motivation control
- Environment control
- Parsimonious information processing

6 Theories of Motivation

6.1 Motivation: General Considerations

6.2 Self Determination Theory of Motivation 

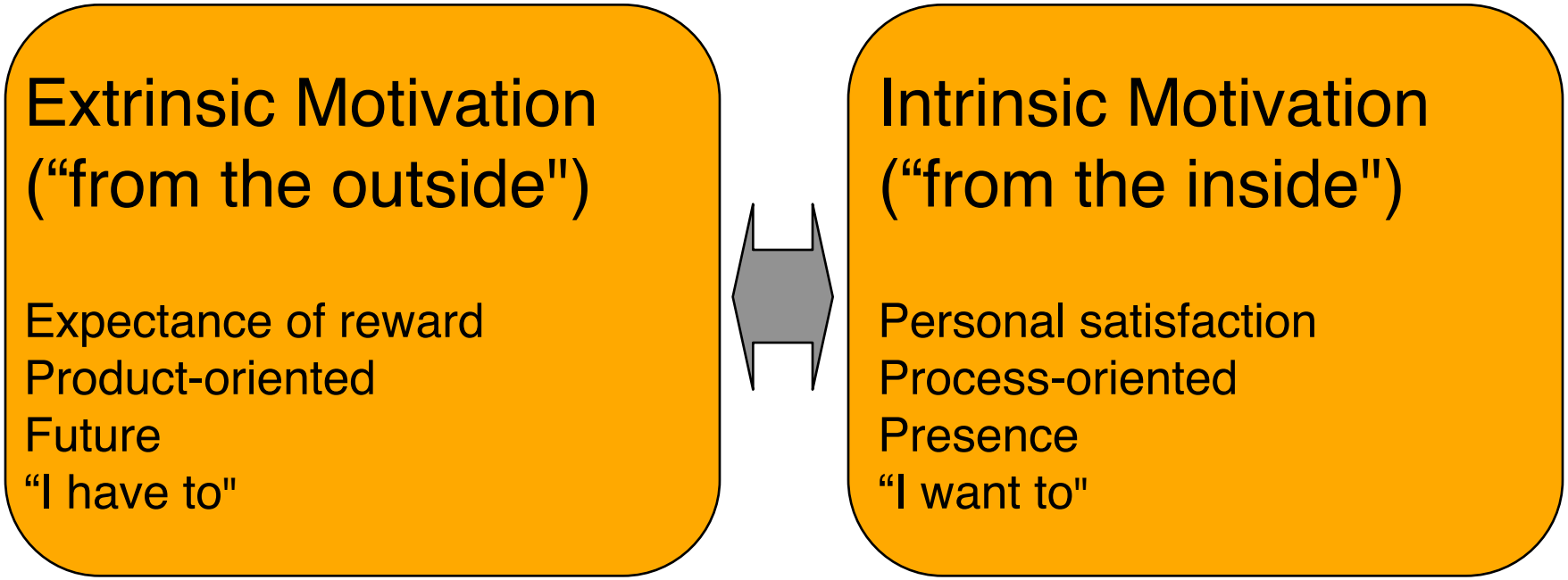
6.3 Motivation Design: ARCS, FEASP

References:

E. L. Deci and R. M. Ryan: The “What” and “Why” of Goal Pursuits: Human Need and Self-determination of Behaviour. *Psychological Inquiry*, 4 (2000), 227-268.

E. L. Deci: Why We Do What We Do. Understanding Self-Motivation. Penguin Books, London 1996.

Intrinsic and Extrinsic Motivation

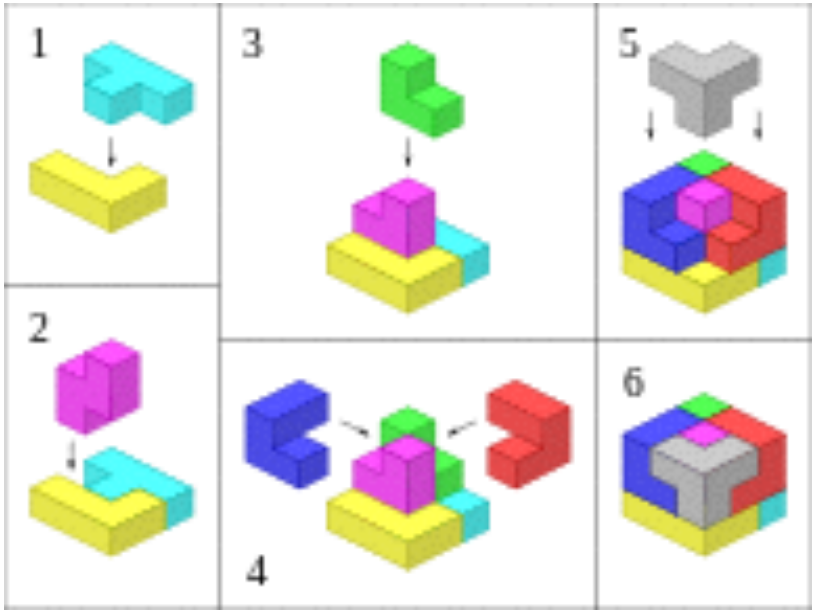


Intrinsic motivation is more effective than extrinsic motivation,
and also has a better long-term effect.

Can you give examples for intrinsic and extrinsic motivation?

An Early Experiment

- Edward Deci, CMU (1969)
- Let students solve given puzzle tasks
- Measure intrinsic motivation by observing them during "breaks", where they are free to do other tasks



"Soma" 3D Puzzle

- Two groups:
  - Group 1: Extrinsic motivation (one dollar per solved puzzle)
  - Group 2: No rewards

Students who were rewarded were far less likely to continue with the puzzle ("just for fun") in their free-choice period!

Combining Extrinsic and Intrinsic Motivation

- Classic result:
  Intrinsic motivation decreases when extrinsic motivation is applied
  (Deci, Ryan et al. 1971-1975)
- Extrinsic motivation leads to better short-term retention performance, but worse long-term retention and transfer performance, also to less creativity. (Ryan/Grolnick 1986)
- Circumstances under which extrinsic motivation strengthens intrinsic motivation
  - *Self-determined* extrinsic motivated behavior
  - *Internalization:* Individual includes external values into its own regulation
  - *Integration:* Individual includes external values and regulations into its own self-construction
- Basic idea:
  Humans integrate external regulation mechanisms, in order to feel connected to their (social) environment.

Types of Extrinsic Behavior Regulation

- *External Regulation:*
  - Regulated by external constraints which are not under control of the individual
  - Examples: To obtain reward, to avoid punishment
- *Introjected Regulation:*
  - Behavior follows internal sense of obligation or guilt
  - Example: Losing weight because being fat is unfashionable
- *Identified Regulation:*
  - Behavior caused by self-ascribed importance
  - Example: Learning in order to get an important degree
- *Integrated Regulation:*
  - Behavior according to consistency with other individual goals and values
  - Example: Self-perception as a “good athlete”, “good student” etc.

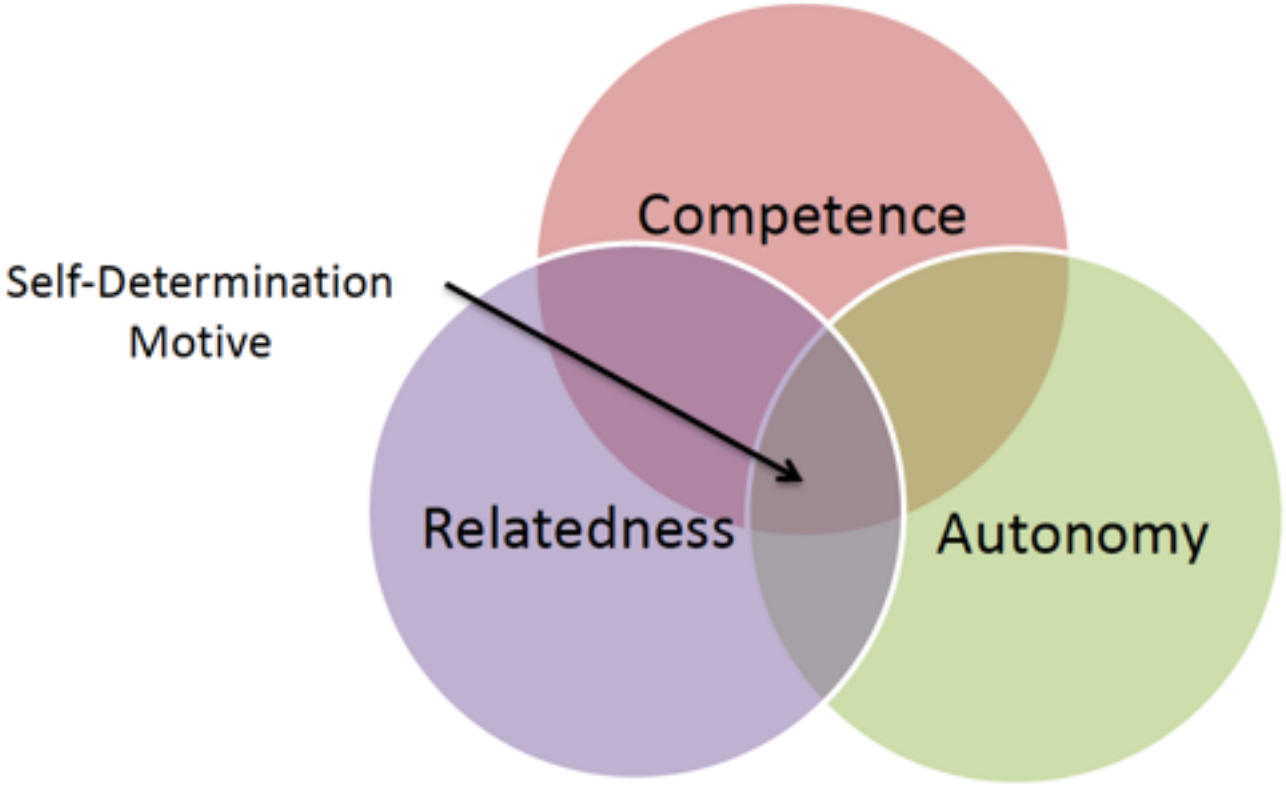
QUIZ: Can you describe the motivation for obtaining a degree under introjected and external regulation?

Motivation and Learning

- ***Intrinsic and integrated regulation of motivation lead to better learning results.***
  - E.g. studies observing dropout rates in schools
- ***External and introjected regulation of motivation do not support learning well.***

> The proper question is not "how can people motivate others?" but rather "how can people create the condition within which others will motivate themselves?"
>
> E.L. Deci

Three Innate Psychological Needs Comprise The Self-Determination Theory of Student Motivation



Source: Deci, E.L., & Ryan, R.M. (2000). The "What" and "Why" of goal pursuits: Human needs and the self-determination of behaviour. *Psychological Inquiry, 11*, 227-268.

Autonomy

- Autonomy and relatedness:
  - Does satisfaction of these two needs always go well together?
- Autonomy is not to be confused with:
  - independence
  - permissiveness
  - individualism

"The truth is that there are no techniques that will motivate people or make them autonomous.
Motivation must come from within, not from techniques."

E. L. Deci

Competence

- Optimal challenges:
  - Trivial tasks -> no perceived competence
  - Overly difficult tasks -> no perceived competence
- Evidence for own competence
  - Praise? ("You solved that faster than the average.")
  - Peer comparison, competition?
  - Peer evaluation?
  - Self-evaluation?

Relatedness

- "To be truly oneself" = autonomy + competence only?
- Limits of self-expression, respect for others
- Concept of "self"
  - individual construction?
  - social interaction?

Self-Directed Learning

- Support for autonomy in the learning environment is crucial for learning success
  - Study with three groups of fifth grade school children
    - » Group 1: Non-controlling condition (free choice among a group of tasks)
    - » Group 2: Teacher-led rote learning, controlling condition
    - » Group 3: Teacher-monitored rote learning, controlling condition
  - Learning outcomes and self-reported evaluation of learning quality best in group 1
  - Grolnick/Ryan 1987
- Numerous replications of importance of autonomy, also cross-culturally!

Lessons Learnt for Design of Learning Environments

- Strengthen feelings for **autonomy, competence, relatedness**
- Autonomy:
  - Self-directed learning, controlled by learner
  - Tasks tailored to current skill level of learner (prerequisite for autonomy)
- Competence:
  - Positive feedback on achievements
  - Optimal distance between tasks and current skill level
- Relatedness:
  - Personal support by peer learners and teachers
- Support for internalization of extrinsic motivation
  - Teacher as behavior model
  - Emphasize importance of learning goals for personal development

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References:

John M. Keller: Motivational Design for Learning and Performance, Springer 2010

Astleitner, Hermann, Designing Emotionally Sound Instruction (2000): The FEASP-Approach, *Instructional Science* 28 (3): 169-198, May 2000

http://edutechwiki.unige.ch/en/FEASP

Forethought (J.M. Keller)

When you think about the concept of motivation which picture would you choose as part of a metaphor representing it, dry leaves or a rock (Figure 2.1)?

Figure 2.1. Leaves or a Rock?
Leaves created from Arts and Letters. Rock is from a personal photograph

SuperMotivation

- D. R. Spitzer (1996): “any activity can be made highly motivating *if a motivating ‘context’ is added to the basic task.”*
- Possible motivators:
  - Action
  - Fun
  - Variety
  - Choice
  - Social Interaction
  - Error Tolerance
  - Measurement
  - Feedback
  - Challenge
  - Recognition

Child: “Boy, that textbook had a lot of good cartoons in it.”

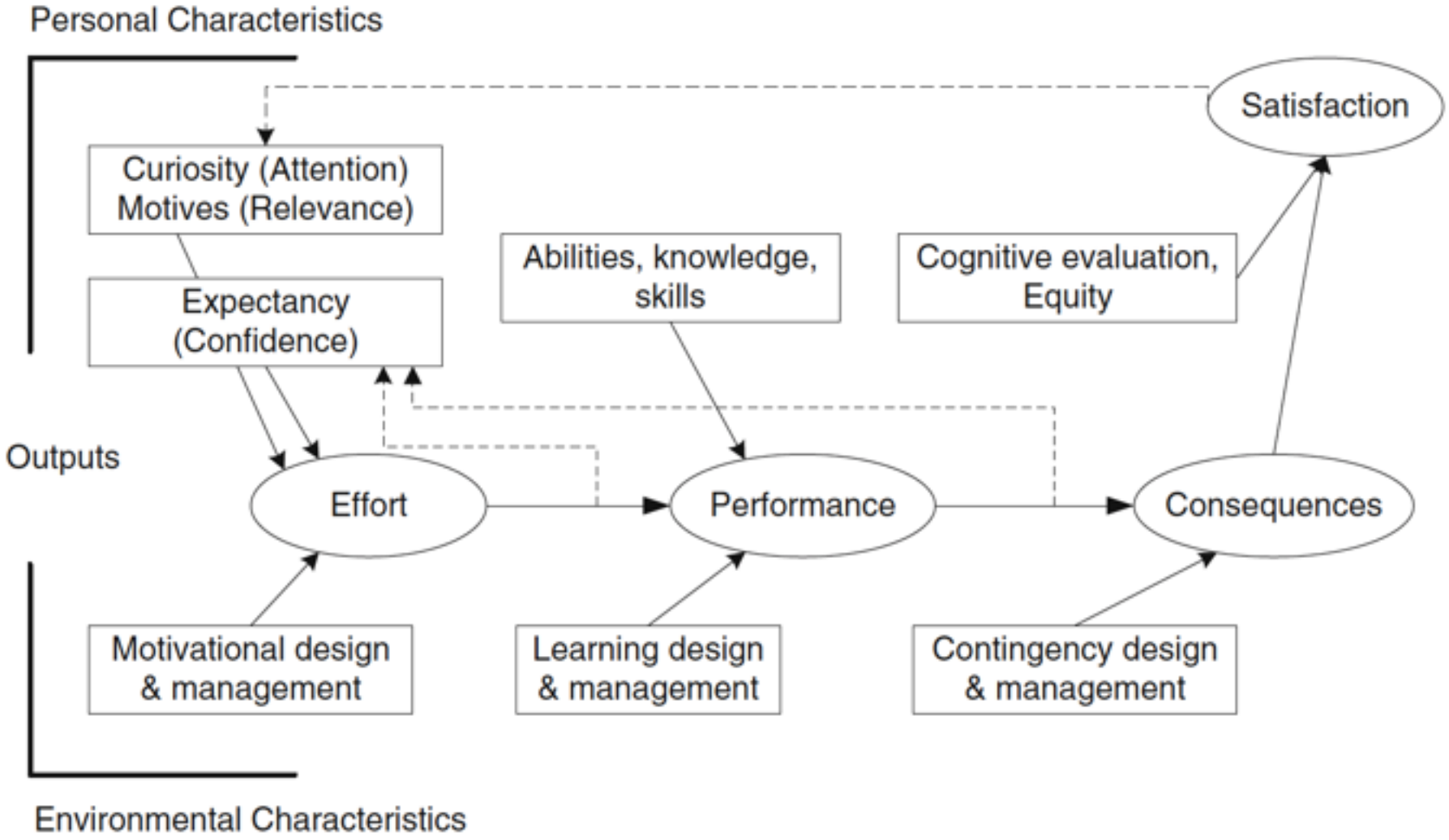
Teacher: “Yes, it did. What were the authors telling us about global warming?”

Child: “Uh, uh, that it is getting hotter?”

J.M. Keller

http://dsor-fs.upb.de/~blumstengel/

Keller's Macro Model of Motivation and Performance



Motivational Design (J.M. Keller)

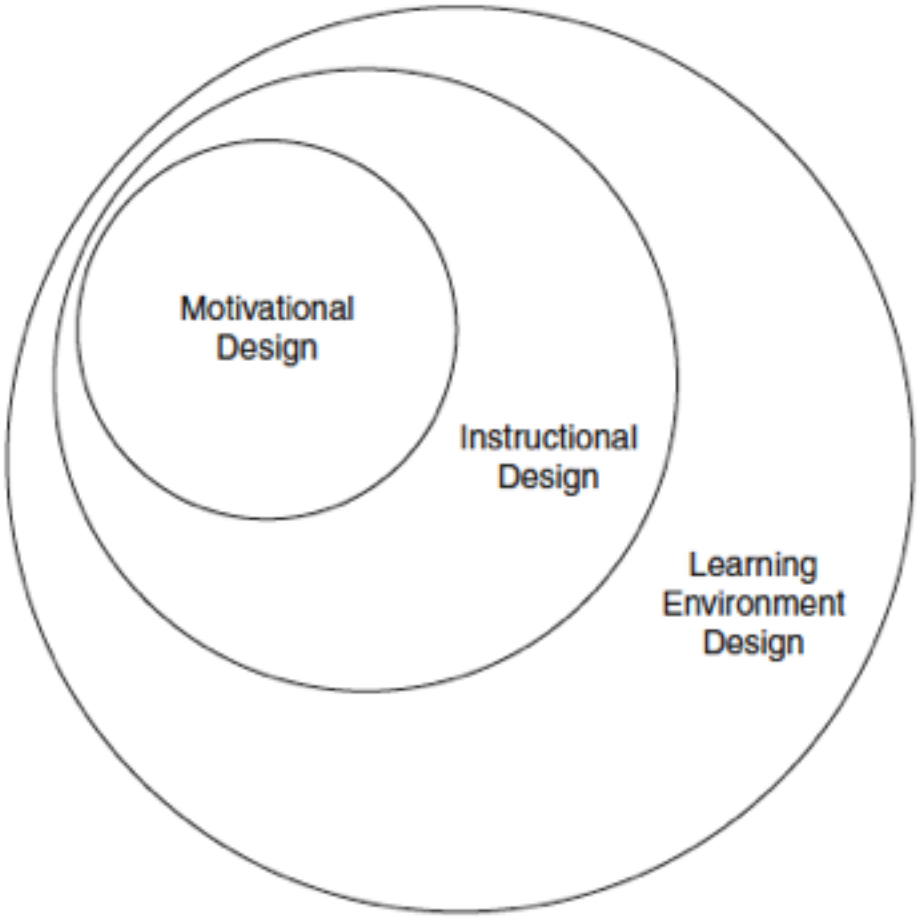


Figure 2.2. Motivational Design as a Subset of Instructional and Learning Environment Design.

ARCS Model

John M. Keller (1983)

– Practically applicable rule system for motivation-enhancing design

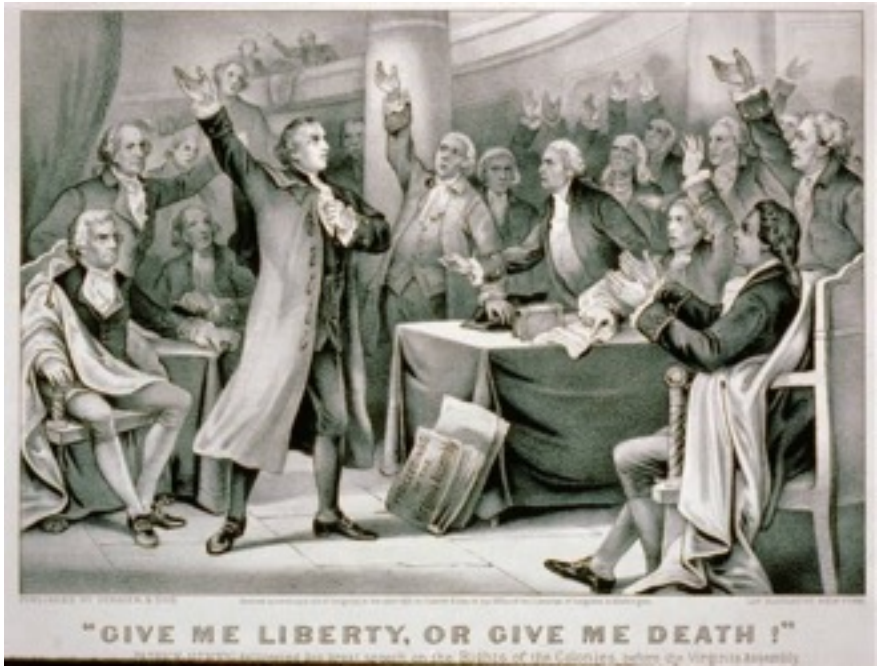
- **A**ttention — Capturing the interest of learners
Stimulating the curiosity to learn
- **R**elevance — Meeting personal needs/goals of learner
Effect a positive attitude
- **C**onfidence — Help the learners believe/feel that they will succeed
Control learners' success
- **S**atisfaction — Reinforcing accomplishment with rewards
(internal and external)

Strategies for Attention and Curiosity

Concepts & Process Questions	Main Supporting Tactics
A1. Perceptual arousal What can I do to capture their interest?	Create curiosity and wonderment by using novel approaches, injecting personal and/or emotional material.
A2. Inquiry arousal How can I stimulate an attitude of inquiry?	Increase curiosity by asking questions, creating paradoxes, generating inquiry, and nurturing thinking challenges.
A3. Variability How can I maintain their attention?	Sustain interest by variations in presentation style, concrete analogies, human interest examples, and unexpected events.

Example (A1): Capture Interest by Concreteness

- Which one is the more attention getting sentence?
  - "Just before the beginning of the Revolutionary War, a famous American patriot said that people should be willing to die if necessary to obtain liberty for the citizens of this country."
  - "On the eve of the Revolutionary War, the famous American patriot Patrick Henry exclaimed, 'I know not what course others may take; but as for me, give me liberty or give me death!' "



Pictures:
faculty.isi.org,
Wikipedia

Strategies for Establishing and Supporting Relevance

Concepts & process questions	Main supporting tactics
R1. Goal Orientation How can I best meet my learner's needs? (Do I know their needs?)	Provide statements or examples of the utility of the instruction, and either present goals or have learners define them.
R2. Motive matching How and when can I link my instruction to the learning styles and personal interests of the learners?	Make instruction responsive to learner motives and values by providing personal achievement opportunities, cooperative activities, leadership responsibilities, and positive role models.
R3. Familiarity How can I tie the instruction to the learners' experiences?	Make the materials and concepts familiar by providing concrete examples and analogies related to the learners' work or background.

Example (R3): Teaching on City Infrastructure

- Gil Perkins had to teach a module in his rural Midwestern school on aspects of a city's infrastructure such as distribution systems (food and merchandise) and communications.
- Gil began his unit by asking:
  "What would happen in a town of 12,500 people if the food supply were cut in half overnight?"
  - Lively discussion based on stdents' knowledge of the close interactions of people in their town
- After 20 minutes, Gil interrupted and asked:
  "What would happen if the food supply were cut in half overnight in a city of 1,250,000 people", giving examples of cities of this size
  - Discussion turns speculative and value/belief-based
- Gil collected a list of questions to be answered by the upcoming module.
- THEN the module started…

Strategies for Building Confidence

Concepts and Process Questions	Main Supporting Tactics
C1. Learning Requirements How can I assist in building a positive expectation for success?	Establish trust and positive expectations by explaining the requirements for success and the evaluative criteria.
C2. Success Opportunities How will the learning experience support or enhance the learners' beliefs in their competence?	Increase belief in competence by providing many, varied, and challenging experiences that increase learning success.
C3. Personal Control How will the learners clearly know their success is based upon their efforts and abilities?	Use techniques that offer personal control (whenever possible), and provide feedback that attributes success to personal effort.

Example (C1): Success Expectations

On the first day of a three-day course on servicing XYZ-111 copiers, Manuel gave the learners handouts which described the course project and how it would be evaluated.

Strategies to Promote Feelings of Satisfaction

Concepts and Process Questions	Main Supporting Strategies
S1. Intrinsic Reinforcement How can I encourage and support their intrinsic enjoyment of the learning experience?	Provide feedback and other information that reinforces positive feelings for personal effort and accomplishment.
S2. Extrinsic Rewards What will provide rewarding consequences to the learners' successes?	Use verbal praise, real or symbolic rewards, and incentives, or let learners present the results of their efforts ("show and tell") to reward success.
S3. Equity What can I do to build learner perceptions of fair treatment?	Make performance requirements consistent with stated expectations, and use consistent measurement standards for all learners' tasks and accomplishments.

Example (S2): Rewarding Outcomes

During a two-day course on instructor skills, Karen writes "motivational messages" to learners praising them for specific skills they have shown in making presentations.

The ARCS Toolbox

- Worksheets for generating ideas of motivational tactics
- Measures of motivation:
  - Course Interest Survey (CIS), 34 items
  - Instructional Materials Motivation Scale (IMMS), 36 items
- Checklists
  - Motivational Tactics
  - Motivational Delivery

1. When I first looked at this lesson, I had the impression that it would be easy for me.
2. There was something interesting at the beginning of this lesson that got my attention.
3. This material was more difficult to understand than I would like for it to be.
4. After reading the introductory information, I felt confident that I knew what I was supposed to learn from this lesson.

IMMS Excerpt

ATTENTION
A1. PERCEPTUAL AROUSAL (CONCRETENESS). *What can I do to capture their interest?*
1. Are there references to specific people rather than "mankind," "people," or other such abstractions? 2. Are general principles, ideas, or other abstractions illustrated with concrete examples or visualizations? 3. Are complex concepts or relationships among concepts made more concrete by use of metaphors or analogies? 4. Are items in a series presented in a list format rather than paragraph format? 5. Are step-by-step procedures or relationships among concepts made more concrete by use of flow charts, diagrams, cartoons, or other visual aids?

Motivational Tactics Checklist (Excerpt)

Emotions: FEASP-Modell

- *Fear* (Angst):
  - negative feeling arising from subjectively judging a situation as threatening or dangerous
- *Envy* (Neid):
  - negative feeling resulting from the desire to get something that is possessed by others or not to lose something that one is possessing
- *Anger* (Ärger):
  - negative feeling coming from being hindered to reach a desired goal and being forced to an additional action
- *Sympathy* (Sympathie):
  - positive feeling referring to an experience of feelings and orientations of other people who are in the need of help
- *Pleasure* (Vergnügen):
  - positive feeling based on mastering a situation with a deep devotion to an action

Astleitner 2000

FEASP Instructional Strategies (1)

- F1: Ensure success in learning
- F2: Accept mistakes as opportunities for learning
- F3: Induce relaxation
- F4: Be critical, but sustain a positive perspective

- E1: Encourage comparison with autobiographical reference points
- E2: Install consistent and transparent evaluation and grading
- E3: Inspire a sense of authenticity and openness
- E4: Avoid unequally distributed privileges among students

- A1: Stimulate the control of anger
- A2: Show multiple views of things
- A3: Let anger be expressed in a constructive way
- A4: Do not show and accept any form of violence

FEASP Instructional Strategies (2)

- S1: Intensify relationships
- S2: Install sensitive interactions
- S3: Establish cooperative learning structures
- S4: Implement peer helping programs

- P1: Enhance well-being
- P2: Establish open learning opportunities
- P3: Use humor
- P4: Install play-like activities

Example: Strategies for Fear Reduction

Instructional strategies	Examples from traditional instruction	Examples from instructional technology based instruction
Fear reduction		
F1 Ensure success in learning	Use well-proven motivational and cognitive instructional strategies	Cognitive learning design
F2 Accept mistakes as opportunities for learning	Let student talk about their failures, their expectations, the reasons for errors, etc.	Q&A, success statistics
F3 Induce relaxation	Apply muscle relaxation, visual imagery, autogenics, or meditation	Trainings via media players
F4 Be critical, but sustain a positive perspective	Train students in critical thinking, but also point out the beauty of things	Cognitive tools (semantic networking)

Daniel Pink: Drive – Kind of a Summary