# SUPERVISORY MEETING
# ~ BRIEFING NOTES ~

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## Contents

# Introduction

Things are going rather slower at the moment – people whinge if I don't teach my classes.  The bad news is that the pace will pick up again after Christmas when my teaching load reduces.

Some of my time has been spent revamping the website on which the work is being tracked.  I now have a clearer view of what is needed.  The dross went and the navigation was simplified by using drop-down menus.  This should make things easier for you too.

Attached are documents generated from the site:-

The Matrix of Educational Theories – This is the current version of the list.  It now includes a few ancient Greeks and others that I had missed.

The List of Educational Theories – This shows how each of the theories in the list above have been categorised for now.  There will probably be some movement here in future.

The Three Sieves of Proof – This came out of the discussion we had at the last meeting.  The document is an attempt to understand the concept of proof and apply it to the "axiomata" shown in that meeting.  I can see that they are not axiomata, but I am unclear whether they are theories or hypotheses and would be grateful for some clarification.  They will be called hypotheses from here, merely to differentiate them from the list of learning theories.  I am also rather hazy on whether hypotheses can be sieved into axiomata like this.  It would be rather convenient if they could.  Some of these hypotheses might be considered to have been proven.  In particular, hypothesis 8 (frequent and clear feedback encourages learning), has been shown by John Hattie (2009) to be the case.

Sieve 1 – The Meta-Physical Level – *If* the three sieves approach can be used the coarsest level of sieving would be one in which there is a body of agreement that the hypothesis is true.  The list of learning theories could be used to check.  The site therefore has a page which lists the learning theories down the side and has the hypotheses across the top.  The grid formed can then be filled in according to whether a particular theory supports a hypothesis, is agnostic about it or contradicts it.  Then it would just be a matter of reading down the column for a hypothesis to see whether it is agreed or not.  This has not been filled in yet because it may be deemed a "road that does not need to be revisited" (The Cos Principle).

Sieve 2 – The Engineering Level – *If* the three sieves approach can be used then the next level of sieving would be one in which the hypothesis has been demonstrated to work.  The analyses by John Hattie could be used to sieve at this level.  Again, a web page has been created with the list of Hattie criteria down the side and the hypotheses across the top.  This can then be handled in the same way as the first sieve; marks are entered to show whether the criteria support, oppose or are agnostic about the hypotheses.  This has not been filled in yet because it may be deemed a "road that does not need to be revisited" (The Cos Principle).

How the material might look on the web – The general description of a Guthrie (an atom of learning) could then be deduced if the hypotheses were to be proven.  The attached mock-ups show how this might look.

Finally, Learning Analysis (Siemens, 2011) is not a mathematical treatment of education.  It is a very valuable exercise in data warehousing and seeks to define how problems, such as students who may be at risk, may be discovered using data from within an institution.

# Matrix of Educational Theories

| | | Style (Nature) | | Strategy (Nurture) |
|---|---|---|---|---|
| **Learner** | | Experiential Learning (Dewey, 1938)<br>LSI Model (Dunn and Dunn, 1978)<br>VARK (Fleming, 1987)<br>Felder-Silverman Test (Felder and Silverman, 1988)<br>Mind Styles Model (Gregorc, 1984)<br>Herrmann Brain Dominance Instrument (Herrmann, 2012)<br>Stages of Development (Piaget, 1964)<br>Learning styles don't exist (Riener and Willingham, 2010) | Multiple intelligences (Gardner, 1983)<br>Triarchic theory of intelligence (Sternberg, 1985)<br>Radical constructivism (von Glasersfeld, 1984)<br>Honey-Mumford (Honey and Mumford, 1986)<br>Experiential Learning (Kolb, 1975) | Surface, strategic and deep learning (Entwistle, 1983)<br>Deep and surface learning (Marton/Säljö, 1976)<br>Conversation Theory (Pask, 1975)<br>Operant conditioning (Skinner, 1938) |
| | **Teacher** | Myer-Briggs Type Indicator (Myer and Briggs, 1964)<br>Discovery Learning (Bruner, 1961)<br>Critical pedagogy (Freire, 1968) | **Empirical** :-   Visible Learning (Hattie, 2008)<br>   Learning Analysis (Siemens, 2010)<br><br>**Theoretical** :-<br>   Not yet | Meaningful Learning (Ausubel, 1963) On Education (Aristotle, ~340BCE) |
| | | Constructive alignment theory (Biggs, 1996) | Adaptive educational hypermedia (de Bra, Brusilovsky)<br>Zone of proximal development (Vygotsky, 1934) | Bloom's Taxonomy (Bloom et al., 1956)<br>Active Learning (Bonwell and Eison, 1991)<br>Flipping the Classroom (Khann, 2011)<br>Montessori Method (Montessori, 1910)<br>Epistemology (Plato, ~360BC)<br>Enhancing Creativity (Robinson, 2013)<br>Development of reasoning (Rousseau, 1762)<br>Elenchus or Socratic method (Socrates, ~400BC)<br>Waldorf Education (Steiner, 1907) |

# List of Educational Theories

| Theorist(s) | Theory | Year | Paper Reference | Overview | Video Link |
|---|---|---|---|---|---|
| [Aristotle](#) | On Education | ~340BCE | Charles Hummel (1999) on the works of Aristotle | Aristotle equated education with being civilised and happy. He saw an education in both the arts and sciences as being a political tool to bring about a happy and self-fulfilled society. | [YouTube](#) |
| [David Ausbel](#) | Meaningful learning | 1963 | Ausubel, D. (1963). The Psychology of Meaningful Verbal Learning. New York: Grune and Stratton. | Learners attach new learning to previously acquired learning - that is what gives it meaning. Therefore teachers should take the time to discover what learners know before introducing new topics and then make the links explicit. | [YouTube](#) |
| [John Biggs](#) | Constructive alignment theory | 1996 | Biggs, John. "Enhancing teaching through constructive alignment." Higher education 32.3 (1996): 347-364. | This postulates three levels of teachers; Level 1 focuses on what students are, e.g. good or bad. Level 2 teachers focus on their performance. Level 3 teachers concentrate on what students do, i.e. how the course content and learning tasks relate to the exam. | [YouTube](#) |
| [Allan Bloom](#) | Bloom's taxonomy | 1956 | Bloom, B. S.; Engelhart, M. D.; Furst, E. J.; Hill, W. H.; Krathwohl, D. R. (1956). Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain. New York: David McKay Company | This describes the order in which we acquire new knowledge. The six stages are; knowledge, comprehension, application, analysis, synthesis and evaluation. The stages should be completed in that order. | [YouTube](#) |
| [Edward de Bono](#) | Six Thinking Hats | 1985 | Edward De Bono. Six Thinking Hats (1985) ISBN 0-316-17831-4 | The traditional method of discourse is the argument. de Bono suggested that this could be replaced in schools by having six ways of viewing a problem: Managing (Blue), Information (White), Emotions (Red), Discernment (Black), Optimistic response (Yellow) and Creativity (Green) - the six thinking hats. | [YouTube - Video 1](#) [YouTube - Video 2](#) |
| [Bonwell and Eison](#) | Active learning | 1991 | Bonwell, C.; Eison, J. (1991). Active Learning: Creating Excitement in the Classroom AEHE- | This is where a practical activity is planned which illustrates the concept being studied. For example, | [YouTube](#) |

| | | | ERIC Higher Education Report No. 1. Washington, D.C.: Jossey-Bass. ISBN 1-878380-08-7. | providing students with a pieces of paper each of which describes a particular stage in a process and asking them to arrange these into a sensible order. | |
|---|---|---|---|---|---|
| Paul de Bra | Adaptive educational hypermedia | 2003 | Bra, P.M.E. De, Aerts, A.T.M., Berden, B. & Lange, B. de (2003). Escape from the tyranny of the textbook: Adaptive object inclusion in AHA!. In A. Rossett (Ed.), Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2003, (pp. 65-71). Chesapeake, VA: AACE. | The computer is taught how to teach (using different learning and personality styles) and then adapts its presentation of materials according to the time the learner takes complete tasks and their level of success. | YouTube |
| Katharine Cook Briggs and Isabel Briggs Myers | Myers–Briggs Type Indicator (MBTI) | 1964 | MBTI type descriptors | This is a questionnaire which, when analysed, puts the learner into one of 16 personality types. The learner can then use their personality type to target their learning preferences. | YouTube YouTube |
| Jerome Bruner | Discovery learning | 1961 | Bruner, J. S. (1961). "The act of discovery". Harvard Educational Review 31 (1): 21-32. | Constructivist theory which emphasises the ability of children and adults to construct and adapt their own view of a subject. This happens when we revisit a topic from several different directions (spiral learning) and then adapt our way of think on the topic so far (scaffolding). | YouTube YouTube |
| Peter Brusilovsky | Adaptive educational hypermedia | 1994 | Peter Brusilovsky, Adaptive Hypermedia: The State of the Art, (1994) | The computer is taught how to teach (using different learning and personality styles) and then adapts its presentation of materials according to the time the learner takes complete tasks and their level of success. | YouTube |
| John Dewey | Social behaviorism | 1938 | Experience and Education | This constructivist theory says that all learning happens through unique and individual experience, rather than by rote learning (the prevalent view at the time). This experience then leads to a growth (learning and social awareness). All learning should be in context, | YouTube |

| | | | | i.e. learn about flowers by looking at them in the field rather than in a textbook. | |
|---|---|---|---|---|---|
| [Rita Dunn and Kenneth Dunn](#) | Dunn and Dunn Learning Styles | 1978 | [Dunn and Dunn web site](#) | The Dunns say that there are five areas which affect learning; the environment (lighting, seating, etc.), emotional state (motivation, responsibility, etc.), social situation (learn alone or learn in a team), physiological preferences (VARK, time of day, control of intake, etc.) and psychological tastes (impulsive/reflective, serialist/holist, etc.). | No video … yet |
| [Noel Entwistle](#) | Surface, strategic and deep learning | 1983 | Entwistle, N.J., and Ramsden, P. (1983). Understanding Student Learning. London: Croom Helm | Surface learners are only interested in getting the minimum they can get away with from a course. Strategic learners will only do the minimum they need to pass. Deep learners want to understand and internalise the material. | [YouTube](#) |
| [Richard Felder](#) and[Linda Silverman](#) | The Felder-Silverman Learning and Teaching Styles Model | 1988 | [R.M. Felder and L.K. Silverman, "Learning and Teaching Styles in Engineering Education," Engr. Education, 78(7), 674-681 (1988)](#) | [The Felder-Silverman test](#) ranks respondents on four continua; Active/Reflective, Sensing/Intuitive, Visual/Verbal and Sequential/Global. The responses are then ranked into no preference, moderate preference and high preference for each type. These can then be used by both students and teachers to use the correct tools for each learner. | [YouTube](#) |
| [Neil Fleming](#) | VARK | 1987 | [VARK Site](#) | The theory is an enhancement of the VAR system developed from neurolinguistic programming. The original Visual, Auditory and Reading preferences was amended by splitting the reading preference into Reading and Kinesthetic. There can be problems if the teaching style is out of kilter with learning style of the individual. | [YouTube](#) |
| [Paulo Freire](#) | Critical pedagogy | 1968 | [About Pedagogy of the Oppressed](#) | Challenging the ways of teaching, both by the teachers and by the students. Both | [YouTube](#) |

| | | | | staff and students have to feel free to criticise and question both the style and the content of the material being taught. | |
|---|---|---|---|---|---|
| [Howard Gardner](#) | Multiple intelligences | 1983 | Gardner, H. (1983/2003). Frames of mind. The theory of multiple intelligences. New York: BasicBooks. Gardner, H. (1993). Multiple intelligences: The theory in practice. New York: BasicBooks. | The theory of multiple intelligences postulates eight different kinds of intelligence, each of which can be measured separately; musical, visual, verbal, logical, kinesthetic, interpersonal, intrapersonal, naturalistic and existential. | [YouTube](#) |
| [Ernst von Glasersfeld](#) | Radical constructivism | 1984 | Von Glasersfeld, Ernst. Radical Constructivism: A Way of Knowing and Learning. Studies in Mathematics Education Series: 6. Falmer Press, Taylor & Francis Inc., 1900 Frost Road, Suite 101, Bristol, PA 19007., 1995. | Knowledge is created by the individual because it is their structure of reality that has meaning for them. These structures are based upon existing foundations and are not objective. | [YouTube](#) |
| [Anthony Gregorc](#) | [Mind Styles Model](#) and[Gregorc Style Delineator](#) | 1982 | Gregorc, A. F. (1982). An Adult's Guide to Style. Maynard, Massachusetts: Gabriel Systems, Inc. Anthony F. Gregorc. Gregorc Style Delineator: Development, Technical, and Administration Manual. Gregorc Associates, Inc., 1984 | This categorises learners into one of four type; Concrete Sequential, Abstract Random, Abstract Sequential, Concrete Random and then displays which learning and teaching strategies work best for that type. | [YouTube](#) |
| [John Hattie](#) | Visible learning | 2008 | Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement. ISBN 0-415-47618-6 | A statistical synthesis of of many thousands of studies into educational practice. These have then been categorised by 138 factors and given a score according to the affect they have on learner achievement. These were then split into six general areas; the student, the home, the school, the curricula, the teacher, and teaching/learning approaches. | [YouTube - Part 1](#) [YouTube - Part 2](#) |
| [William "Ned" Herrmann](#) | Herrmann Brain Dominance Instrument (HBDI) | 2012 | [Herrmann, Ned. "The creative brain*." The Journal of Creative Behavior 25.4 (1991): 275-295.](#) | Four quadrants of thinking styles; logical, details, emotional needs of others and long term planning. You have a score for each quadrant and linking these four dots results in a diamond shape. | [YouTube](#) |

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|---|---|---|---|---|---|
| John Holt | Unschooling | 1970's | Unschooling web site | Unschooling - Children like to learn, but do not like to be taught. They can be taught by guiding rather than by dictat.<br>How Children Fail | YouTube |
| Peter Honeyand Alan Mumford | Activist, Reflector, Theorist and Pragmatist | 1982 | The Manual of Learning Styles | Activists prefer to get stuck in. Reflectors want to consider the problem before starting. Theorist want to take the clear and logical approach. Pragmatists will look for the easy solution that will work for them. | YouTube |
| Ivan Illich | Deschooling society | 1971 | Deschooling Society | The educational institutions have more to do with teaching conformity than providing an education. | YouTube |
| Salman Khan | Flipping the classroom | 2011 | The Flipped Classroom by Bill Tucker also, seeThe Khan Academy | Students watch videos on the topic to be covered the next day rather than the teacher stand in front of a class. The class then becomes a question and answer session in which ideas are explored and internalised. | YouTube |
| David Kolb | Experiential learning | 1975 | Kolb. D. A. and Fry, R. (1975) Toward an applied theory of experiential learning. in C. Cooper (ed.), Theories of Group Process, London: John Wiley | Learners need to cycle through the four stages of learning; active experimentation, concrete experience, reflective observation and abstract conceptualisation. It does not matter where a learner starts in the cycle. | YouTube |
| Jean Laveand Etienne Wenger | Situated Learning | 1991 | Jean Lave and Etienne Wenger (1991) Situated Learning. Legitimate peripheral participation, Cambridge: University of Cambridge Press | Learning is based on and through relevant and engaging learning activities. This is a constructivist approach. | YouTube |
| Ference Marton andRoger Säljö | Deep and Surface Learning | 1976 | Marton F. and Säljö R. (1976) On qualitative differences in learning. I - Outcome and Process - British Journal of Educational Psychology 46, pp. 4-11<br>DOI: 10.1111/j.2044-8279.1976.tb02980.x | Deep learning is where the learner wants to understand. Strategic learning happens when the learner just seeks to pass the exam. Surface learners just wants the minimum. | YouTube |
| Maria Tecla Artemesia Montessori | Montessori education | 1910 | Pedagogical anthropology | Children are encouraged to learn at their own pace and in their own way. The method assumes that children learn by doing. | YouTube |

| | | | | | |
|---|---|---|---|---|---|
| [Gordon Pask](#) | Conversation Theory - Serialist/Holist Learning | 1975 | Gordon Pask (1975). The Cybernetics of Human Learning and Performance. Hutchinson | Serial learners prefer to have the detail and then construct their view from that. Holists require an overview into which the detail can be ordered. | No video ... yet |
| [Jean Piaget](#) | A part of Cognitive Theory | 1964 | [Piaget, J. (1964), Part I: Cognitive development in children: Piaget development and learning. J. Res. Sci. Teach., 2: 176–186. doi: 10.1002/tea.3660020306](#) | Children develop through different stages; Stage 1 - Sensorimotor stage, Stage 2 - Pre-operational, Stage 3 - Concrete operational and Stage 4 - Formal operational. | [YouTube](#) |
| [Plato](#) | Epistemology | ~360BC | [Theaetetus](#) | Plato is created with inventing the concept of epistemology - the theory about the nature of knowledge. He view has been paraphrased (possibly by Plato himself) as, "Knowledge is justified true belief". | [YouTube](#) [YouTube](#) |
| [Cedar Riener](#)and [Daniel Willingham](#) | Learning Styles Don't Exist | 2010 | [The Myth of Learning Styles, *Change: The Magazine of Higher Learning*, Volume 42, Issue 5, 2010](#) | Most learning is meaning-based (i.e. understanding) rather than through a particular learning style preference. | [YouTube](#) |
| [Sir Kenneth Robinson](#) | Enhancing creativity | 2013 | Finding Your Element: How To Discover Your Talents and Passions and Transform Your Life | Current educational practice stifles education because it seeks to regiment the material, its presentation and method of understanding. Creativity is discouraged. | [YouTube](#) [TED](#) [TED](#) |
| [Jean-Jacques Rousseau](#) | Development of reasoning | 1762 | Emile | Current educational practice stifles education because it seeks to regiment the material, its presentation and method of understanding. Creativity is discouraged. | [YouTube](#) [TED](#) [TED](#) |
| [George Siemens](#) | Learning analytics | 2011 | Siemens, George, and Phil Long. "Penetrating the fog: Analytics in learning and education." Educause Review 46.5 (2011): 30-32. [Siemens, George, and Ryan SJ d Baker. "Learning analytics and educational data mining: towards communication and collaboration." Proceedings of the 2nd international conference on learning analytics and knowledge. ACM, 2012.](#) | There are six phases:- establishing data sources, creating the data repositories, providing monitoring tools, creating the methods of analysis and establishing who will have permissions to view each of these analyses. | [YouTube](#) |

| | | | | | |
|---|---|---|---|---|---|
| [Burrhus Frederic (B.F.) Skinner](#) | Operant conditioning | 1938 | [The Behavior of Organisms: An Experimental Analysis, 1938. ISBN 1-58390-007-1, ISBN 0-87411-487-X.](#) | The behaviourist approach requires a response to a stimulus.  If the behaviour was "correct" then a reward was given. | [YouTube](#) |
| [Socrates](#) | Elenchus or Socratic method | ~400BC | [Euthyphro](#) and [Ion](#) | The Socratic method of teaching involves a discussion between in which hypotheses are eliminated by exploring all their ramifications and finding any contradictions or inconsistencies.  If either is found then the hypothesis is rejected, a new one formulated and then tested.  This cycle, Socrates believed, would lead to a better understanding of the world.  Poor behaviour, he argued was just the result of not understand the implications of this behaviour - it was an educational issue. | [YouTube](#) |
| [Rudolf Steiner](#) | Waldorf Education | 1907 | Steiner, Rudolph. "The education of the child in the light of spiritual science." Rhythms of learning. Great Barrington, MA: Anthroposophical Press.(Original work published in 1907) (1989). | This assumes three stages; early (birth to six or seven) - where the emphasis is on hands-on activities and creative play, primary education (six or seven to fourteen) - where the focus is on artistic expression and developing social skills and secondary (aged 14 plus) - where children develop critical skills and an empathetic understandings of the world through the study of mathematics, arts, sciences, humanities and languages. | [YouTube](#) |
| [Robert Jeffery Sternberg](#) | Triarchic Theory of Intelligence | 1985 | [Sternberg, R. J. (1985). Beyond IQ: A Triarchic Theory of Intelligence. Cambridge: Cambridge University Press.](#) | There are three types of intelligence; analytic (the ability to critique a situation), creative (the ability to create good new ideas) and practical (the ability to apply concepts in new areas). | [YouTube](#) |
| [Lev Semyonovich Vygotsky](#) | Zone of proximal development | 1978 (although written in 1934) | Vygotsky, L.S. (1978). Mind in society: The development of higher psychological processes. Cambridge, MA: Harvard University Press. | All new learning should be built on existing learning.  There is a zone around our current state of knowledge in which we can acquire new knowledge if it is linked to our existing knowledge by someone else. | [YouTube](#) |

# The Three Sieves of Proof?

**The Theorem**
Andy has not completed his PhD.

**Metaphysical** – Andys supervisors agree that the PhD has not been completed.  Since there is general agreement on this the theorem is deemed to be correct.

**Engineering** – A dissertation has not been submitted nor that the viva voce taken place.  In the experience of my supervisors, those who have not completed these have not been awarded a PhD.  Therefore Andy has not completed his PhD.

**Scientific** – The University awards the qualifications.  Andy has not got his PhD since there is no record on the qualifications database of Andy having been awarded a PhD.

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_If_ the above is correct then it _could_ be used to assess whether my theora are axiomata.

**Sieve 1 - Metaphysical**
Each theorem can be assessed against each of the items in [the matrix of education](). For example, what is the view of each theory on in the matrix on whether people are naturally curious?  Each item could be scored as one of:-

      XX    - The item explicitly contradicts the theorem.
      x     - The item implies that it contradicts the theorem.
      o     - Either the item does not address the theorem or is agnostic on it.
      ✓    - The item implies agreement with the theorem.
      ✓✓  - The item explicitly agrees with the theorem.

This would not only show whether there is general agreement on each of the theora, but would also place them in context in the literature.

**Sieve 2 – Engineering**
If a theorem gets through the first sieve it could then be tested against the empirical data derived by Hattie.  This would show whether there is any experience of this theorem and whether that experience back-up or rejects the theorem.  For example, which of the criteria in Hattie's list refer to metacognition and how do they score?

**Sieve 3 – Scientific**
If a theorem passes through the first two sieves then the third level is reached.  Here experiments would have to be devised which test the theorem in practice.  For example, the theorem that learners change their preferences could tested by looking at the data from Moodle to see whether they always head for a particular type of instructional material (e.g. text, video or sound) or whether that varies.  This could then be followed up by an interview with the learner in which their clicking patterns are explored (it may be that they just hit the wrong link).

# Theora versus Educational Theories

Theorem 1

    Humans are born curious.

Theorem 2

    It is natural and desirable to maximise metacognitive skills.

Theorem 3

    Learners are not static in any dimension in the short, medium or long term.

Theorem 4

    Capacity to learn within a given time period is finite.

Theorem 5

    The level of motivation to learn is the sum of positive and negative pressures.

Theorem 6

    Retention of information is based on its frequency of use, motivation and time.

Theorem 7

    All items of learning have value.

Theorem 8

    Frequent and clear feedback encourages learning.

## Analysis

| Theorist(s) | Theory | Year | Theorem 1 | Theorem 2 | Theorem 3 | Theorem 4 | Theorem 5 | Theorem 6 | Theorem 7 | Theorem 8 |
|---|---|---|---|---|---|---|---|---|---|---|
| Aristotle | On Education | ~340BCE | | | | | | | | |
| David Ausbel | Meaningful learning | 1963 | | | | | | | | |
| Allan Bloom | Bloom's taxonomy | 1956 | | | | | | | | |
| Edward de Bono | Six Thinking Hats | 1985 | | | | | | | | |
| Bonwell and Eison | Active learning | 1991 | | | | | | | | |

... and so on.

# Visual Learning Categories versus the Theora of Education

**Source**: Visible Learning: A synthesis of over 800 meta-analyses relating to achievement. John Hattie, 2008.

**Please Note**: The colour coding of the values is <u>not</u> supported by John Hattie.  This is merely my attempt to categorise the criteria by helpful to learning (green), neutral (orange) and detrimental to learning (red).  He does, however, conclude that the [Hawthorne Effect](#) has a value of about 0.4.

## Theora

**Theorem 1**

> Humans are born curious.

**Theorem 2**

> It is natural and desirable to maximise metacognitive skills.

**Theorem 3**

> Learners are not static in any dimension in the short, medium or long term.

**Theorem 4**

> Capacity to learn within a given time period is finite.

**Theorem 5**

> The level of motivation to learn is the sum of positive and negative pressures.

**Theorem 6**

> Retention of information is based on its frequency of use, motivation and time.

**Theorem 7**

> All items of learning have value.

**Theorem 8**

> Frequent and clear feedback encourages learning.

## Analysis

| Pos | Domain | Category | Value | Page No. | Theorem 1 | Theorem 2 | Theorem 3 | Theorem 4 | Theorem 5 | Theorem 6 | Theorem 7 | Theorem 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Student | Self-report grades | 1.44 | 43-44 | | | | | | | | |
| 2 | Student | Piagetian programs | 1.28 | 43 | | | | | | | | |
| 3 | Teaching | Providing formative evaluation | 0.90 | 181-183 | | | | | | | | |
| 5 | School | Acceleration | 0.88 | 100-101 | | | | | | | | |
| 4 | Teacher | Micro teaching | 0.88 | 112 | | | | | | | | |

… and so on.

# How the material might look on the web



iPad     08:39 AM
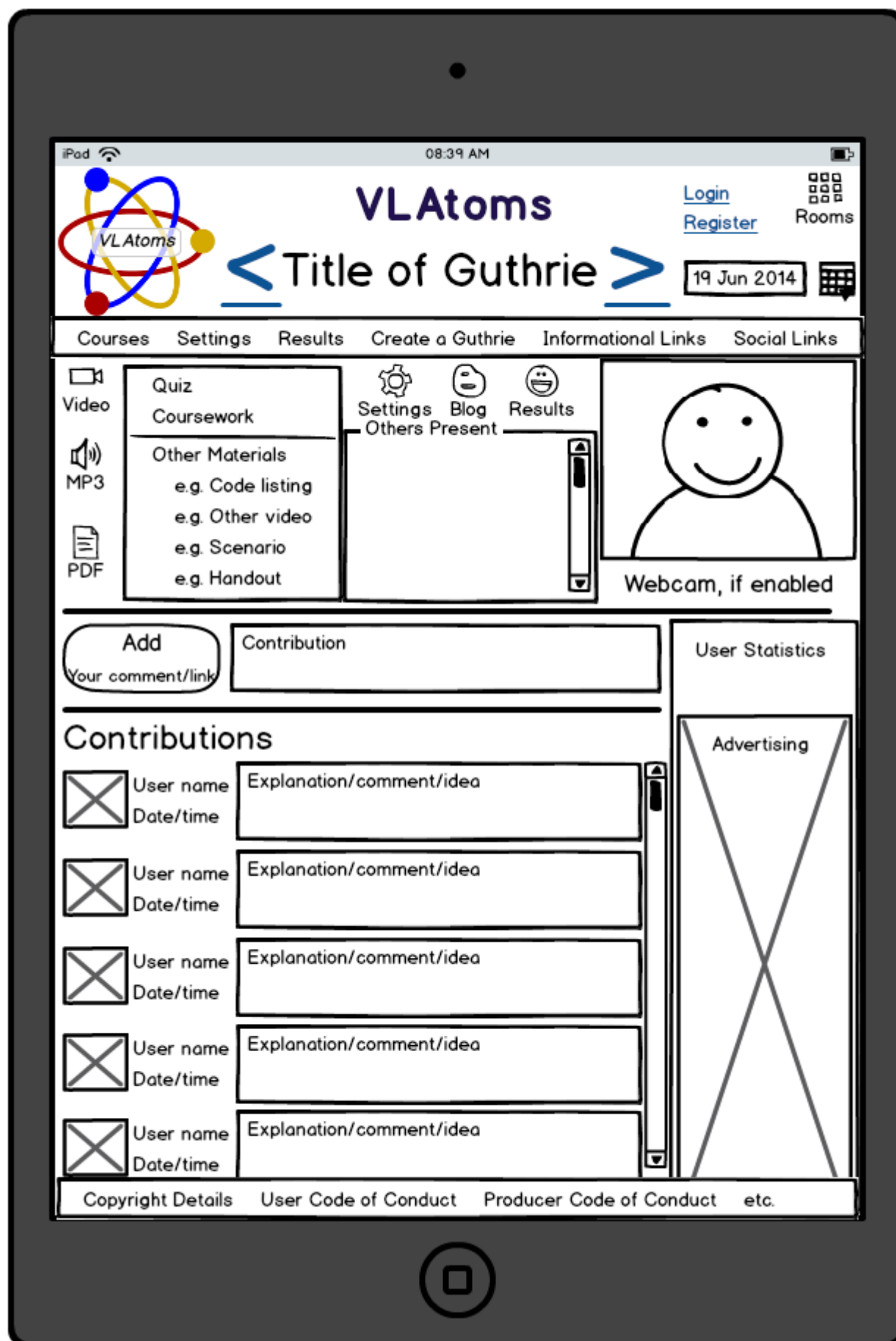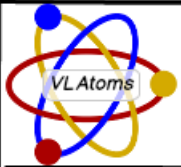
## VLAtoms

VLAtoms

< Title of Guthrie >

Login
Register

Rooms

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Courses    Settings    Results    Create a Guthrie    Informational Links    Social Links

Video

MP3

PDF

Quiz
Coursework

Other Materials
   e.g. Code listing
   e.g. Other video
   e.g. Scenario
   e.g. Handout

Settings   Blog   Results
Others Present

Webcam, if enabled

Add
Your comment/link

Contribution

User Statistics

## Contributions

Advertising

User name
Date/time
Explanation/comment/idea

User name
Date/time
Explanation/comment/idea

User name
Date/time
Explanation/comment/idea

User name
Date/time
Explanation/comment/idea

User name
Date/time
Explanation/comment/idea

Copyright Details    User Code of Conduct    Producer Code of Conduct    etc.

# VLAtoms

< Title of Guthrie >

Rooms

Courses    Settings    Results    Create a Guthrie    Informational Links    Social Links

19 Jun 2014

**Video**

**MP3**

**PDF**

Quiz
Coursework

Other Materials
e.g. Code listing
e.g. Other video
e.g. Scenario
e.g. Handout

Settings    Blog    Results

Others Present in this space

My Contribution

Add
My comment/link

Webcam, if enabled

User Statistics

Advertising

## Contributions

| | | |
|---|---|---|
| User name Date/time of contribution | Explanation/comment/idea | |
| User name Date/time of contribution | Explanation/comment/idea | |
| User name Date/time of contribution | Explanation/comment/idea | |
| User name Date/time of contribution | Explanation/comment/idea | |