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21st Century Pedagogies

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Early in the 21st Century we face significant global social, economic, technological, health and ecological challenges and opportunities. Our future flourishing will depend on our success in meeting these challenges. If we are to successfully meet these challenges, the next generation will need to be the most capable yet, in terms of thinking well and living well. Schools and universities have a critical role, though by no means an exclusive role, in cultivating these capabilities.

In this paper I will:

1. Identify a set of pedagogical tools available to cultivate 21st century capabilities
2. Examine the use of these tools in combination to cultivate various 21st century capabilities
3. Identify the curriculum implications for encouraging the use of these tools in combination to cultivate various 21st century capabilities

Definitions

By "21st Century Challenges" I mean challenges or change imperatives that are significant for the 21st Century – now and in the medium to longer term. These challenges include:

1. Social challenges - such as maintaining and improving the health and vitality of a democratic society. (Nussbaum 2010)
2. Economic challenges - such as preparing ourselves for employment in jobs that do not yet exist, creating ideas and solutions for products and problems that have not yet been identified, using technologies that have not yet been invented (Darling-Hammond 2011 page 2)
3. Technological challenges - such as preparing ourselves for the increasing power of, and dependence on, science and technology; information overload; and increasing global integration (Gardner 2010 pages 7-8)
4. Health challenges - maintaining and improving our physical and mental health
5. Ecological challenges - finding ways to live and work that are less harmful to living systems

By "21st century capabilities" I mean capabilities necessary to address 21st Century challenges. These capabilities include:

1. Critical thinking – the ability to examine, reflect, argue and debate
2. Holistic thinking - the ability to understand how the whole influences and shapes its components
3. Creative thinking – the ability to go "beyond existing knowledge and syntheses to pose new questions, offer new solutions, fashion works that stretch existing genres or configure new ones…" (Gardner 2008 page 156)
4. Imagination - the ability to understand a variety of complex issues affecting the story of a life as it unfolds: to think about development, illness, death, relationships with other living systems (including humans) informed by a wide range of stories and perspectives (adapted from Nussbaum 2010 page 25)
5. Practical reasoning – including the ability to think about the good of all living systems, not just that of one's own species or community.

By "21st century pedagogies" I mean those pedagogies that may be used singly or in combination to cultivate 21st century capabilities.

Introduction

In his recent book *All Systems Go* Michael Fullan suggests that 21st century capabilities are critical, good assessments for them do not exist, and the corresponding instructional practices to teach them have not been developed. (Fullan 2010 page 20)

As I have already indicated, I agree with Fullan that 21st century capabilities are critical. Good assessments for them do exist, but these assessments are not of the "tick-a-box" kind that can be measured in standardised tests. In this paper, I will argue, contrary to Fullan, that instructional practices to teach 21st century capabilities have in fact been developed but they may not be widely practiced.

Learning by Doing

How are these 21st century capabilities – or any capabilities - learned? In his 1916 book *Democracy and Education* the distinguished American philosopher and educator John Dewey

suggested that we learn from experience. For Dewey experience is not, as it is commonly thought of, a "mysterious conduit through which information is conducted from the external world into the mind." Rather, according to Dewey, experience involves a combination of acting or doing or trying something and "feedback" from the world on that action. As Dewey puts it "When we experience something we act upon it, we do something with it; then we suffer or undergo the consequences."

For Dewey feedback is an essential part of experience and learning from experience. He writes "Experience as trying involves change, but change is a meaningless transition unless it is consciously connected with the return wave of consequences which flow from it. When an activity is continued into the undergoing of consequences, when the change made by action is reflected back into change made in us, the mere flux is loaded with significance. We learn something." For Dewey experience, and learning from experience, is not purely a passive undergoing but an active doing and trying.

Whether we learn to walk, to talk, to read, to write, to ride a bike, to swim, to play (games such as cricket or chess), to perform, (drama or music) to think, to drive, to work – we learn to do something by trying it, giving it a go. We refine our ability through regular practice, taking account of the feedback we receive.

Taking Dewey's account of learning to do things as read, how can such learning be best supported? Over thousands of years educators have developed an array of pedagogical tools to support learning. In the first section I seek to catalogue a selection of these tools, and in the second section I consider how these tools can best be used in combination to support learning of 21st century capabilities.

1. A pedagogical toolkit

There are two broad categories of pedagogical tools that might support learning of 21st century capabilities. Pedagogical tools may be teacher-centred involving direct instruction or learner-centred involving indirect facilitation of learning.

Direct instruction

Presenting

Glyn Davis, Vice Chancellor, Melbourne University, Victoria, Australia notes that "Much basic teaching [in universities] is still done through lectures, that traditional if not always effective way to speak to large groups of students – lecture from *lectus,* the act of reading." Davis notes that the best teachers typically do not read aloud from notes. They profess, stimulate, provoke and respond to student interest (Davis 2010 page 37)

Good lectures can *model* 21st century capabilities. For example, a lecture might model critical thinking by having a clear and logical structure.

A lecture can also *demonstrate* 21st century capabilities. A lecture might identify clearly and explicitly a problem and the processes involved in solving that problem.

Worked examples

A worked example is a step-by-step demonstration of how to do something, such as solve a problem or, more specifically, a statement of a problem and the appropriate steps to solve that problem.

Process worksheets

A related way of guiding instruction is the use of process worksheets. Such worksheets provide a description of the phases required when solving a problem as well as hints that may facilitate completion of each phase. Students typically make use of the process worksheet while they are working on the learning tasks and they may use it to observe the intermediate results of the problem-solving process.

Personalised direct instruction

According to Michael Fullan "Quality instruction requires getting a small number of practices right. These practices involve knowing clearly and specifically what each student can and cannot do, followed by tailored intervention that engages students in that particular learning in question, and

then doing the assessment-instruction-correction process on a continuous basis." (Fullan 2010 page 6)

Direct instruction and learning as doing

Direct instruction assumes or involves learners immersed in doing a particular activity (learning by doing). Personalised direct instruction involves a "tailored intervention that engages students in that particular learning in question." Worked examples and process worksheets are designed to be used while learners are engaged in the learning task. If a lecture is to support learning how to do some activity, then it is assumed, or at least anticipated, that the learner is, or soon will be, engaged in that activity. In direct instruction the teacher provides "feedback" to a learner engaged in an activity. The assessment-instruction-correction process is a kind of feedback loop. Worked examples and process worksheets serve a similar role. They provide an instructive "standard" to enable self assessment and correction in the process of carrying out a task.

Indirect facilitation of learning

In addition to the teacher-centred, direct instruction approaches for cultivating 21st century pedagogies are approaches involving learner-centred indirect facilitation of learning. Included in this family of pedagogies are Socratic Pedagogy, Problem-Based Learning, Student Action Teams, so called Active Learning, and pedagogies designed to cultivate imagination. I will describe each of these pedagogies in turn.

Socratic Pedagogy

After inheriting a modest fortune, Socrates used his financial independence to develop the practice of philosophical dialogue. For the rest of his life, Socrates conducted discussions with the aristocratic citizens of Athens, challenging their unwarranted confidence in the truth of popular opinions – through dialogue. Socratic dialogue aims at deeper understanding through the systematic application of the dialectical method that employs critical inquiry to challenge or test the plausibility of popular views. Through this process we can discover universal definitions of the key concepts governing human life, such as courage, love and justice.

The Socratic Method for Thinking has a number of steps:

1. Locate a definition of a key concept widely held and confidently asserted, and described as common sense.

2. Search for exceptions to the definition - situations or contexts where the definition is not true.
3. If an exception is found, the definition must be false or at least imprecise.
4. The initial statement must be nuanced to take account of the exception
5. If one subsequently finds exceptions to the improved definition, the process should be repeated... It is by finding out what something is not that one comes closest to understanding what it is.
6. The product of this process is superior to the product of initial intuition. (Adapted from De Botton 2004 pages 24-25)

For example, interacting with a confident young man, *Euthyphro,* Socrates systematically challenges Euthyphro's idea that doing what is right involves doing whatever is loved by the gods. Such a definition faces a logical dilemma: Either what is loved by the gods is right because it is loved or loved because it is right. If it is right because it is loved, right and wrong becomes arbitrary (if the gods loved murder then murder would be right). If the gods love what is right because it is right, then what is right is independent of the gods – that is, it is loved for features it has in itself apart from its being loved. Socrates thus demonstrated that Euthyphro's initial definition of what is right requires refinement.

The US based philosopher and educator Matthew Lipman developed and refined a dialogue-based inquiry approach to teaching critical thinking called *Philosophy for Children*. The approach is based on a 'community of inquiry' in which children learn critical thinking by working with one another and building on each other's ideas, questioning each other's underlying assumptions, and suggesting alternatives – in true Socratic style.

An example of such an approach is the 2010 trial of Ethics classes in New South Wales, Australia. Lessons were designed by Associate Professor Phillip Cam from the Philosophy Department of the University of New South Wales for a process of discussion-based inquiry, in which students engaged in discussion of ethical issues, guided both by purpose-built thought provoking teaching resources and questioning from the teacher. The lesson topics were Fairness, Lying, Ethical Principles, Graffiti, The Use and Abuse of Animals, Interfering with Nature, Virtues and Vices, Children's Rights and The Good Life.

The lessons operate in the following way:

1. Ethical scenarios are transcribed onto cards and distributed, one to each group of two to three students.
2. Students engage in discussion of their scenario within their group and then declare their position, by placing the card on an appropriately marked place on the floor. (Where there is disagreement within the group or where all members of the group are unsure how to judge their scenario, the card is placed separately, at a place marked by a question mark).
3. Groups give reasons for their decisions about the placement of the cards.
4. Members of the class discuss the various placements and explore their disagreements. Discussion rules include the use of a Speaker's Ball, possession of which confers the right to speak
5. Members discuss general principles underlying their reasons and which principles are more important than others

A similar approach is used in teaching mathematics in countries like Japan and China. Teachers pose a single well-chosen problem to students, which students reason through together. Students individually and as a group develop and present a variety of possible solutions for class discussion and further evaluation until everyone understands the concept from multiple perspectives. At the end of this process, the students may derive a formula or set of principles to characterise what they have learned. (Darling-Hammond 2011 page 13)

Problem based learning

Problem Based Learning also seeks to cultivate learner's reasoning capabilities. Lessons involve the following steps.

1. Students are presented with a problem. The problem should be clear but practical, reflecting the complex, ill-defined, and messy nature of real-world dilemmas. The problem will be incomplete in the sense of lacking information needed for its resolution.
2. Students discuss the problem in a small group. They collaborate in investigating:
   - What they think they already know
   - What they need to find out
   - How they will proceed to investigate the questions
   - What they are learning
   - How and where they can apply the results of their investigations

3. Students engage in independent investigation of what they need to know outside the collaboration. They may draw on multiple sources of information for this – books, the internet, conversations.
4. They come back to the collaboration sharing information and working together on the problem.
5. They present and discuss their solution to the problem.
6. They review what they have learnt from working on the problem. (Barrell 2010)

Problem Based Learning seeks to simulate the collaborative learning and reasoning of the company board room, the Cabinet, or a science laboratory, as they attempt to address complex practical problems and dilemmas, such as the complexities of energy production, sustainable development, providing equitable health care and education, and a fair judicial system.

Student Action Teams

Student Action Teams provide a student centred and active educational approach to community based learning and connection for schools. The steps are as follows:

1. Students are presented with a topic (an issue of local concern) or the students themselves identify such a topic or issue. The team makes decisions on actions fusing *logical arguments and based on evidence* and tries out its decisions, and is open to learning from mistakes. The first step in any decision making is research. This involves collecting information and thinking about it
2. Students engage in independent investigation on what they need to know outside the group –liaising with appropriate community groups
3. Students come back to the group to develop action proposals and then identify an audience for results and proposals
4. The group presents results, findings, proposals, recommendations to the selected audience
5. The group reflects on and evaluates progress (Australian Youth Research Centre 2003)

Student Action Teams seek to simulate, indeed embody, the kinds of reasoning that informs decision making in varied democratic contexts – in which groups of citizens collaborate to address issues of concern in the local community, such as community safety, increasing student attendance, prevention of bullying.

Problem Based Learning, Student Action Teams and Philosophy for Children share the following features:

- Teachers and students share control of decision making, teaching and learning
- Students learn from each other in dialogue, as well as from the teachers
- Learners have experiences in small group collaborations such as listening, reasoning together, and building upon each others' ideas
- Learners are encouraged to pose questions, think critically, make decisions, and draw reasonable conclusions supported by evidence

The main differences between the three pedagogies are the scope or generality of the problems they deal with. Philosophy for Children involves investigation of philosophical problems. Problem-Based Learning involves exploration of messy, complex real world problems of a fairly global nature, or practical methodological problems within a discipline. Student Action Teams investigate local problems that participants seek to address. Philosophy for Children simulates the work of a philosopher; Problem-Based Learning simulates the work of problem solving professions and Student Action Teams simulates the work of local decision makers. All depend on dialogue and reasoning in their different contexts.

Active Learning

A course on *Happiness Investigating its causes and conditions* conducted at the University of Wollongong explores the causes and conditions for happiness at the individual and social level. The question "how can we be happy?" is approached though various perspectives including cultural studies, psychology, economics and sociology.

The philosophy underlying the course is that of active learning. The best way to learn something is to research and learn it for one's self, and even better, to teach it. The course set up situations in which students can learn for themselves rather than being told what to learn. There are no lectures.

The course involves student participation in four tasks.

1. Class participation - Students do the assigned reading (or a different reading of their choice on a similar issue), make observations about the causes and conditions of happiness in everyday life and give a verbal report about this to the class lasting up to one minute.
2. Oral Report on Observation and Theory - Students give a 12 minute oral report on observations they have made and recorded about the causes and conditions of happiness

in their life. They link their observations to happiness writings and to research on a selected theme.

3. Classroom Activity - Students work in small teams to present a learning activity within a tutorial that is designed to engage other students in one of the core skills that research suggests is pertinent to the development and maintenance of happiness.
4. Happiness Consultancy - Students work in small teams to carry out an assessment of the causes and conditions of happiness in a group. They contact the group, negotiate the terms of their study, assess an issue of happiness within the group and make recommendations for increasing the happiness of group members. They write a report for the group members and reflections on the project's methods and findings. (Barker, C and Martin, B, 2011)

Role playing

Role playing – central to the performing arts – can be a powerful way of cultivating sympathetic imagination. The US Philosopher Martha Nussbaum notes that the great Indian philosopher, poet, novelist, playwright, choreographer and educator Rabindranath Tagore used role-playing throughout the school day to explore intellectual positions by asking children to take up unfamiliar postures of thought. Blending mind and body, he encouraged students to celebrate the rituals and ceremonies of religions not their own, and thus to understand the unfamiliar through imaginative participation. He used multi-media theatrical productions to encourage children to explore different roles by adopting unfamiliar bodily stances and gestures. (Nussbaum 2010 page 104)

Imagination classes

In *Earth Time*, David Suzuki describes the pedagogy of a Japanese primary school teacher, Toshiko Toriyama. After teaching for thirty years she established a school based on the writing of an early 20th Century poet Kenji Miyazawa, who saw all living and nonliving things as interconnected by fine threads – like a web. The destruction of any part of the web destroys the integrity of the whole. In Toriyama's Imagination class the children close their eyes and listen to her voice, to music, to sounds and to silence. She invites them to imagine they are eggs in a praying mantis cluster: struggling out of the egg case, exploring their world, the dangers of predators, the need for food, finding a mate – challenges common to all living things. She teaches ecology of water by inviting children to be the water of the oceans, evaporate into the sky, rain into rivers and lakes and become part of their own body. (Suzuki 1998 pages 216-217)

2. Using pedagogies in combination to cultivate 21st century capabilities

Is direct instruction superior to inquiry based approaches?

Extremists challenge the effectiveness of any pedagogies other than those that involve direct instructional guidance. Paul Kirschner, John Sweller and Richard Clark (Kirschner 2006) argue that research on chess expertise, has found that expert problem solvers derive their skill by drawing on the extensive experience stored in their long-term memory and then quickly select and apply the best procedures for solving problems (page 76) He argues that "Based on our current knowledge of human cognitive architecture, minimally guided instruction is likely to be ineffective…. Minimally guided instruction appears to proceed with no reference to the characteristics of working memory, long-term memory, or the intricate relations between them." (page 76)

Taking Kirschner's theory of human cognitive architecture as read, this does not support the effectiveness of direct instructional guidance in all learning. For example, developing expertise in chess (to choose Kirschner's example) does not typically involve direct instructional guidance. Beyond learning the rules of chess, expertise in chess requires playing lots of games and studying the (sometimes annotated) games of experts. Expertise in chess these days admittedly involves learning a lot of opening theory, which again generally involves the study of games, but that is seldom mediated by direct instruction.

Kirschner states that a "worked example constitutes the epitome of strongly guided instruction… The worked-example effect occurs when learners required to solve problems perform worse on subsequent test problems than learners who study the equivalent worked examples. Accordingly, the worked-example effect, which has been replicated a number of times, provides some of the strongest evidence for the superiority of directly guided instruction over minimal guidance." (Page 80)

Supposing that Kirschner is right about the worked example effect, it may be all very well to come up with a worked example in solving a problem in algebra, but quite a different matter to come up with a worked example of a solution to a philosophical problem, or even a mathematical paradox, such as one of Zeno's paradoxes, relating to the infinite divisibility of a finite line or a finite stretch of time. A worked example of a solution to Zeno's paradoxes is not really feasible since there is no agreed solution to these paradoxes. Nonetheless, studying Zeno's paradoxes and investigating various solutions to them can provide valuable insights into the nature of mathematics, space and time and the relationship between these.

Direct instructional guidance, such as following a worked example, may be a useful way to learn mathematics or more aptly, numeracy, but more limited as a way of learning to ride a bike, play chess, play cricket, interpret or write poetry, write well, think well or live well. Direct instructional guidance is fine for learning to solve problems with a clear, definitive solution, but may not be the best way to learn to solve philosophical problems or problems that are complex, ill-defined, and messy – such as the real-world dilemmas that are the subject of investigation in Problem-Based Learning.

Kirschner argues that "Stronger evidence from well-designed, controlled experimental studies supports direct instructional guidance. When students learn science in classrooms with pure-discovery methods and minimal feedback, they often become lost and frustrated, and their confusion can lead to misconceptions." (page 79) Socratic pedagogies such as Philosophy for Children may not involve direct instructional guidance but it certainly *does* involve students receiving extensive feedback and guidance from their teacher and particularly other students. The direct instructional guidance/ minimal feedback contrast is a false dichotomy.

Kirschner and his colleagues appear to be asking the wrong question. They ask "which is better, direct instructional guidance or minimal guidance in teaching people an activity?" A more appropriate question might be "How do people learn (or develop expertise in) an activity? How can teachers best facilitate this learning?"
Generally, people learn an activity by doing that activity. Sometimes direct instructional guidance will help people learn that activity. Sometimes it may be less helpful. It depends on the activity. Where an activity involves solving problems with one right answer and one tried and true way of reaching that answer, direct instructional guidance may be the best way to facilitate learning in that activity. But where there is no agreed solution to a problem, where the problem is complex and messy, and there is no generally accepted algorithm for solving that problem, perhaps a less direct approach is called for, such as philosophical dialogue or problem based learning.

Cultivating critical thinking

Socratic Pedagogy is an excellent tool for cultivating critical thinking. Socratic Pedagogy engages students in philosophical thinking, in giving reasons for their views, accommodating counter-examples to their definitions and identifying principles underlying their points of view. Philosophical thinking is critical thinking par excellence.

Having said this, Socratic Pedagogy could be supported by the explicit teaching of logic, perhaps as part of Mathematics. Through worked examples, students could learn to identify, in a variety of texts, conclusions of arguments and the premises supporting those conclusions. Students could learn different ways of evaluating arguments, again through worked examples, and to distinguish between the validity of an argument (an argument is valid where its conclusion is entailed by its premises) and the soundness of an argument (an argument is sound if it is valid and its premises are true.) Students could learn to identify patterns of valid arguments. Socratic Pedagogy could also be supported by Active Learning pedagogy, such as a debate that allows students to take a position and gather data and develop arguments to support that view. Debates also give students experience with presentation of arguments. Asking students their personal views on an issue and then making them argue for the opposite position could enable students to better understand both sides of an argument.

Cultivating holistic thinking

Imagination classes are a key pedagogical tool in cultivating holistic thinking. These classes assist students to become intelligent readers of the story of a life as it unfolds: to think about development, illness, death, relationships with other living systems (including humans) and much more in a way informed by an understanding of a wide range of stories. They also assist students to be aware of themselves as part of a bigger whole: temporally as part of the great tree of life and spatially as part of bigger living wholes – human societies, ecosystems and the biosphere. Toriyama's imagination class assists students to see themselves as part of a bigger spatial whole, but the approach could be adapted to assist students to see themselves as a part of a bigger temporal whole – part of the tree of life.

We are part of a greater whole encompassing all Earthly living systems. We are part of the Milky Way Galaxy, the solar system, and the Earth. Earthly carbon, hydrogen, oxygen, and nitrogen cycles run right through us connecting us with all living beings. Not only are we connected to all Earthly living organisms spatially, but also temporally. Every individual human is a component of a number of lineages: sapiens; Homo; Primates; Mammals; Vertebrates; Animals; Eukaryotes and organisms, stretching back 4 billion years to a unicellular common ancestor. It takes imagination to see ourselves this way – to see life as one thing – analogous to a vast tree. In the West, we have only begun to see ourselves as part of the tree of life, for at most 200 years. To understand the evolution of life on earth is to be an intelligent reader of the great story of the growth of the tree of life.

British Astronomer John Gribbin tells us "Life begins with the process of star formation. We are made of stardust. Every atom of every element in your body except for hydrogen has been manufactured inside stars, scattered across the universe in great stellar explosions, and recycled

to become part of you." (Gribbin 2000 page 1) This is a recent understanding of our place in the universe, no older than 50 years. To see ourselves and all life on earth as stardust is an act of imagination requiring us to be intelligent readers of the great story of life on Earth and the formation of our solar system.

One way of encouraging such imagination would be for learners to construct a representation of a tree of life such as by contributing to the Tree of Life website, based on research perhaps in their own local area or to construct a representation of a tree of life in a school corridor, wall or playground.

The cultivation of holistic thinking can be supported by direct instruction and active learning in the sciences (astronomy, biology and in particular ecology) and the humanities (systems in geography, context as influencing meaning in language). It can be supported by discussions using Socratic Pedagogy. Consideration of the relationship between parts and wholes is relevant to solving a number of philosophical problems that might be considered in Philosophy for Children or even practical problems that might be considered in Problem-Based Learning and Student Action Teams.

Cultivating sympathetic imagination

A 21st century capability is sympathetic imagination, the ability to think what it might be like to be in the shoes of a person different to oneself, to understand how they might feel in those shoes and be an intelligent reader of that person's story, (Nussbaum 2010 pages 95-96). Role play is a key tool in cultivating sympathetic imagination. Education in the Arts may play a significant role in this. As Professor Robyn Ewing from the University of Sydney, has recently observed in her paper *The Arts and Australian Education: Realising Potential* (citing various authors) the Arts are the window to the soul – both the individual and collective soul. She forcefully argues that the arts can release our imaginations to open up new perspectives and identify alternatives. They provide intercultural dialogue, provoke conversations that challenge the status quo and offer a lens into historical and contemporary social issues, as well as simultaneously challenging them. (Ewing 2010 pages 1-2) Of equal importance in cultivating sympathetic imagination is Socratic Pedagogy that involves listening to others' points of view and the reasons for their views. A principle underlying Socratic Pedagogy is that all participants have the right to express their views and be listened to. By listening to the views of others and the reasons for their views and by prompting deeper articulation of these reasons we can cultivate our sympathetic imagination. Active learning pedagogies, such

as taking a position different from your own in a debate, can also support the cultivation of sympathetic imagination.

Cultivating creativity

Creativity – or thinking outside of the box – may not be best supported by direct instruction, since creativity requires independent thinking, rather than conventional thinking. The Socratic method of thinking which is based on challenging common sense or popular assumptions, or active learning with its emphasis on encouraging students to find out things for themselves rather than being told what to think, are likely to be more conducive of creativity than didactic pedagogies. On the other hand, creative thinking requires mastery of a discipline or disciplines, and this may be best supported by a combination of direct instruction and inquiry-based approaches.

3. 21st century curriculum

While a thorough consideration of 21st century curriculum is beyond the scope of this paper, I will conclude this paper with a discussion of curriculum issues as they relate to pedagogy. Curriculum specifications in syllabus documents can influence the types of pedagogies adopted by teachers. For example, giving too much emphasis to knowledge in a syllabus over skills or capabilities, or specifying too much content (knowledge) in syllabus documents can result in pressuring teachers to rely on didactic pedagogies to deliver that content. 21st century capabilities are best cultivated through using a combination of didactic and inquiry-based pedagogies. While in many English speaking nations there is a well-established division of labour between curriculum developers and teachers that Curriculum authorities make decisions about what is in the curriculum and teachers make decisions about how to teach it, curriculum developers need to be mindful of the influence on pedagogy that curriculum might have. It is important not to over-emphasise content knowledge in the design of syllabuses over skills or capabilities. For similar reasons care needs to be taken with the amount of content specified in syllabus documents. There are political pressures to include too much content in syllabus documents, since it is considered that to say that particular content should not be included in the curriculum is to suggest that it is not important.

It is sometimes suggested that 21st century pedagogies require an integrated curriculum rather than a subject based curriculum. An integrated curriculum may have certain advantages over a subject-based curriculum in terms of encouraging learners to make connections across disciplinary boundaries. However, 21st Century capabilities can be learned *within* disciples as well as across disciplines. Critical thinking, holistic thinking, creativity and imagination can be learned in the context of a wide range of disciplines. Philosophy for Children does not need to be a separate subject but can be part of disciplines such as Mathematics, Science, English, History and so on.

Conclusion

In this paper I have outlined several 21st Century pedagogies

- Direct Instruction
- Philosophy for Children
- Problem Based Learning
- Student Action Teams
- Active learning
- Role playing
- Imagination classes

These pedagogies are best used in combination with each other to cultivate 21st century capabilities.

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