

LEARNING IN DEPTH: STUDENTS AS EXPERTS



NEARLY EVERYONE who has tried to describe an image of the educated person, from Plato to the present, includes at least two requirements: first, educated people must be widely knowledgeable and, second, they must know something in depth.

The first criterion is fairly straightforward – almost everyone associates being well educated with knowing a fair amount about the world, about its history and geography, about politics in their own and other countries, about what is generally going on in the sciences, about the arts and literature, and so on. In addition, we expect that breadth of knowledge not to be a loose assemblage of facts, but also to involve some conceptual schemes that give it order and give the person some general understanding. We also expect the educated person to have developed habits of critical reflection on what is known, along with a commitment to continuous learning.

The second criterion – depth of learning – is less well understood. Most commentators on education recognize that having a relatively superficial knowledge of many things is not adequate to provide an understanding of – to put it a bit vaguely (as it is usually put) – the way knowledge works, or the nature of knowledge, or the insecurity of knowledge. By learning about something in depth, we come to grasp it from the inside, as it were, rather than accumulating breadth of knowledge to which we remain always on the outside. With regard to the knowledge we learn in breadth, we always rely on the expertise of others; when learning in depth, we develop our own expertise. That in-depth learning carries over to a better understanding of all our other, broader knowledge.

EN BREF Presque tous ceux qui ont tenté de décrire ce qu'est une personne instruite incluent au moins deux critères : une personne instruite doit détenir des connaissances diversifiées et certaines connaissances approfondies. Selon cette proposition d'apprentissage en profondeur, les élèves devraient s'engager dans des recherches portant sur un seul sujet, en plus du programme d'études régulier, pendant leurs 12 ans de scolarité publique. Guidés par leurs enseignants, ils passeraient de la simple accumulation de faits et de renseignements aux activités complexes d'organisation, de classification, d'analyse et de création de théories à propos de leur sujet. Ils seraient encouragés à perfectionner leurs aptitudes d'apprentissage, à mieux comprendre la nature même du savoir et à apprendre à distinguer le savoir des croyances et des opinions. Cette proposition leur permettrait de rehausser leur confiance en eux-mêmes en tant qu'apprenants, stimulerait leur imagination et favoriserait l'apprentissage comme une fin en soi.

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KNOWLEDGE BASE.**



We would like to advocate a somewhat novel approach to 'learning in depth' (LiD) that seems likely to meet the second requirement for an educated person. Our aim is to describe a simple and relatively inexpensive addition to the curriculum that could have a transformative influence on the school and radically change most students' experience of education in the process.

The basic idea is that, in the first week of schooling, all children would be assigned a topic that they would continue to learn about during their whole school career, in addition to the usual curriculum. Topics could be as varied as apples, ships, dust, the solar system, or the circus. Students would meet regularly with their supervising teachers for guidance and suggestions as they build personal portfolios on their topics over the twelve or so years of regular schooling. The aim is that each child, by the time of graduation from high school, will know as much about that topic as almost anyone on earth. Our expectation is that this process will transform most children's relationship to, and understanding of the nature of, knowledge. This transformation is especially relevant for those low-achieving students for whom our schools currently do so little.

Much of the work on building the portfolio would be expected to take place out of school hours, though for the first few years more support might be given within the school. This project would be a kind of extended homework, in which students might engage intensively at some times, and relatively little at others; the school's main role would be to provide the guidance, support, and encouragement required to keep them exploring.

BENEFITS OF IN-DEPTH LEARNING

Educational philosophers have consistently claimed that only by learning something in depth can a person escape from the confusions that commonly accompany a superficial knowledge base. The persistence of Kilpatrick's 'Project Method', wherein students focus detailed attention on some topic for a sustained period, also speaks to the recognition by many that greater depth in learning has obvious benefits.¹ Katz and Chard suggest that such projects offer a valuable form of teaching that is complementary to regular forms of systematic instruction.²

Gardner, in *The Disciplined Mind*, gives a strong set of arguments for why learning in depth is crucial to producing an adequately educated person and adequate understanding of any topic. He shows that only by disciplined work can one get beyond the parochial level of knowledge that is too common. He notes, too, that the understanding gained from the intensive study of one topic or issue gives one a sense of the nature of knowledge that serves as a 'litmus test' to apply to other topics and issues.³

The work of Hirst and Peters illustrates one way of applying in-depth learning to the curriculum.⁴ They reach the conclusion that becoming educated requires knowing something in depth, and so one expects them to provide some criteria for what constitutes 'depth' of learning. Instead we are left to conclude that depth is what most schools – and certainly the British 'public' schools and grammar schools of their time – provide to the higher achieving students by allowing them to specialize in some topic, which they might then go on to study in college or university. According to this model, what constitutes depth

IN a ceremony during the first week of Grade 1, Nathan receives a portfolio with his name and the name and picture of his topic: 'apples'.

In the first years Nathan is encouraged by his teacher to explore the story of apples. How many different types of apples are there? What kind of shapes do they have? How many colours do they come in? What do you use them for? During his first year Nathan may learn that there are 7,500 varieties of apples and that they all descended from one type of apple that grew in Kazakhstan many years ago, and which still grows there. He may learn about the story of Johnny Appleseed and how apples spread across the U.S. His teacher or librarian may introduce him to sayings such as 'one rotten apple spoils the whole barrel', which could lead him to explore brown spots on apples in his fridge.

During the year Nathan will have the opportunity to meet children in other grades who are also studying apples. He meets Emily in Grade 3 and Ryan in Grade 6, and from them he learns about making apple juice and paintings of apples by Cezanne and Magritte.

As he moves up to Grade 2, he will continue to meet with his teacher regularly to discuss ideas about apples and what to explore next. His teacher will have thought about different ways to engage his imagination in his topic and will encourage Nathan to think in metaphors, to see in apples their history, their popular use, their chemistry, their use in art and literature, their economic opportunity. In Grade 3 Nathan will add an online component to his learning through which he can increase his knowledge and work collaboratively with other students, in another class in his school or in a school across the country.

As he moves into his middle school years, his teacher will help him categorize and organize his work and develop a system that tells his stories in ways he finds more meaningful as he gets older. He may look at the location of the original apple orchards, Kazakhstan, in light of its role as a territory in the USSR when it was the USSR's primary nuclear weapon testing site, and how this may have affected the ability of the fruit to reproduce.

By the time Nathan is moving into his final school years, his interest in theoretical abstractions may lead him to consider the place of apples in the complex natural system, and whether they are threatened by agricultural policies such as genetic modification, which may in turn lead him to think about ethical issues to do with ecology and sustainability. A sense of agency may encourage him to get involved in political action groups that look at reduction of pesticides and an increase in organic farming methods.

During each phase of his development his teacher has provided learning tools that have coincided with his needs. Now, his teacher will help guide him in developing abstract concepts. She will encourage his development of theories and raise anomalies to encourage more sophisticated thinking.

By the end of his twelve years Nathan will be an expert in apples with a special interest in the ecological impact of pesticides used in apple production. But more than this, he will have an extensive toolkit for acquiring and organizing knowledge.

in the study of history or chemistry is determined by the historians or chemists who contribute to the curriculum.

A more focused area of learning-in-depth research concerns the use of student-created portfolios, which contain materials demonstrating growth and change in students' knowledge. Portfolio use has shown great promise in enhancing different dimensions of learning, as well as promoting learners' autonomy.⁵

The proposed LiD program draws from the principles mentioned above, incorporating ideas about disciplined, on-going learning in depth and portfolio use. However, the LiD proposal offers a different approach than earlier proposals. No previous proposal has suggested a focused, twelve-year attention to a specific topic that is ungraded and left significantly under the direction of the student's own interests. Also, unlike many other programs, our LiD program seems relatively easy to implement; it does not require virtuoso teaching in order to work adequately, nor does it require significant changes to the rest of the curriculum.

EXPLORING IDEAS, AND EVENTUALLY ENGAGING IN INTELLECTUAL

EXCHANGES BASED ON DETAILED AND COMPLEX KNOWLEDGE AND

UNDERSTANDING, OFFERS A MEANS FOR ENLIGHTENMENT THAT

STUDENTS CAN TAKE WITH THEM INTO THE WORLD.

Consider a process in which one gradually expands one's knowledge of a single topic for twelve years. With teachers' help, this will not be – and cannot be – simply an accumulation of facts. Students' interests will change; they will find themselves reorganizing their portfolios time and again; they will pursue particular features of their topics for months at a time; they will move from accumulating knowledge, to finding 'records' and romance in their topics, toward developing theories [see sidebar page 20].

First, the LiD process hones learning skills that can then be transferred to other content areas by encouraging students to research, organize, classify, and then create theories that enrich their understanding of the knowledge. Students will carry these knowledge-building and organizational skills to other content areas throughout their schooling.

Second, it builds a deep understanding of the nature of knowledge and teaches students the difference between knowledge, belief, and opinion. Once students have the experience of deep knowledge, they will be less prone to present opinions that are not secured by sound knowledge and less gullible when they come in contact with beliefs and opinions, however assertively these are stated or promoted.

Third, by enabling students to become expert in a topic, the LiD program builds students' confidence in themselves as learners.

Fourth, it stimulates the imagination. The imagination is one of the great 'workhorses of learning', but it can work only with what people know. The more they know and the more stimulating material they have acquired about a topic, the more engaged and enriched will be their imaginations, and the more imaginatively they will be able to solve problems.

Fifth, LiD encourages learning for the sake of learning. Our self-awareness and growth as human beings requires

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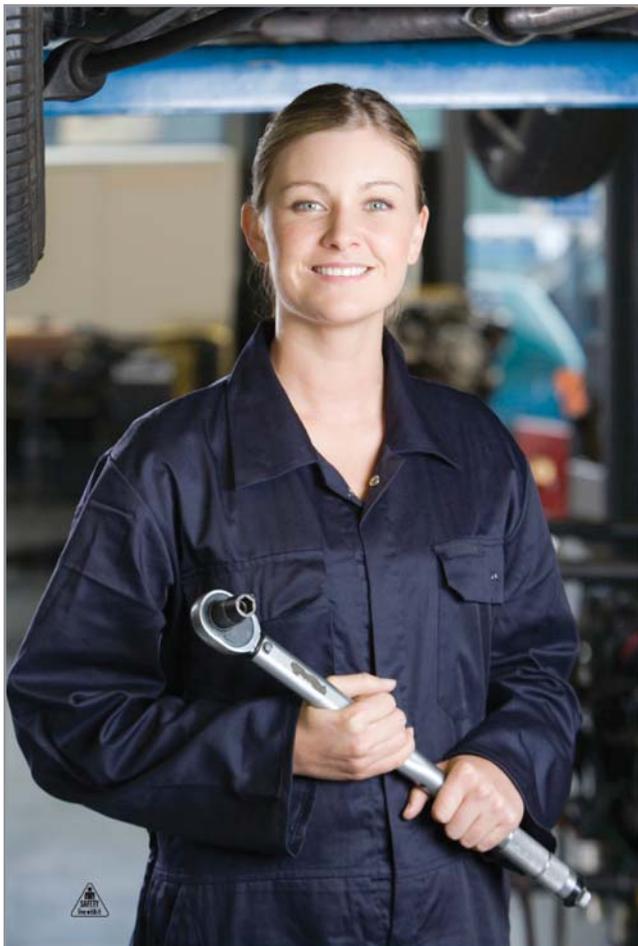


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more than either the superficiality or the utilitarian purpose that have become increasingly common in our educational environments. More important than these is the depth of our engagement with life and our openness to life-long learning. Exploring ideas, and eventually engaging in intellectual exchanges based on detailed and complex knowledge and understanding, offers a means for enlightenment that students can take with them into the world.

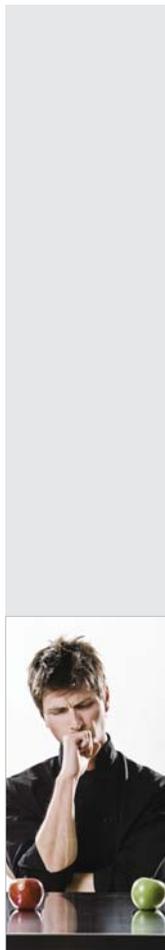
Of course, there may be good reasons why no one has suggested a program like this before. So let us look at some potential objections – and some suggested responses explaining why, in our view, none of them is sufficiently compelling to discourage us from establishing some LiD pilot projects.

CAN IT WORK?

The most common objection to this proposed program is that students will become bored and want to change their topics. No one has yet gone through such a program, so all we can do is speculate about this concern, but some pilot projects could help us determine if it is valid. We suspect that after the first few years, students will have invested so much – and gained so much expertise – that they will not want to give up their topics. It seems to us unlikely that student engagement in such an ungraded, un-coerced exploration of a specific topic over a number of years could be pre-judged based on our experience in current classrooms, where students move from topic to test to topic, gaining superficial acquaintance with a subject before moving on. In discussing this project with teachers, we have frequently heard them recollect that in Grade 5, for example, they studied pyramids for the whole year. They loved it, and it is what they remember most vividly about their schooling. This project is designed to provide that kind of experience in spades to all students.

Another common objection is that it would be impossible to implement such a program with students changing schools, moving through grades, and so on. It would be a logistical nightmare. We recognize that administratively complicated projects are often doomed from the start, but we think that the dog of educational value should wag the tail of administration, rather than the other way around. We also think it is easy to exaggerate the difficulties of implementing LiD. We believe that, after the first three or four years, students will generally need only marginal help; they will carry their portfolios with them, and they will have on-line communities of 'dust' or 'apples' co-explorers helping. We anticipate LiD leading to structures and communities of learners like we have not yet experienced in K-12.

Some people object to the idea of arbitrarily allotting topics to children, thinking students should be given a choice. This issue is more complicated than it might initially appear. One principle underlying the LiD program is that 'everything is wonderful'. This might seem a tad romantic, but it is not such a strange principle to those who have become experts about something. We observe that the more one learns about something, the more interesting it becomes; the more a student learns about dust or apples, the more they will want to know. Again, because the program offers students something that currently is not a part of typical schooling, we should be wary of judging it simply in light of current schooling.



Another telling objection, perhaps paradoxically, is that the Internet will destroy the possibility for the program to work as planned. You can imagine the parent, after the student is given the topic of 'trees', downloading 55 gigabytes of information the next day. This is a complicated issue, and some guidance that will limit students' use of on-line information resources for the first few years might prove beneficial.

A further objection concerns the apparent fact that this proposal does not come with sets of empirical studies and 'evidence-based' backing. When any proposal is made in education today, we have been alerted to ask, "What is the research base that supports it?" It is worth reflecting on the oddity of this common reaction. It is a truism that nearly all questions of any significance in education are matters of value or meaning, and that currently dominant forms of educational research are unable to contribute much to these analytic tasks. Still, this hasn't deterred people from the knee-jerk question. Perhaps we might ask, as a preliminary response, what is the research base for inclusion of Social Studies in the curriculum? Or the Arts? Or the Sciences? You can look in vain for such research findings. These areas of study are included on the basis of values and meanings; they represent activities we value, and they instantiate what we mean by education. Their existence in the curriculum comes from our analysis of what we value and mean, not from empirical research. LiD has to be addressed on the same basis. The questions we have to deal with are: What is the educational value of LiD? Is it consistent with our definition of an educated person? And will it change students in the way we predict?

Of course we can draw on empirical research to help us work out which elements of the program are likely to be successful in meeting the aims of LiD and which are not. As mentioned above, for example, an empirical study of the pilot projects can help us determine how many students will get bored with their topics. Will it be 10 percent, 50 percent, or 90 percent?

Other objections may well arise, but so far none has persuaded us that the program is not viable, and not worth at least some serious pilot projects in a number of different schools.

CONCLUSION

This idea is barely a year old,⁶ so we do not have trials, pilot projects, or precedents to work with. We are thinking about the idea, analyzing its potential, and assessing whether such a novel program is worth adding to the work of the school. But we are encouraged. After discussing it with teachers and administrators, pilot programs are currently in place or being planned for implementation in 2009 in Canadian, U.S., Australian, and Japanese schools.

Many who have expressed interest in the idea are driven by their concern that students leaving schools today simply know too little. They point to surveys of students' knowledge on entering colleges – and these are presumably the more knowledgeable students. These survey results have been consistently depressing, from the influential 1981 Educational Testing Service report⁷ and the 1983 Nation at Risk report,⁸ to more recent dramatic summaries, such as Bauerlin's charmingly titled *The Dumbest Generation: How the Digital Age Stupefies Young Americans and Jeopardizes*

Our Future (or, Don't Trust Anyone Under 30).⁹

Such surveys expose large-scale ignorance of the contents of the curriculum. They do not tell us all we need to know about our students' education, but they hardly encourage complaisance. We think that the proposed LiD program can mount a significant attack upon the levels of ignorance that currently survive our schooling efforts. **I**

KIERAN EGAN is Canada Research Chair in Education at Simon Fraser University. He has written a number of books about education, including *Teaching as Story Telling* and *The Educated Mind: How Cognitive Tools Shape our Understanding* (both from University of Chicago Press.) He has received both the Grawemeyer Award in Education and the CEA-Whitworth Award, and is a Fellow of the Royal Society of Canada.

KRYSTINA MADEJ is a post-doctoral fellow with the Imaginative Education Research Group, Faculty of Education, Simon Fraser University. Her academic research looks at how narrative is mediated by different technologies, is a part of our enculturation process, and creates meaning for us in our immediate and global environment.

You can learn more about the LiD initiative and get involved in the discussion at www.ierg.net/LiD.

Kieran Egan's book, *The Future of Education: Reimagining Our Schools from the Ground Up* (Yale University Press, 2008) will be reviewed in the next issue of Education Canada.

Notes

- 1 Thomas H. Kilpatrick, "The Project Method," *Teachers College Record* 19 (1918): 319-334.
- 2 Lilia G. Katz and Sylvia C. Chard, *Engaging Children's Minds: The Project Approach* (Norwood, NJ: Ablex Publishing, 1989).
- 3 Howard Gardner, *The Disciplined Mind: What All Students Should Understand* (New York: Simon & Schuster, 1999).
- 4 P. H. Hirst and R.S. Peters, *The Logic of Education* (London: Routledge & Kegan Paul, 1970).
- 5 J.A. Arter and V. Spandel, "Using Portfolios of Student Work in Instruction and Assessment," *Educational Measurement: Issues and Practice* (Spring, 1992): 36-44; V. Klenowski, *Developing Portfolios for Learning and Assessment: Processes and Principles* (London: RoutledgeFalmer, 2002); S. Meisels and D. Steele, *The Early Childhood Portfolio Collection Process* (Ann Arbor, MI: Center for Human Growth and Development, University of Michigan, 1991).
- 6 Kieran Egan, *The Future of Education: Reimagining Our Schools From the Ground Up* (New Haven: Yale University Press, 2008).
- 7 Thomas S. Barrows et al., *College Students' Knowledge and Beliefs: A Survey of Global Understanding*. The Final Report of the Global Understanding Project. Educational Testing Service (New Rochelle, NY: Change Magazine Press, 1981).
- 8 National Commission on Excellence in Education, *A Nation at Risk: The Imperative for Educational Reform* (Washington, D.C.: Government Printing Office, 1983).
- 9 Mark Bauerlein, *The Dumbest Generation: How the Digital Age Stupefies Young Americans and Jeopardizes Our Future* (or, Don't Trust Anyone Under 30) (New York: Jeremy P. Tarcher/Penguin, 2008).



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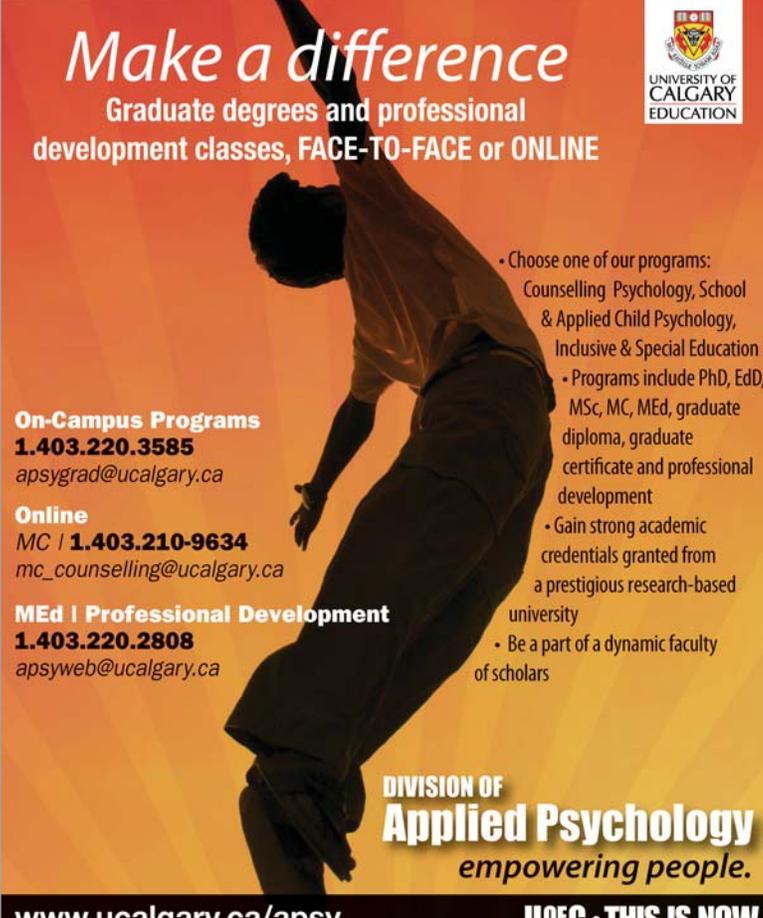
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