

On the nature and design of learning technologies

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Is there a learning technology in
this picture?



Is there a learning technology in
this picture?



What is a technology?

tech·nol·o·gy/tek'näləjē/

Noun:

- The application of scientific knowledge for practical purposes, esp. in industry: "computer technology"; "recycling technologies".
- Machinery and equipment developed from such scientific knowledge.

Synonyms:

technics - engineering - technique

“Anything invented after you were born” (Hillis)

“Ways that people get complicated things done” (Bessant & Francis)

“A combination of artefacts and what you do with them” (Nye)

“Tools with a context” (Papert)

“Not a thing but a verb” (Kelly)

“The way things are done around here” (Franklin)



technology

“the orchestration of phenomena for some use”

(W. Brian Arthur)

pedagogies are
technologies



technologies are
assemblies



learning
technologies



where pedagogy is
part of the
orchestrated
assembly



Hard technologies

Orchestration
of phenomena
embedded in
the
technology



May need skill to use them *correctly*

Soft technologies



http://commons.wikimedia.org/wiki/File:François_Barraud_-_Palette_et_Pinceaux.jpg

Active
orchestration
of phenomena
by people

Skill needed to use them *well*

resilience

flexibility

diversity

creativity

control

hard is easy
soft is hard

precision

replicability

accuracy

speed

ease of use

cyborg technologies

we are a *part* of all soft technologies



and some technologies are made *of* us

pedagogies are
soft technologies



we shape our dwellings and
afterwards our dwellings
shape our lives

hard learning technologies



Welcome, Jon

- Tools
- Calendar
- Use Directory
- Student email
- Staff email
- Tools
- Feedback form
- Feedback address
- MS Office viewers

- Life Support
- Classes & Part time jobs
- Clubs and Societies
- Computing, Libraries & Media
- Counselling
- Disability & Diversity
- Health & Wellbeing
- International
- Living here
- Money
- Partner Colleges
- Religious Life
- Restaurants, Cafes & Shops
- Rights & Responsibilities
- Safety & Security
- Send Request
- Student Handbook

A screenshot of a course page for 'COMP 602_F07: Computer Science 602: Enterprise Information Management'. The page is from the 'School of Computing and Information Systems'. It shows a 'Weekly outline' with sections for 'Welcome to COI', 'COMP 602 Syllabus', 'News forum', 'COMP 602 Grad', 'COMP 602 Gen', 'Course wiki', and three 'TME' (Topic Module Exam) sections, each with a 'new in' icon and a 'Forum' link. A 'Course Menu' on the left lists 'Control Panel', 'Turn editing on', 'Dropticket', and 'Weeks 1' through 'Weeks 7'. The page also includes a 'People' section with 'Participants' and 'The instructors' section with profiles for 'Jonathan Preece' and 'Peter Haining'.



soft learning technologies



Soft is hard



but very flexible

help, social
computing, education,
facebook, learning, widget,
550, law, social media, group,
privacy, moodle, social
re, comp 607, e199,
ng, comments, dashboard,
comp650, social
ng technology, ethics,
plugin.

points of view



Image by Jules Feiffer, from *The Phantom Tollbooth*, by Norton Juster

contrasting soft and
hard technologies

diverse

Three screenshots of a Moodle course page for COMP 266. The first screenshot shows a welcome message and a list of course navigation links. The second screenshot shows a topic outline with six weeks of units. The third screenshot shows a weekly outline with specific tasks for each week.

RT

Welcome to Computer Science 214, in exploration of the current and emerging with some historical perspective. To be the links below, which tell you what y course. If you need more information a

- Overview and Introduction
- Outline
- Softwares
- Evaluation
- Tip on Writing Essays
- Academic Integrity

Course Communication

- News and Announcements
- General Course Discussion
- Software Peer Support Forum
- Course Mail

Planning Assignment

- Do this first.
- Personal Assignment Plan
- Assignment Planning Calculator

Topic 1 - The Context of Human-Co

- Topic 1 Activities
- Assignment 1

Topic 2 - Input and Output

- Topic 2 Activities
- Assignment 2

Topic 3 - Using and Evaluating App

66 RT

Topic outline

- Welcome to COMP 266
- Using Moodle
- COMP 266 Syllabus
- Digital Reading Room
- The SCIS Virtual Helpdesk
- COMP 266 General Conference
- News forum
- COMP 266 Study Guide
- Tutor Marked Exercise (TME) 1
- Tutor Marked Exercise (TME) 2
- Tutor Marked Exercise (TME) 3
- Tutor Marked Exercise (TME) 4
- test

1 Week 1

- Complete Unit 1
- Start to work on part one of your

2 Week 2

- Complete Unit 2

3 Week 3

- Begin Unit 3

4 Week 4

- Complete Unit 3

5 Week 5

- Complete Unit 4
- Complete and Submit TME 1

6 Week 6

- Complete Unit 5

2 508

Weekly outline

- Welcome to COMP 602
- Using Moodle
- COMP 602 Syllabus
- Getting Help
- Copyright Information
- News forum
- COMP 602 Cracle Instalator
- COMP 602 General Discuss
- Course wiki
- Frequently asked questions
- Tutor Marked Exercise (TME)
- TME 1 Forum
- Tutor Marked Exercise (TME)
- TME 2 Forum
- Tutor Marked Exercise (TME)
- TME 3 Forum
- Project
- Project Forum
- Archived Study Guide in dower
- Archived Study Guide in PDF
- 1 May - 7 May
- Week 1: Introductions
- E-mail your tutor to introduce you
- Familiarize yourself with the S
- COMP 602 Student Bios
- 8 May - 14 May
- Week 2: Information manage
- Complete Unit 1 of the Study
- 15 May - 21 May
- Week 3: the entity-relationship r
- Complete Unit 2 of the Study
- 22 May - 28 May
- Week 4: the relational model
- Complete Unit 3 of the Study
- Submit TME 1
- 29 May - 4 June
- Week 5: database implementa
- Complete Unit 4 of the Study

uniform

difficult



easy



brittle

flexible



complicated



complex

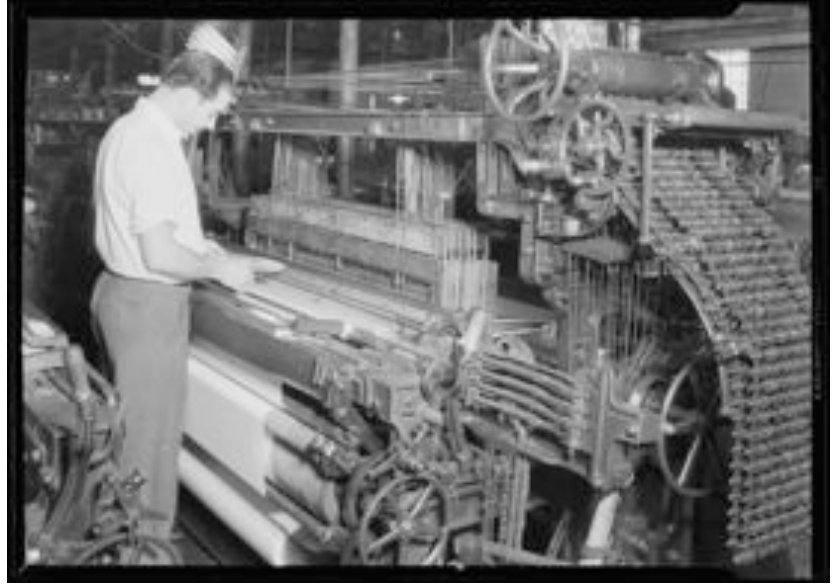


aggregation



replacement

replication



novelty

precision



interpretation

efficiency



control

softening

- modification
- aggregation
- extension
- communication



hardening

- replacement
- automation
- limiting
- filtering

Addin

Name*

Introduction

Open the quiz

Close the quiz

Time limit (minutes)

Time between first and second attempt

Time between later attempts

Questions per page

Shuffle questions

Shuffle questions within questions

Attempts allowed

Builds on the last

Adaptive mode

Send email alerts

defaults harden

they make things easy



but can make us stupid

assemblies soften

they can make broken hard things work



but sometimes it is better to fix the hard thing

three bears



Steel, Flora Annie. English Fairy Tales. Arthur Rackham, illustrator. New York: Macmillan Company, 1918.



<http://www.flickr.com/photos/photonquantique/2596581870/sizes//in/photostream>

thank you

Landing: <https://landing.athabascau.ca/profile/jond>

Home page: <http://jondron.athabascau.ca>

Aggregation page: <http://jondron.org>

email: jond@athabascau.ca

Twitter: [jondron](#)