A Brief Guide to
Learning in Depth

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The basic idea

In the first week of schooling, each student will be assigned a random topic to learn in depth. The topics might include "birds," "apples," "the circus," "railways," "the solar system," etc. Students will then study their assigned topics throughout their elementary and secondary education, along with the usual curriculum.

They will meet regularly with their supervising teachers, who will give guidance, suggestions, and help as students build personal portfolios on their topics. The aim of Learning in Depth is for each student, by the end of her or his schooling, to know as much about that topic as almost anyone on Earth.

The project proposes, and draws on what research is available to suggest, that this process of Learning in Depth has the potential to transform the schooling experience of nearly all children by transforming their relationship to, and understanding of, the nature of, knowledge.
Some potential benefits of LiD

For students:
- Provides knowledge of a topic in great breadth and depth
- Generates a deep understanding of the nature of knowledge
- Engages students' imaginations and emotions in learning
- Builds confidence and pride in their knowledge
- Develops expertise in organizational and research skills

For teachers:
- Encourages discover along with students
- Removes pressures to grade and assess
- Working with enthusiastic learners
- Enriches regular teaching

For the school:
- Provides a means for older and younger students to cooperate in learning
- Builds the school into a centre of expertise or Knowledge Hub on many topics
- Enriches the culture of the school
- Real and virtual displays and students’ expos of topics will provide a community focus of attention
An example

It is the end of Sara’s first week of school and Sara’s family has joined her for a special ceremony. Sara and her classmates will each be given a topic that they know they are to study for the rest of their school years. There is much excitement as the children prepare to discover what they are to become experts in. Sara watches as each of her classmates is given a topic. One of her close friends is given the topic, dust, another is given the topic, cats. Sara is excited with anticipation and suddenly it is her turn. She goes onto the stage in her turn and is given a folder. Inside is a small colorful tile on which her topic is written, along with a picture and her name. Her teacher reads it to her, and Sara announces to the audience that she is to learn about apples for the next twelve years. The tile is added to a wall of such tiles in the school.

Her teacher also has received materials related to each of the topics her group of students is to study, with suggestions for how to get the process of engagement and discovery going.

So in her first meeting with Sara a week or so later she asks what Sara’s caregivers and older friends have suggested she might do to learn about apples. Then the teacher suggests that Sara checks out the variety of apples she can find in her local supermarket, and, if possible, buy one of each.

Sara begins to make a list of the apple varieties she finds, and develops, with her teacher’s help, a table in which she gives them one to five points for taste. Then Sara finds further varieties at farmer’s markets, and adds their names to her table, and scores them by taste too. She also draws them, trying to show what is different about each variety. As time goes on, Sara discovers more varieties, and added them to her table. She learns by the end of the first year that there are about 7,500 varieties of apple in the world, and that nearly all those apples are descended from a wild sweet apple that grew in Kazakhstan thousands of years ago, and that still grows there. She looks it up on a map.
Her teacher also suggests she might like to learn stories or poems about apples, and so she learns about William Tell, Johnny Appleseed, Isaac Newton, and many others.

Then her teacher guides her to a series of sayings about apples, whose meanings Sara is to explore: “the apple of my eye,” “one rotten apple spoils the whole barrel,” “an apple a day keeps the doctor away.” She learns to write in part so that she can make a list of these. Her page of such sayings is decorated with a barrel of brightly colored apples on a pirate ship, because she has discovered that apples protected sailors, as they do us, from scurvy.

As year succeeds year, Sara’s portfolio on apples grows, in directions driven in part by her own interests and in part by the guidance of her teachers, family, and older students who also have the same topic for their portfolio. As you might flick through her portfolio as she enters secondary school you will see segments on the fact that apple trees are part of the rose family and that the biggest apple was around 4 pounds. She has a small file explaining why apples float. There is a note that the current Lady apple was first cultivated by an Etruscan woman called Api, and in France it is still called ‘pomme d’Api’—a good way to be remembered, Sara noted. The Greeks and Romans prized apples, and knew about twenty varieties: Sara has a complex “family tree” showing the development from those early apples to our current abundance of varieties.

By the end of her schooling Sara is an expert on the medicinal properties of apples and how we metabolize its various healthful components, as that has become a special interest of hers. She also knows many poems about apples—a favorite being W.B. Yeats’s “The song of Wandering Aengus,” with its magical images of a “glimmering girl / With apple blossom in her hair” and of how Aengus and the glimmering girl would pluck “till time and times were done / The silver apples of the moon, the golden apples of the sun.”

And she knew much about the Trojan war, because it had begun with Eris throwing a golden
apple which Paris of Troy awarded to Aphrodite as the most beautiful of the goddesses, after Aphrodite had bribed him with Helen of Sparta. She is also active in campaigns to preserve rare apple varieties, as the few commercially grown varieties are vulnerable to diseases. She is knowledgeable about the production of apples in different countries, and learned a good deal of mathematics as she calculated the proportions of apples produced in the U.S. and China and the prices at which they were sold on different world markets.

She knows that the apple is related to the rose, and her knowledge of apples is rich in images, songs, flavors, stories, mysteries, and massive knowledge that intricately traces the history of this wonderful fruit from its source in Asia to today’s many varieties and the major orchards of the world, and who owns them, costs of production, profits, transportation problems, and on and on. Like all her classmates, she is massively expert about something, and it has come at little cost in teacher-time, and has beneficially impacted everything else she has done in school.

Sara met Jon at a friend’s party. They talked about their topics and decided that they should do a joint presentation at the end of the year. Jon’s topic was birds, and they began work on a presentation that would show the many ways in which apples and birds interacted. Threading through their presentation was the Italian folk tale of the Singing Apple and the Talking Bird.

Jon’s older cousin, it turned out, also had apples as a topic, and Jon invited Sara to meet him when he next visited. Sara took along an outline of her portfolio and the section on the historical development of apple species, of which she was most proud. Jon’s cousin had his laptop with him and showed Sara a world map he had drawn which showed what species of apples were grown where and in what quantities. They discussed whether they might be able to merge the information they had and produce a similar map for every century from ancient Greek times till today.
Q. Won’t students become bored with the same topic for twelve years?
A. Boredom is a product of ignorance; generally, the more we know about something, the more interesting it becomes. An underlying principle of the LiD project is that “everything is wonderful, if only we know enough about it.”

Q. The random assignment of topics is absurd. Why not let students choose their topic?
A. Children’s interests at age five tend to change quite often. A particular topic may be stimulated by a recent movie and change in a week; even the dinosaurs so loved by typical five year olds commonly lose their appeal after a few years. There are a number of reasons to hold to the random assignment.

Q. Wouldn’t this be too complicated to organize?
A. Certainly it will be a challenge. If we are more committed to an educational system than a school system, then we can make it work. It will cost something, of course. Even if each student meets a supervisor for only half an hour per month, that becomes a significant time requirement. But the cost will be tiny compared to educational budgets. Teacher-librarians, volunteer parents, and older students studying the same topic in depth can mitigate the costs.

Q. What is the research basis for this project?
A. Nearly all questions of educational importance are matters of value and meaning, and these are beyond the reach of the dominant forms of research methods we currently
have available. What research basis is there for including Social Studies in the curriculum?

**Q. Aren’t many of these topics developmentally inappropriate for the ages at which they are to begin?**

**A.** We have always liked, and agreed with, Jerome Bruner’s argument that “any subject can be taught effectively in some intellectually honest form to a child at any stage of development” (1966, p. 33).

**Q. Will the “depth” knowledge transfer to other curriculum areas?**

**A.** We suspect that it will transfer unstoppably. The kind of expert knowledge and layered understanding that will be built up over the years cannot fail to affect how students deal with other subjects and topics in the curriculum. Remember, we have never had anyone—anyone—go through such a program. Our suspicion, and hope, is that it will transform students’ experience of schooling and our sense of what schooling can be.

**Q. This project isn’t going anywhere without teacher buy-in—why do you imagine it will get it?**

**A.** When we have talked with administrators about LiD, the most common response we get is that they think it would be a great addition to what the schools can offer, but that teachers will never go for it. When we speak with teachers, the most common response we get is that it is a great addition to what schools can offer and that they would love to be involved in ungraded exploration of topics with their students on an individual basis, if we can find the time—“This is exactly what I got into teaching for!” one teacher put it recently—but, they commonly conclude, administrators will never go for it. We think both groups will go for it.
Some possible topics

<table>
<thead>
<tr>
<th>Apples</th>
<th>Spiders</th>
<th>Dust</th>
<th>The wheel</th>
<th>Mollusks</th>
<th>Trains &amp; Railways</th>
<th>Rivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>The circus</td>
<td>Sacred buildings</td>
<td>Habitations</td>
<td>Water</td>
<td>Rivers</td>
<td>The moon</td>
<td>Camels</td>
</tr>
<tr>
<td>Butterflies and moths</td>
<td>Teeth</td>
<td>Mushrooms</td>
<td>Tools</td>
<td>Measurement of time</td>
<td>Measurement of space</td>
<td>Tea</td>
</tr>
<tr>
<td>Ships</td>
<td>Grass</td>
<td>Trees</td>
<td>Flowering plants</td>
<td>Whales</td>
<td>Cats</td>
<td>Horses</td>
</tr>
<tr>
<td>Beetles</td>
<td>Insects</td>
<td>Ants</td>
<td>Maps</td>
<td>Wood</td>
<td>Clothing</td>
<td>Writing systems</td>
</tr>
<tr>
<td>Flags and heraldry</td>
<td>Volcanoes</td>
<td>Rice</td>
<td>Money</td>
<td>Navigation</td>
<td>Ponds</td>
<td>Spices</td>
</tr>
<tr>
<td>Birds</td>
<td>Special clothing</td>
<td>Edible roots</td>
<td>Air</td>
<td>Games</td>
<td>Jungles</td>
<td>Leaves</td>
</tr>
<tr>
<td>The Solar system</td>
<td>Cooking</td>
<td>Silk</td>
<td>Worms</td>
<td>Apes</td>
<td>Monkeys</td>
<td>Mountains</td>
</tr>
<tr>
<td>Olympic games</td>
<td>Theatre</td>
<td>Islands</td>
<td>Explorers</td>
<td>Mills</td>
<td>Castles</td>
<td>The book</td>
</tr>
<tr>
<td>Bridges</td>
<td>Seeds</td>
<td>Sheep</td>
<td>Cattle</td>
<td>Counting systems</td>
<td>Rubber</td>
<td>Light</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Jewels</td>
<td>Fantasy stories</td>
<td>Bees</td>
<td>Ancient ruins</td>
<td>Butterflies</td>
<td>Weaving and spinning</td>
</tr>
<tr>
<td>Coral</td>
<td>Clouds</td>
<td>The submarine world</td>
<td>Electricity</td>
<td>Deserts</td>
<td>Clothing</td>
<td>Algae</td>
</tr>
<tr>
<td>Numbers</td>
<td>Calculating tools</td>
<td>Emotions</td>
<td>Fish</td>
<td>Wheat</td>
<td>Hands, feet, hooves, and paws</td>
<td>Storms</td>
</tr>
<tr>
<td>Stone</td>
<td>Dance</td>
<td>Spaces under the earth</td>
<td>Pirates</td>
<td>Inventors</td>
<td>Glass</td>
<td>Humor</td>
</tr>
<tr>
<td>Paper</td>
<td>Dyes</td>
<td>Wool</td>
<td>Wells</td>
<td>Tunnels</td>
<td>Cotton</td>
<td>Water transport</td>
</tr>
<tr>
<td>Tides</td>
<td>Steel</td>
<td>Skin</td>
<td>Space craft</td>
<td>Submarines</td>
<td>Paints and their uses</td>
<td>Coffee</td>
</tr>
<tr>
<td>Frogs and toads</td>
<td>Pests</td>
<td>Color</td>
<td>Oil</td>
<td>The Arctic and Antarctic</td>
<td>Mail systems</td>
<td>Iron</td>
</tr>
<tr>
<td>Ice Ages</td>
<td>Glass</td>
<td>The printing press</td>
<td>Goats</td>
<td>Gold</td>
<td>Tundra</td>
<td>Electricity</td>
</tr>
<tr>
<td>Energy</td>
<td>Dams</td>
<td>Clocks</td>
<td>Bones</td>
<td>Coal</td>
<td>Food preservation</td>
<td>Compass</td>
</tr>
<tr>
<td>Chemicals</td>
<td>Canals</td>
<td>Musical instruments</td>
<td>Aircraft</td>
<td>Carpets</td>
<td>Cereals</td>
<td>Irrigation</td>
</tr>
</tbody>
</table>
What would a teacher who would like to start such a practice in the classroom (at least for a year) have to do to organize such a project?

First the teacher would need to have available a set of suitable topics so that each student would have a different one to work with. A list of such topics, and the criteria that can be used to choose additional ones, can be found on the previous page.

The teacher will also need to have done some preliminary search for the kind of information, and the kinds of experience that can give students information, about each of the topics. (This needn’t be anything like as onerous as it sounds, in that teachers will already have such information for nearly all the topics. But some Internet searching might help to give some further ideas and engaging facts to start the students off.) For example, beginning Sara on an exploration of what varieties of apples were locally available would be something any teacher would have suggested. Then organizing a table for classifying what she was learning would be straightforward. Each topic would suggest somewhat different beginnings for the student, but none should be very challenging for a teacher. The LiD website (www.ierg.net/LiD) has examples of many ideas for starting topics off.

The other task is to engage the student’s imagination with the topic. Again, most teachers will be skilled in doing this, but further help might be found on the website IERG website (www.ierg.net), and also in such books as An imaginative approach to teaching (Egan, 2005). Presenting the students with a folder to begin their portfolio development at a small ceremony will further help to engage them and stimulate the students’ commitment to their topics.

The parents or other caregivers will be important to the project, so teachers should try to arrange that they attend the ceremony in which the topics are given to the students. That occasion can be used to explain to the parents something of the nature of the adventure the students are beginning on. A handout should also be prepared for the parents and caregivers, suggesting how they might help the students. It is important also that the handout indicate ways in which the parents should not “help” the students, by, for example, downloading 55 gigabytes of information the day after the student is given the topic. The point is that this is a slow beginning to a long exploration, and the explorer is the student, though, of course, parents and others can explore along with them.
FOUNDATION OF LEARNING IN DEPTH

The main foundation is a theory of cultural recapitulation, best described in Kieran Egan’s *The Educated Mind: How cognitive tools shape our understanding* (Chicago: University of Chicago Press, 1997), and further developed in *The Future of Education: Reimagining our schools from the ground up* (New Haven: Yale University Press, 2008.) In this somewhat Vygotskian theory, accumulating knowledge leads to the development of distinctive kinds of understanding. A common theme of the theory is that the imagination can only work with what we know and consequently learning in depth is important also for stimulation of the imagination.

“A new theory of education that is (believe it or not) useful. ... 'The Educated Mind' is something very new and different.”


“Kieran Egan has one of the most original, penetrating, and capacious minds in education today. This book provides the best introduction to his important body of work.”

-- Howard Gardner, *Harvard University*

“Almost anyone involved at any level or in any part of the education system will find this a fascinating book to read.”

-- Richard Fox, *British Journal of Educational Psychology*

“Egan proposes a radical change of approach for the whole process of education. ... There is much in this book to interest and excite those who discuss, research or deliver education.”

--Ann Fullick, *New Scientist*

Further information about this idea can be found at http://www.ierg.net/lid, and in the forthcoming book “Learning in Depth: A simple innovation that can transform schooling.”