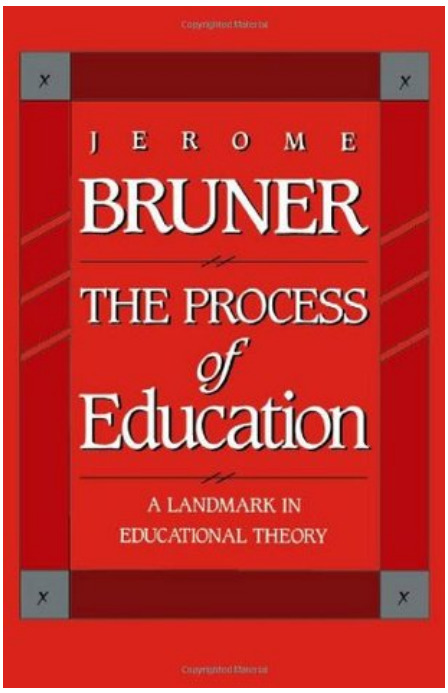

The Process of Education

Jerome Bruner

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In this classic argument for curriculum reform in early education, Jerome Bruner shows that the basic concepts of science and the humanities can be grasped intuitively at a very early age. He argues persuasively that curricula should he designed to foster such early intuitions and then build on them in increasingly formal and abstract ways as education progresses. Bruner's foundational case for the spiral curriculum has influenced a generation of educators and will continue to be a source of insight into the goals and methods of the educational process.

The Process of Education Details

Date	:	Published January 1st 1976 by Harvard University Press (first published November 30th 1960)
ISBN	:	9780674710016
Author	:	Jerome Bruner
Format	:	Paperback 128 pages
Genre	:	Education, Nonfiction, Psychology, Teaching, Philosophy, Theory

From Reader Review The Process of Education for online ebook

Becca says

Foundation text, I have now read thee.

Leanna Aker says

Timeless educational classic. Bruner discusses the role of structure in learning (schema and the like), readiness for learning, intuition, and the desire to learn. His insights resonate with most educators, and they are simple and relevant, even today (book was written in the early 60's)

Bill Van Loo says

This little book is one of the clearest elucidations of what curriculum is all about that I've ever read. Excellent. I borrowed it from the library, but will be adding a copy to my teaching library.

Shannon says

A good conversation starter. Bruner and other concerned intellectuals got together in the late 50s, early 60s and mapped out some areas that teachers and other curriculum creators might want to look at in order to boost our children's learning. Though it seems that many of their ideas have been ignored in favor of corporate agendas, they are still relevant and pursued by alternative educators today.

Mac Hull says

4.5/5

Irene says

Pretty informative, some really interesting ideas, and still relevant today even though it was written 50 years ago.

It really is amazing how relevant these books written so long ago are to modern educational problems... It makes me think of how little we've progressed.

Stuart Macalpine says

The text is unbelievably in tune with the educational world it fore-shadows by 40 years. It not only outlines many of the concerns we are going through as we articulate the curriculum at UWCSEA, but also identifies quite nuanced points about how these ideas play out.

Some quotes below are considered:

Chapter 1: introduction

"The main objective of this work has been to present subject matter effectively-that is, with due regard not only for coverage but also the structure."
This is the foundation of our approach that all disciplines have within fundamental structures in the way that they understand the world. It starts here. The text also had a strong influence on the International baccalaureate.

"Whereas the early emphasis have led to research studies on the transfer of formal discipline-the value obtained from training of such faculties as analysis, judgement, memory, and so forth-later work tended to explore the transfer of identical elements or specific skills.… These studies have stimulated a renewed interest in complex learning of a kind that one finds in schools, learning designed to produce general understanding of the structure of the subject matter." 6

Bruner describes these transferable understandings or features of knowledge as"tropisms". To us they are essential understandings or standards.

"The three fundamentals involved in working with equations are commutation, distribution, and dissociation. Once a student grasps the ideas embodied by these three fundamental he is in a position to recognise somewhere in new equations to be solved are not new at all, but variants upon a familiar theme. Whether the students knows the formal names of these operations is less important to the transfer and whether he is able to use them."8

"Good teaching that emphasises the structure of the subject is probably even more valuable for less able students than 51, it is the former rather than the latter who is most easily thrown off the track by poor teaching"

"Ideally schools should allow students to go ahead in different subject as rapidly as they can. The administrative problems raised when one makes such an arrangement are almost invariably beyond the resources schools have available for dealing with them. The answer will probably lie in some modification or abolition of the system of greater levels in from subject, notably mathematics, along with the program of course enrichment in other subjects."

"If earlier learning as to render later learning easier it must do so by providing a general picture in terms of which the relations between things encountered earlier and later I made it clear as possible"12

"The early teaching of science, mathematics, social studies and literature should be defined to teach the subject with scrupulous intellectual honesty, but with an emphasis upon the intuitive grasp of ideas"

Chapter 2: the importance of structure

"The first object of any active learning over and beyond the pleasure it may give is that it should serve us in the future. Learning should not only take us somewhere that should allow us later to go further more easily.

"The attitude that things are connected and not isolated is a case in point. One can imagine a kindergarten game is designed to make children more actively alert to how things effect or are connected with each other- a kind of introduction to the idea of multiple determination of events in the physical and social world"

"To recapitulate, the main theme of this chapter has been that the curriculum of the subject should be determined by the most fundamental understanding that can be achieved of the underlying principles that gives structure to that subject"

The best way to create interest in the subject is to render it worth knowing, which means to make the knowledge gained usable in once thinking beyond the situation in which the learning has occurred"

Chapter 3: readiness for learning

"We begin with the hypothesis that any subject can be taught effectively in some intellectual honesty form to any child at any stage of development." 33

What is most important teaching basic concepts is that the child can be helped to past progressively from concrete thinking to the utilisation of more conceptually adequate modes of thought. But it is futile to attempt this by presenting formal explanations based on logic that is distant from the child's manner of thinking and sterile in its implications for him. Most teaching in mathematics is of this sort. The child learns not understand mathematical order but rather to apply certain devices or recipes without understanding their significance and connectedness. They are not translated into his way of thinking. Given this inappropriate start he is easily led to believe that the important thing is for him to be "accurate"-though accuracy has less to do with mathematics and computation."

"Curriculum ought to be built around the great issues, principles, and values that a society deems worthy of the continual concern of its members." 52

Chapter 4: intuitive and analytical thinking.
"Much is been said in the preceding chapters about the importance of the students intuitive, in contrast to his formal, understanding of the subject encounters. The emphasis in much of school learning and student examiner is a upon explicit formulations, upon the ability of the student to reproduce verbal or numerical formulation. It is not clear, in the absence of research, whether this emphasis is in the medical to the later development of good intuitive understanding-indeed it is even I'm clear what constitutes intuitive understanding. Yet we can distinguish between inarticulate genius and articulate idiocy."

Doni says

Despite approaching education backwards from how I approach it (deductively rather than inductively), I enjoyed Bruner's thoughts. He describes how we can remember ideas better if they are inserted into a general structure and advocated for the development of intuitive as well as analytic judgment. He also, apparently, is the originator of the spiraling curriculum, feeling that any subject can be taught to any age level as long as the appropriate language and ideas are used. I don't know how I haven't been exposed to this seminal thinker until this late in my education career!

Elaine says

Dense, but very useful to anyone who wants to pursue a career in education.

Ilib4kids says

(k:Bruner) 370.11 BRU
Back Cover review:
...Jerome Bruner shows that the basic concepts of science and humanities can be grasped intuitively at a very early age.... should be designed to foster such early intuition and then build on them in increasingly formal and abstract ways as education to be progress. Bruner's foundational case for the spiral curriculum has influenced a generation of educations...

Ranks as one of the most important and influential works on education. (Fortune)
Search by : Conception of Learning, Conception of knowledge
Concept learning, also known as category learning, concept attainment, and concept formation, is largely based on the works of the cognitive psychologist Jerome Bruner. Bruner, Goodnow, & Austin (1967), Ref: Finnish Lessons.

Books mentioned:
Toward a Theory of Instruction by Jerome Bruner (How to apply theory of "Process of Education".
The Relevance of Educationby Jerome Bruner.
Beyond the Information Given: Studies in the Psychology of Knowing
Three Thousand Years of Educational Wisdom: Selections from Great Documents
Taxonomy of Educational Objectives Book 1: Cognitive Domain by by Benjamin S. Bloom
Fantasy and Feeling in Education by Richard Matthew Jones
Syntactic Structures by Noam Chomsky
How to Do Things with Words by John Austin
Productive Thinking by Wertheimer, Max (classic book)
Geometry and the Imagination by David Hilbert (German Mathematician, great book)

Piaget, Chomsky, Levi-Strauss: a profound effect on author.

Man: A Course of Study, usually known by the acronym MACOS or M.A.C.O.S., was an American humanities teaching program, popular in America and Britain in the 1970s. It was based upon the theories of

Jerome Bruner, particularly his concept of the **"spiral curriculum"**

School Mathematics Study Group (SMSG)
Physical Science Study Committee (PSSC)
Biological Sciences Curriculum Study
The University of Illinois Arithmetic Project,created in 1958, directed by Professor **David A. Page** (one of most experience teacher in elementary math.)
Educational Testing Service

Dualism: usefulness vs. ornamental.
Usefulness: as Benjamin Franklin refer as 1. Skills of a specific kind 2. General understanding P4

P16: Four themes and one conjecture:How best to aid the teacher in the task of instruction.
Chap 2: The important of **structure**
Chap 3: The **readiness** of learning
Chap 4: **Intuitive** and analytic thinking
Chap 5: **Motives** for learning
Chap 6: Aids to teaching

p13 ... But they(children) cannot put these ideas into formal language or manipulate them as grown-ups can.

Chap 2
p22 How do we tailor fundamental knowledge to the interests and capacities of children?... It requires a combination of deep understanding and patient honesty ... in a way that is simultaneously exciting, correct, and rewardingly comprehensible.... We fond much patient honest ... that has come to naught because authors did not have a deep enough understanding.
P27 Any working scientist is usually able to say something about the way of **thinking or attitudes** that are a part of craft.
P29 One hears often the distinction between "doing" and "understanding"...a sharp line drawn between "rote drill" and "understanding",... or **learn by rote.**

p38 But it is futile to attempt this by presenting formal explanations based on a logic that is distant from the children's manner of thinking.... Much teaching of mathematics is of this sort. The child learns not to understanding mathematical order but rather to apply certain device or recipes without understanding their significance and connectedness....Given this inappropriate start, he is easily led to believe that the important thing is for him to be "accurate"- though accuracy has less to do with mathematics than with **computation**.

Chap 3
p43 So too with the teaching of physics, which has much in it that can be profitably taught at an inductive or intuitive level much earlier. Basic notions in these field are perfectly accessible to children of seven to ten years of ages, provided that they are divorced from their mathematical expression and studied through materials that the child can handle itself. My comment: this is exactly the same as what I figure out how to teach children, I even go further, children have enough mental ability to be self-taught.

p45 In such game, children first discover an entirely qualitative notion of chance defined as an uncertain event, contrasted with deductive certainty. The notion of probability as a fraction of certainty is discovered only later.
...Interesting in problems of probabilistic nature could easily be awakened and developed before the

introduction of any statistical processes or computation. Statistical manipulation and computation are only tools to be used after intuitive understanding has been established. If the array of computational paraphernalia is introduced first, then more likely than not it will inhibit or kill the development of probabilistic reasoning.
One wonders in the light of all this whether it might not be interesting to devote the first two years of school to a series of exercises in manipulating, classifying and or... My comment: need to be done until high school.

Chap 4
P55 **inarticulate genius** (by his operations and conclusion,reveals a deep grasp of a substance but has not much ability to "say how it goes") vs. **articulate idiocy** (is full of seeming appropriate words but has no matching ability to use the ideas for which the words presumably stand.

Mathematician, physicists, ... stress the value of intuitive thinking in their respective areas. In mathematics, for example, intuition is used with two rather different meanings. On the one hand, an individual is said to think intuitively when, have worked for a long time on a problem, he rather suddenly achieves the solution, one for which he has yet to provide a formal proof. On the other hand, an individual is said to be a good intuitive mathematician if, when others come to him with questions, he can make quickly very good guesses whether something is so, or which of several approaches to a problem will prove fruitful.

Intellectual development in the child: according to Piaget and others
1.Preschool up to 5-6 years old
2.stage of concrete operations.
3.formal operations (by Geneva school)

The acting of learning 3 process p48
1.Acquisition of knowledge.
2.transformation
3.evaluation.

Secondary education: junior high school or middle school, begin with 6th or 7th (age 11 or 12)
Junior high school 7th - 9th grade.
high school, 9th grade (age 14) 12th grade (age 18).

James Samuel Coleman
David Riesman P71 (commentator of american secondary school social setting)

Chap 6 Aids to teaching
1. Model devices (mathematical block to academic type programs (one type is self-contained, entertaining,PBS nova , another entire substance of a course, like great courses,)
2. Dramatizing devices.
3.automatizing devices. (like modern-day computer-based programs)

My Review:
1. A lot of theories match to my observation of my child mental development, and basic the same to my own education theory. Try to address what to teach, when to teach, how to teach. Very theoretical approach.
2. Too complicated. The author does not realized the children do not need be taught. They can learn by themselves. The trouble in today education is not "children can not learning", but learn something not appropriate to brain capacity, e.g Arithmetic in K-5, 100% guarantee failure, Children train to by rote, not by understanding, the basic structure are far deep, and could not easily by children by such young age. Just as it

is definitely failure to teach baby to walk before 1 year old.
3. Not have a enough experience as a teacher to experience common phenomenon. "I teach, but they do not learn" as in John Halt's book, and try to solve its mystery.

Jessica says

Short simple read that expounds sound principles for developing classroom curriculum. Although he does not expand on the spiral model extensively in this book, the conceptual framework is intuitive and persuasive for developing curriculum for all grade levels (particularly though for elementary).

WhizKid says

Discovered at After-Words bookstore in downtown Chicago. $9.00.

I am devouring this book.Worth of reading time over time.

Ahmed Chicktay says

The book is a bit dated, but the content and challenges for schools and education are the same. The challenge for schools still remain, how do they at scale, implement all the knowledge that has been gained from research on children and how they learn. There is a great chasm between what we know and what actually happens within the classroom. In my opinion, the problem still remains the all encompassing institution of school itself.

Araminta Matthews says

This book is dated--or, at least, you might look at its publication date and imagine it to be too far out of date to be relevant in the 2012 ecology or e-learning and instructional design. I'm here to say that if you fell into that initial assessment of this book and its theories, you'd be wrong. Sure, some of the terminology is out of date, but I found virtually every aspect of this book to be widely applicable to today's landscape. I was particularly intrigued by (and inspired to further research) his theories on intuitive learning and how best to facilitate the development of intuitive skills in students. In addition, his chapter on teacher's aides directly applies to e-learning in the modern era! He suggests that teachers tend to gravitate to tools for the sake of the tool rather than for a directly applicable use of that tool in facilitating transfer of learning. In other words, as teachers, we tend to say, "Oh, look at that shiny new tool! Let's figure out how to use it in class!" when we should be saying, "What am I trying to teach my students and what tools will help me facilitate that learning?" That same question applies to e-learning. Very impressed with Bruner. :)