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The art of questioning.

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The Art of Questioning

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CHAPTER I

INTRODUCTION

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INTRODUCTION

PURPOSE

It is the intention of this study to combine and evaluate material found in a review of the practical theory and research on the various aspects dealing with the art of good questioning. We feel that the practical worth of such a study is found in the following statements:

1. The scattered material on the subject of good questioning is combined in one piece of work either in text or in bibliography.
2. The questioning problem is dealt with in a logical and practical manner from the procedures and the formulation of good questions to the mental pattern each question type hopes to elicit.
3. From the basic types of questions used, examples are formulated illustrating the purpose of each type of question.

The use of the question is as old as education itself. In fact, this may be one of the great obstacles that the question and the art of good questioning has to overcome before the true value is recognized by a large number of the every day practioners in our class rooms. Actually the concept of questioning is so old that it is often considered synonymous with that of education. If one deals with the learning process and not so much the subject matter, we suspect there is that close relationship.

In other respects, this purpose of questioning as a functional part of the learning process often has been relegated to those archives reserved for vague concepts because its outstanding feature, a boon to the thinking process, was obscure and pushed into the back ground by the more tangible results produced by rote recitation and drill.

Whatever the past has shown concerning the questioning process, it seems that once again educators are pointing out the real nature and function of the question as it pertains to modern education.

^{1/}
Bossing summarized the importance of questioning quite well when he stated that regardless of whether it is silent or orally expressed, the question is among the first stimuli to the mental life of the child. He continues by saying that throughout life it remains as one of the outstanding mainsprings for, or to, mental

^{1/}Nelson L. Bossing, Progressive Methods for Teaching in Secondary Schools. Houghton Mifflin Company, Cambridge, 1935, p. 282.

activity. Since the modern teaching-method approach centers around stimulation and direction of the learning activity, the question makes itself available to the teacher to enhance the value of the stimulating process. Thus the true nature of the question moves out from behind the shadows of some of its component parts and again is seen in its full splendor in its roll as a real aid to the educational process.

Though few studies have been made concerning this questioning procedure, those that have, offer conclusive evidence that improvement can be made in our classroom concerning the use of questions in the learning process. One of the first outstanding studies made in this field was by Stevens.

Stevens realized that a question and answer recitation could become a period of the richest opportunity for true education for the children in the classroom. From her study the following information seems valid and important.

^{1/}Stevens conducted this study to find the efficiency of instruction as measured only by the number of questions that arose during the class period.

The nature of the investigation took the study into the classroom. The schools that were used were considered as representative schools. The classes in which the observations took place were conducted by,

^{1/}Romiett Stevens, The Question as a Measure of Efficiency in Instruction, Teachers College, Columbia University Contributions to Education, No. 48. New York; 1912. pp. 8-15.

according to authorities, above average teachers. Many different subjects were taught, but always the instruction was analyzed by questioning alone. The total length of time of the study took four years.

The observations were of two parts. Part one, or one phase of the observation, consisted of random observations (100) of six subjects of the high school curriculum. The number of questions and their nature were recorded. The second part consisted ten observations of selected classes; that is one class was observed for an entire day in all its classes and the aggregate number of questions were recorded.

Stevens found that the average number of questions for a day's activity of one class was 395. With the average of 400 questions and answers besieging a class in the course of a day, Stevens felt that among other things this high pace:

1. Increased nervous tension.
2. Found the teacher doing most of the work and not directing it.
3. Caused verbal and superficial judgment.
(little time for recall and reflecting)
4. Gave little time to generate the gentle art of expression.
5. Found the teacher setting the pace and as a result gave little thought to individual differences.
6. Made the class a place to display knowledge rather than a place to use it.
7. Aided little in developing self-reliance and independent mental work.^{1/}

^{1/}Ibid., pp. 16-26.

From the report the following statement seems to sum up the general implications from the above statements.

"Never-the-less, the fact remains that a large number of questions (barring modern language and developmental lesson) is a valuable indicator, a prominent symptom, of bad instruction, while number is not the full measure, it is a very large factor in estimating efficiency, larger probably, than any other single factor."^{1/}

Monroe and Carter conducted a study as to the use of different types of thought questions in the secondary schools, and their difficulty. The method of investigation that they used was the sending of questionnaires to a large number of teachers in the seventh, eighth, and high school grades. The questionnaires contained twenty types of thought questions.^{2/}

1. Selective recall.
2. Evaluating recall.
3. Comparison of two things on a single designated basis.
4. Comparison of two things in general.
5. Decision for and/or against.
6. Causes or effects.
7. Explanation.
8. Summary.
9. Analysis.
10. Statement of relationships.
11. Illustrations or examples.
12. Classification.
13. Application.
14. Discussion.

^{1/} Ibid., p. 44.

^{2/} Walter S. Monroe, Ralph E. Carter, The Use of Different Types of Thought Questions in Secondary Schools and Their Difficulty for Students, University of Illinois. Bulletin No. 14, 1923, p.6-7.

15. Statement of air.
16. Criticism.
17. Outline.
18. Reorganization.
19. Formulation of new questions.
20. New methods of procedure.

These questionnaires called for a per centage of each type used in the classroom. The teachers were asked to check the five types of questions that would least likely be answered satisfactorily by the students. The teachers were also asked to mention the faults in answering the three most difficult kinds, and the per centage wrong answers due to the faulty procedure used in answering thought and memory questions.^{1/}

From the study the following conclusions were formulated.^{2/}

"Teachers are not sufficiently conscious of the types of questions which they are accustomed to ask and of the significance of these types, and in general teachers do not analyse unsatisfactory answers to questions in order to ascertain whether such answers are due to a faulty technique on the part of the student."

In short there was little agreement among the teachers as to the grade level, difficulty and frequency of certain questions.

Both of these studies indicate that there has been a lack of understanding as to the many functions of the question in our schools. Both of these studies have aided the progress that has been made in this field over the years.

Another study was made by Helseth showing the improvement in

^{1/}Ibid., p 8-10.

^{2/}Ibid., p 26.

thinking about questions in United States History made by seventh and eighth grade pupils when they were encouraged to ask questions with regard to United States History, and to answer these questions according to their own plans.

The study was a year project in which the same teacher was to conduct the class for that period of time. A number of different types of records were kept. There were certain conditions that were understood by the pupils.

1. The class was free to discuss any question pertaining to United States History.
2. The class was free to use any method of studying and reciting it thought helpful.
3. The class was responsible for making good use of its time and being able to give a reason for anything it wished to do.
4. The class was to carry to fair completion anything it starts itself.
5. Persons must do (even if in a poor way) any work assigned them by the majority of the class.

The study revealed that at first answers were single words and little thought was put on the question unless the teacher insisted upon it. Gradually the students realized the importance of combining and changing materials that had already been answered in the light of the more recent questions, and did so. The encouragement to ask questions and the emphasis on the classification of material already

1/Inga Olla Helseth, Children's Thinking, Teacher's College, Columbia University, New York: 1926, p.7.

discussed to aid constructive thinking increased pupil participation over the year from 40 to 84 per cent.^{1/}

From these studies we can see that much work needs to be done to make the question a valuable part of the thinking process, and that if correctly fostered once it is established the fruits of the effort can be observed in the classroom.

^{1/} Ibid., pp. 34-37.

CHAPTER II

HISTORICAL BACKGROUND

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HISTORICAL BACKGROUND

Questioning is not a contemporary phase of education, for curiosity is as ancient as man himself. In every being a natural stimulus stirs all the different faculties; just as the body tends to develop itself, so too, does the mind. The mind thirsts for knowledge, and is aroused by a wonted curiosity of anything which in any shape or form may interest us; and, because of our restless, inborn desire for happiness, which shall never truly be satisfied in man, we are always seeking to increase what we have.

As a result, the question and answer method of pedagogy developed from this curiosity incentive, and, by far, has proven to be one of the most valuable and one of the most ancient aids that we have in education today. Perhaps the question and answer method's success has been due to the naturalness of the procedure, which stems from curiosity, and also due to the variety of functions to which this method lends itself ... both to the educator and the educand.

The writers, in the process of their research, have found evident traces of this pedagogical method being used from the ancient times of Socrates to the 19th century contemporaries.

It was thought to be more enlightening to the readers if the historical era was presented as four distinctive periods, namely, Ancient, Medieval, Modern and Contemporary, as these said periods had certain characteristics that either influenced or were influenced by educators and philosophers.

In acquiring the historical background data found in the chapter, the general method used was that of individual research. It was agreed that we would commence with Socrates. The research was, from this starting point, of a casual one in nature. That is to say the research was interested mainly in securing representative examples of questioning as visualized at the various times in history by outstanding educators, philosophers, theologians, and other great men of the times. As a result we have presented a number of examples representing all periods in history, showing the degree and method of their use by individuals or groups.

The outstanding sources that were helpful in securing this background and these illustrative examples are as follows:

1. Arnold, Thomas, The Miscellaneous Works of Thomas Arnold.
New York: D. Appleton Company 1845
2. Arnold, Felix, Outline History of Education.
New York: The Bay Press, 1911
3. Froebel, Friedrich, Froebel's Education of Man
New York: A. Lovell Co., 1866
4. Mann, Horace, Annual Reports on Education
Boston: Horace B. Fuller, 1868

5. Moore, Ernest Carroll, The Story of Instruction, The Church, The Renaissances, and the Reformation
New York: The Macmillan Company, 1938
6. The New Testament
Patterson: St. Anthony Guild Press, 1941
7. Plato, The Republic of Plato
New York: E. P. Dutton and Co., Inc., 1950
8. Quintilianus, Marcus Fabius, The Institutio Oratoria of Quintilian
New York: G. P. Putnam and Sons, 1921

Ancient Period - following the Age of Pericles, 500 B.C., the Sophists found fertile grounds in Athens, due to the great changes in the aims and practices of education. No longer was stress placed on drama, art and sculpture; educational ideals became more individualistic. The ability to debate and to discuss all social, philosophical and political questions with great skill was the prime objective. Sophistic teaching soon spelled doom to Athenian life.

Distinguished theorists and philosophers came forward with proposed cures to aid the threatened Athenian life. Amongst these learned men was Socrates, the greatest teacher the world has ever known.

^{1/}
Fitch tells us the renowned Socratic method was to question the Greeks, who were a somewhat opinionated people, as to the grounds of their opinions by means of rigid inquiries on points that they thought they thoroughly understood. Thus, their ignorance would be

^{1/}Joshua Fitch, The Art of Questioning. New York: E.L. Kellogg and Company, 1888, pp5.

proven. Socrates believed the greatest impediment to learning was the possession of unreal knowledge...and that the pupil's mind must be opened for truth alone. This type of mental purification was necessary for good teaching.

^{1/}
Plato gives this example of the great Socratic method:

Are we never of our free will to do wrong, or under certain circumstances is the rule relaxed? Is it quite true, as we used constantly to admit, that wrong-doing is never in any way good or honorable? Have the events of these few days played havoc with all our arguments of former times? And have we, Crito, talking gravely together all these years, like old men as we thought, been no nearer the truth than children? Or is it uncomprisingly true, as we used to think, that all wrong-doing under all circumstances is an evil and a disgrace to the wrong-doer, no matter what the world says, and no matter what we may suffer for refusing? Is this true?

Plato, was the most conspicuous disciple of Socrates,...to this student the world owes the important information about the work of this celebrated master. Plato held with his master the same belief that knowledge was the significant tie between society and individuals, but he elaborated more on what he meant by knowledge. ^{2/}More states that Plato performed the services of expanding and developing his master's doctrines. If the wide sweeping logic and exquisite symbolism seem to cloak the young philosopher's teaching and obscure the simplicity of the great master, a close study will reveal the old Socratic teaching unchanged. The Platonic philosophy is but a development and not a distortion of the great Socratic lessons.

1/Plato, The Judgement of Socrates.
Boston: Houghton Mifflin Company, 1898, pp77.
2/Ibid, pp4.

^{1/}
Plato asks:

Well, what then does the art called justice render, and to whom or what?

Quintilian, the great Roman Rhetorician, believed that questioning is the bridge that closes the gap between pupil and teacher. In his most famous selection on education, he states the importance of inquiry on the part of the teacher and on the part of the pupil.

^{2/}
Quintilian writes:

He must be ready to answer questions and to put them unasked to those who sit silent. In praising the recitations of his pupils he must be neither grudging nor over-generous; the former quality will give them a distaste for work, while the latter will produce a complacent self-satisfaction.

^{3/}
Concerning questioning, Quintilian also adds:

My ideal pupil will absorb instruction with ease and will even ask some questions; but he will follow rather than anticipate his teacher.

^{4/}
Quintilian asks:

When I Socrates, the prince of instructors, whose works proclaim his eloquence no less than his pupils testify to his excellence as a teacher, gave his opinion of Ephorus and Theopompus to the effect that the former needed the spur and the latter the curb, what was his meaning?

^{1/}Plato, The Republic of Plato. New York: E. P. Dutton and Co., Inc., 1950. pp 8, Translated by A.D. Lindsay.

^{2/}Quintilianus, Marcus Fabius, The Institutio Oratoria of Quintilian. New York: G. P. Putnam and Sons, 1921. Volume 1, pp. 213.

Translated by H. E. Butler

^{3/}Ibid., pp. 55.

^{4/}Ibid., pp. 267-269.

Throughout the Bible and Holy Scriptures, questioning is used as a valuable method in teaching both the wise and the average men. In fact, the methods of the great Master, Jesus, is very similar to the procedure used by Socrates. ^{1/} Avent says that Jesus's teachings evolved around the conversational, story and developmental method.

^{2/}
Avent writes:

His pupils were not philosophers, but just average men. So he adapted his method of instruction to their ability to understand. When he wanted to teach them a profound truth, he used a story. When one asked him a question, Jesus used the developmental method and led the man to answer his own question. But every hour nearly, he was using the conversation method.

^{3/}
Saint Luke says:

And He spoke to them this parable, saying: What man of you who hath a hundred sheep and loseth one of them, doth not leave the ninety-nine in the desert, and go after that which was lost, until he find it?

If, then, Satan is also divided against himself, how shall his kingdom stand? Because you say that I cast out devils by Beelzebub. Now, if I cast out devils by Beelzebub, by whom do your children cast them out? Therefore they shall be your judges.^{4/}

Medieval Period ... this era limited the confines of instruction to the professions and the nobility. As a result of this static condition in education, two distinctive schools of philosophers

^{1/}Joseph Emory Avent, Beginning Teaching. Tennessee: University of Tennessee, 1927 pp. 133.

^{2/}Ibid., pp. 133.

^{3/}Saint Luke: 15 3-5.

^{4/}Saint Luke: 11 18-20.

were born; namely, the Scholasticists and the Humanists. Arnold^{1/} states the characteristics of their philosophies as such: the Scholasticists believed in dogmatism, realism and authoritative word rather than documentary evidence. On the other hand, the Humanists reacted against verbalism and ascetism in the mystics and they proposed the return to nature and direct experience. The use of interrogation as a method of teaching and developing the mind was very evident in both these schools.

One of the most outstanding examples of the use of inquiry was the monarch, Charles the Great. No matter how busy he was, Charles never was too busy to attend the palace school with the sons of his courtiers. Here he would sit hour after hour, questioning the great master, Alcuin...trying to solve his mental difficulties.

^{2/}
Moore says:

The cross-questioning propensity of the king was marked. He attended the classes for the purpose of having his own mental difficulties solved, not of having mental difficulties aroused within him, as did the younger people.

^{3/}
Along the same line, Moore tells us more about Alcuin, and his great scholar, Charles:

The persistent cross-questioning of his royal

1/Felix Arnold, Outline History of Education. New York: The Bay Press, 1911. pp. 77-79.

2/Ernest Carroll Moore, The Story of Instruction, The Church, The Renaissances, And The Reformation. New York: The Macmillan Company, 1938. pp. 180.

3/Ibid., pp. 192.

master and pupil tried, if it did not dishearten, the patient teacher; and the repeated movings of the court, together with the journeyings necessary to the care of his two monasteries, left him but little time for study and a quiet mind.

^{1/}Laistner records this example; translated from Lehmann:^{2/}

Charles: Expound the nature of justice.

Alcuin: Justice is a state of mind which assigns to each thing its proper worth. In it the cult of divine, the rights of mankind and the equitable state of the whole of life are preserved.

Charles: Unfold its parts also.

Alcuin: Justice proceeds partly from natural rights, partly from customary use.

Charles: How is justice which proceeds from customary use here maintained?

Alcuin: By equity, by judgment, and by law.

Peter Abelard, the founder of the University of Paris, proves by his stupendous success the importance of questioning in teaching. History tells us the University of Paris was not founded by wealth, but by the supreme teachings of Abelard. He taught the same old subjects but in a new astonishing way. Highet^{3/} says that the chief teachers in the University of Paris made themselves available on occasion to answer "quodlibets" (whatever you like), anything the student wanted to ask. The range was a challenge to both instructor and pupil, the young and bold verses the mature experienced.

^{1/}Max Ludwig Laistner, Thought and Letters in Western Europe. New York: Lincoln MacVeagh, 1931, pp. 157.

^{2/}P. Lehmann, Vom Mittelalter und von der lateinischen Philologie des Mittelalters. Munich, 1914, 101 col. 944 B-C.

^{3/}Gilbert Highet, The Art of Teaching. New York: Alfred A. Knopf, 1950, pp. 169.

1/
Moore says:

In Abelard's day the question raged in terms of theology.

2/
Moore adds:

Abelard, the acutest thinker of his century, found the Socratic way of making words have meanings and taught an unheeding and perverse generation which condemned him the lessons which its children learned from Aristotle in succeeding decades.

3/
Abelard questions the mystery of the Trinity:

How can there be three persons where it is evident there was not three things? Why, indeed, speak of three in such a case? There is not even a multiplicity. How can a thing be multiple if it has no multitude within it?

Questioning proved functional in a variety of ways for the Jesuit method of teaching. Interrogation was used as a means of reviewing, refreshing and testing previous lessons that were supposedly known by the pupils.

4/
Farrell gives us examples of questions used in the Jesuit method of teaching humanities and rhetoric:

What historical foundations is there for the story of Daedalus, Deucalion, or the Golden Fleece?

Were the kings justly expelled from Rome?

1/Ernest Carroll Moore, The Story of Instruction, The Church, The Renaissances, And The Reformation.

New York: The Macmillan Company, 1938, pp. 304.

2/Ibid., pp. 321-322.

3/Abelard, Christian Theology. Oxford: Basil Blackwell, 1948. pp. 71. Introduced and Translated by J. Ramsay McCallum

4/Allan P. Farrell, The Jesuit Code of Liberal Education, Development and Scope of the Ratio Studiorum.

Milwaukee: Bruce Publishing Co., 1938 pp. 295.

Which was the greater leader, Hannibal or Scipio?

Name the different types of speeches. What is the exordium? the insinuat^{io}?

What means did this or that orator use to arouse the feelings of his hearers?

During the twelfth and thirteenth centuries, contradictions of the Christian faith became so effective that the great theologians were prompted to bring about a reconciliation of Aristotelian thought with Christian faith. One of the greatest reconcilers that appeared was St. Thomas Aquinas. He believed that faith may be reasoned about as far as reason can go, but some articles of faith go beyond the reason of the human being. The method of St. Thomas was similar to that of Abelard, but he went one step beyond Abelard. He stated the problem, gave authorities on both sides and then added the correct solution.

^{1/}
St. Thomas Aquinas states the problems in the form of questions:

Whether every human action is good, or are there evil actions?

Whether the good or evil of a man's action is derived from its object?

Whether man's action is good or evil from a circumstance?

^{1/}Aquinas St. Thomas, Basic Writings of St. Thomas Aquinas. New York: Random House, 1945. Volume II pp. 317-320. Edited by Anyon C. Pegis.

Modern Period... this was the true era of Enlightenment; theory of education was the development of a new concept of education for citizenship. Theorists came forth replacing the tradition program with modern aims, a new curriculum of practical subjects, and free secular education for all.

1/
Locke in England stressed the need of good questions, that are basic and not trifling. Our thoughts should only be employed in reaching the fundamental truths that lie at the bottom, a source that eventually becomes the foundation for many other verities.

2/
Locke writes:

Most of the difficulties that come in our way, when well considered and traced, lead us to some proposition which, known to be true, clears the doubt, and gives an easy solution of the question, whilst topical and superficial arguments, of which there is store to be found on both sides, filling the head with variety of thoughts and the mouth with copious discourse, serve only to amuse the understanding, and entertain company, without coming to the bottom of the question, the only place of rest and stability for an inquisitive mind whose tendency is only to truth and knowledge.

3/
On the subject of children's curiosity, Locke says:

Curiosity in Children is but an Appetite after Knowledge; and therefore ought to be encouraged in them, not only as a good Sign, but as the great Instrument Nature has provided to remove that Ignorance they were born with; and which, without this busy Inquisitiveness, will make them dull and useless Creatures.

1/John Locke, Conduct of the Understanding. Oxford: The Clarendon Press, 1890. pp. 93-95.

2/Ibid., pp. 95-96.

3/John Locke, Some Thoughts Concerning Education. London: Clay and Sons, 1892. pp. 103.

1/
Locke inquires:

For example, if it be demanded, whether the grand seignior can lawfully take what he will from any of his people?

2/
Locke suggests ways to encourage inquiry, and to keep it active and busy. First, do not check, discount, or laugh at any questions asked. Answer all and suit your reply to the intelligence and the original aim that prompted the inquiry. As a result of kindness and respect, children will delightfully turn to learning and improving knowledge, rather than busying themselves with play and play things. Secondly, commend them on their knowledge, praise them before others they esteem as flattery often spurs one on to greater accomplishments. Third, never give deceitful or eluding answers as children quickly learn neglect and falsehoods. Fourth, be amiss, stimulate their curiosity by mentioning strange things that may engage their enquiry, and lead themselves in search of new knowledge. Should they ask about subjects they should not know, tell them, this knowledge is not to be possessed by them, rather than answer falsely or deceitfully.

A Frenchman, Rousseau by name, became entranced by Locke's treatise on Education...and within a short time commenced on his famous works that emphasized the influence of naturalism in education. Included in these revolutionary ideas, Rousseau mentions

1/Ibid., pp. 96

2/John Locke, Some Thoughts Concerning Education.
London: Clay and Sons, 1892, pp. 103-106.

that curiosity is the best self-teaching device of the pupil. From curiosity, develops questioning, and with proper directions from the master, important discoveries are made and retained by the inquirer.

1/
Rousseau says:

This first principle of curiosity is natural to the heart of man, but is developed only in proportion to our passions and to our advance in knowledge. Call your pupil's attention to the phenomena of nature, and you will soon render him inquisitive. But if you would keep this curiosity alive, do not be in haste to satisfy it. Ask him questions that he can comprehend, and let him solve them. Let him know a thing because you have found it out himself, and not because you have told him of it. Let him not learn science, but discover it for himself. If you once substitute authority for reason, he will not reason any more; he will only be the sport of other people's opinions.

2/
Rousseau suggests the deep thought question:

I think the sun set over there, and now it has risen over here. How can that be so?

Pestalozzi, a Swiss, maintained that the education of a child could be aided or retarded by methods of teaching. He advocated observation and investigation instead of memorizing and thinking instead of reciting.

2/
Pestalozzi declares:

The mode of doing this is not by any means to talk much to a child, but to enter into conversation with a

1/Jean Jacques Rousseau, Emile. Boston: D.C. Heath and Co., 1883 pp. 124 Translated by Eleanor Worthington.

2/Ibid., pp. 127.

3/Johann Heinrich Pestalozzi, Educational Writings. New York: Longmans, Green and Co., 1916 pp. 252-256.

child; not to address to him many works, however familiar or well chosen, but to bring him to express himself on the subject; not to exhaust the subject, but to question the child about it, and to let him find out, and correct the answers. It would be ridiculous to expect that the volatile spirits of an infant could be brought to follow and lengthy explanations. The attention of the child is deadened by long explanations, but roused by animated questions.

Let these questions be short, clear and intelligible. Let them not merely lead the child to repeating the same or in varied terms, what he has heard just before. Let them excite him to observe what is before him, to recollect what he has learned, and to muster his little stock of knowledge for materials for an answer.

Herbart, who is commonly referred to as the "father of modern psychology" helped greatly to give scholarly support to the teachings of Pestalozzi. He believed in application of psychology, imperfect as it was, to educational methods. This theory is manifested by his attitude toward questioning in the classroom.

^{1/}
Herbart says:

Now, although many questions cannot, while others must not, be answered, the tendency to ask questions should, generally speaking, receive constant encouragement as a sign of native interest, of the absence of which the teacher able by any skill on his part to revive it. Here an opportunity is presented for preparing the ground in many directions for future instruction.

In the beginning of the nineteenth century the great educator Froebel appeared with his educational theories on self-expression, self-activity and natural development which found expression in

^{1/}John Frederick Herbart, Outlines of Educational Doctrine. New York: The Macmillan Co., 1909 pp. 204-323.

the kindergarten. In his thoughts on education, Froebel ^{1/} expounds on the curiosity and inquiries of small children in their bewilderment of the world around them. He advises directing pupils toward self-discovery rather than making reply to their question by means of sheer verbalism which is usually half heard.

^{2/}
Froebel warns us:

Do not harshly repel him, show no impatience about his ever recurring questions. Every harshly repelling word crushes a bud or shoot of his tree of life. Do not however, tell him in words much more than he could find himself without your words. For it is of course easier to hear the answer from another, perhaps only to half hear and understand it, than it is to seek and discover it himself. To have found one fourth of the answer by his own effort is of more value and importance to the child than it is to half hear and half understand it in the words of another. Do not, therefore, always answer your child's question at once directly; but as soon as they have gathered sufficient strength and experience, furnish them with the means to find the answer in the sphere of their own knowledge.

^{3/}
Froebel used inquiry to develop related ideas:

We are in a room; many things are around us;
name some of these things?

Could we put other things into the room?

Could we put as many things into the room as
we please? Why not?

^{1/}Friedrich Froebel, Education of Man. New York:
A. Lovell Co., 1866 pp. 273.

Translated by Josephine Jarvis.

^{2/}Ibid., pp. 51.

^{3/}Friedrich Froebel, Education of Man. New York:
D. Appleton and Company, 1887, pp. 274.

Translated by W. N. Hailmann.

The rhymed question was suggested by Froebel ^{1/} to incite effort and discovery:

Who can now the large cube change,
And one six-sided form arrange?

In France, Jacotot attempted to imitate the method by which both men and children teach themselves through self-discovery and investigation. This method of investigation is stimulated by clever questioning on the part of the professor which places them on the right track.

^{2/}
Payne says this about Jacotot's method:

Instead of pouring forth a flood of information on the subject under attention from his own ample stores-explaining everything, and thus too frequently superseding in a great degree the pupil's own investigation of it-Jacotot, after a simple statement of the subject, with its leading divisions boldly started it as a quarry for the class to hunt down, and invited every member to take part in the chase. All were free to ask questions, to raise objections, to suggest answers. The professor himself did little more than by leading questions put them on the right scent.

Contemporary Period. - As the principle of secular education had been established, the time had come to give serious thought for improving the curriculum and expanding the school system in order to reach all people. Much time and energy was also devoted to the quantity and quality of instruction.

1/Friedrich Froebel, Pedagogics of the Kindergarten.
New York: D. Appleton and Co., 1896, pp. 211.
Translated by Josephine Jarvis.

2/

Thomas Arnold, one of the more modern humanist, strictly concentrated on improving old mechanical methods. Great stress was placed on discipline and guidance rather than instruction...on questioning rather than lecture. ^{1/}Payne says that Thomas Arnold's whole method of teaching was based on the principle of stirring the intellect of every boy in the class, both the slow and the advanced learner. His instructions were interwoven with the reasoning process that took place with the given lesson; there was a continual reference to the pupil's thoughts. The teacher would guide the more quick-minded students to the true answer; this process served as a medium by which instruction was passed on to the slower group. This method of teaching proved valuable to all mental levels. The advanced group realized their sense of responsibility, morally and intellectually...the less fortunate pupils were relieved of their hazy and vague answers.

^{2/}Payne adds this information about Arnold's methods:

Hence it was his practice to teach by questioning. As a general rule, he never gave information except as kind of a reward for an answer, and often withheld it altogether, or checked himself in the very act of uttering it, from a sense that those whom he was addressing had not sufficient interest or sympathy to entitle them to receive it. His explanations were as short as possible - enough to dispose of the difficulty and no more - and his questions were of a kind to call the attention of the boys to the real point of every subject, to disclose to them the exact boundaries of what they knew or did not know, and to cultivate a

1/John Payne, Lectures on the History of Education.
New York: Longmans, Green and Co., 1892. pp. 182.

2/Ibid., pp. 181.

habit not only of collecting facts but of expressing themselves with facility, and of understanding the principles on which their facts rested.

^{1/}
Arnold says:

We should ask questions of our book and ourselves; what is its purpose; by what means it proceeds to effect that purpose; whether we fully understand the one, whether we go along with the other. Do the arguments satisfy us; do the descriptions convey lively and distinct images to us; do we understand all the allusions to persons or things?

Horace Mann, a very distinguished and active crusader in the field of modern education, became very impressed with the Pestalozzi method that he observed in the Prussian School system. ^{2/} Mann, in his highly criticized Seventh Report delivered to the Massachusetts State Board of Education, lauded the stimulating pedagogical methods used by the highly trained Prussian teachers, which delighted the children, developed their perceptive powers and stirred their reflective faculties.

^{3/}
Mann says:

But the Prussian teacher has no book. He needs none. He teaches from a full mind. He cumbars and darkens the subject with no technical phraseology. He observes what proficiency the child has made, and then adapts his instructions, both in quality and amount to the necessity of the case. He answers all questions. He solves all doubts. It is one of his objects at every recitation, so to present ideas that they shall start doubts and provoke questions.

1/Thomas Arnold, The Miscellaneous Works of Thomas Arnold.
New York: D. Appleton Company 1845. pp. 303-304.

2/Horace Mann, Annual Reports on Education. Boston:
Horace B. Fuller, 1868. pp. 342.

3/Ibid., pp. 342.

1/

Mann adds these suggestions as a result of observing the interrogation method:

The value of this practice of adjusting questions to the capacities and previous attainments of the pupils cannot be overestimated. The opposite course necessitates mistakes, habituates and hardens the pupils to blundering and uncertainty, disparages the value of correctness in their eyes, and what is a consequence as much to be lamented as any-gives plausibility to the argument in favor of emulations as a means of bringing children back to the habit of accuracy from which they have been driven.

The last improvement can only be fully effected when the teacher can dispense with all text-books, and can teach and question from a full mind only. The case is hopeless where a conspiracy against the spread of knowledge has been entered into between an author who complies, and a teacher who uses a text-book in which the questions to be put are all prepared and printed.

2/

Mann uses these questions to test proficiency of members of the class in arithmetic:

Can you tell why a difference of 15° in longitude, makes an hour's difference in time?

How many degrees does any point on the earth's surface pass over in a day?

In latitudes where a degree of longitude is equivalent to 45 miles, how far must you travel to find 10 seconds difference of time?

As a result of the foregoing evidence presented in this chapter, we can feel justified in emphasizing the importance on 'the question' as a valuable tool in the education of man.

1/Ibid., pp. 358-359.

2/Horace Mann, Plinty E. Chase, Arithmetic Practically Applied for Advanced Pupils and for Private Reference.
Philadelphia: E. H. Butler and Company, 1950 pp. 27.

It is a tool to be used by the educator as a stimulant for the mind-it is a tool to be used by the educand as an aid to satisfy human curiosity and to relieve a confused or ignorant mind. In short, questioning performs the greatest transformation that can take place in the human body; it converts the passive mind to an active state.

CHAPTER III

QUESTIONING AS AN ASPECT OF

EDUCATIONAL METHODS

emotional processes before attempting to change beliefs.

8. To focus attention on cause-and-effect relationship. This, of course, overlaps with two or three others. Socratic, conversational questioning of the "if this, then that" type is valuable.
9. To determine the informational background, interests, and maturity of individuals or class groups. General techniques for pretesting listed in the chapter on the assignment supply guidance here. Here, if anywhere, direct fact questions might play a legitimate part along with other forms.
10. To create interest, arouse purpose, develop mind-set.
11. To test directly for designated achievements. Although not as extensive and inclusive as Burton, Mueller^{1/} and Maxwell^{2/} hold the same general opinions. Fitch^{3/} is rather adamant with his views found in his summary chapter.

For indeed, the whole sum of what may be said about questioning is comprised in this: It ought to set the learners thinking, to promote activity and energy on their parts, and to arouse the whole mental faculty into action instead of blindly cultivating the memory at the expense of higher

^{1/}A.D. Mueller, Teaching In Secondary Schools, New York: The Century Company, 1928, p. 119.

^{2/}C.R. Reusser Maxwell, W.C. Observation and Directed Teaching In Secondary Schools. New York: Prentice-Hall, Inc., 1939, p. 293-4.

^{3/}Joshua G. Fitch, The Art of Questioning. New York: E.L. Kellogg and Company 1888, p. 33.

intellectual powers. That is the best questioning which best stimulates action on the part of the learner; which gives him a habit of thinking and inquiring for himself; which tends in a great measure to render him independent of his teacher; which makes him, in fact, rather a skillfull finder than a patient receiver of truth. All our questioning should aim at this; and the success of our teaching must ever be measured not by the amount of information we have imparted, but by the degree we have strengthened the judgment and enlarged the capacity of our pupils, and imparted to them that searching and inquiring spirit which is a far surer basis for all future acquisition than any amount of mere information whatever.

IMPORTANCE OF QUESTIONING

The ability to ask questions has long been regarded as one of the chief qualifications for successful teaching. While the question and answer method is not the only method of imparting instruction, it is perhaps the most important, especially in the elementary school. Like many other methods used in the school room, questioning can be carried to extremes.

^{1/}
Bagley, makes this comment:

Questions must be carefully worked out before hand and arranged in the proper order, so that successive phases of the topic will be developed consecutively. One cannot trust to the inspiration of the moment for this factor. This is true even when the subject of instruction is developed over and over again at intervals of a year or half year. The teacher who has got beyond the necessity for a strenuous daily preparation has outlived his professional usefulness.

Children's questions have annoyed parents and teachers for generations but the spontaneous questions of children are probably of great importance by indicating their interests. Its unfortunate that most parents and many teachers answer their queries with "don't ask so many questions, or please be still." As the children grow older it is very difficult to get some of them to volunteer questions of any sort.

^{2/}
According to Thorndike the questioning method has three main

^{1/}Chandler William Bagley, The Educative Process, New York: The MacMillan Company, 1922, p. 273-74.

^{2/}Edward L. Thorndike, Education, New York: The MacMillan Company 1923, p. 281.

advantages:

It keeps the teacher and the student informed of what the latter does and does not know can and cannot do. The teacher by it verifies the results of his previous work, as a scientific man verifies his theories by actual observation and experiment. He learns what changes have been made in the students, and what remain to be made, and so is guided in what he does or says next. The student by it is kept informed of where he has succeeded and where he has failed, and is guided in his own further study.

1/

This general trend is supported by Colvin who states:

It should never be forgotten that well-organized and carefully planned questions are a vital part of the class exercise, indeed the most vital part. The efficiency of instruction is measured in a large degree by the nature of the questions that are asked and the care with which they are framed. No teacher of elementary or secondary subjects can succeed in his instruction who has not a fair mastery of the art of questioning. The most efficient teacher is more than a drill-master, a hearer of lessons, an expositor of facts and principles. He leads his pupils to think and to understand by arousing in them self-activity through the stimulus of his questions.

2/

Simpson and Yoakam take this stand:

To be able to formulate stimulating questions and to answer the questions which children ask is necessary for successful conduct of certain types of teaching activities. Particularly in the preparation of unit plans, study guides, and work sheets, the teacher is required to formulate questions that will stimulate the child's curiosity and arouse his desire to learn. Questioning is one of the techniques of teaching which all teachers will do well to study.

1/Stephen Sheldon Colvin, An Introduction To High School Teaching. New York: The MacMillan Company 1924, pp. 310-330.

2/Robert Gilkey Simpson, PH.D., Gerald Alan Yoakam, PH.D., An Introduction To teaching and Learning. New York: The MacMillan Company, 1934, pp. 105-120.

1/
Strayer makes this worthwhile suggestion:

If any one thinks that questioning is a simple matter, one that deserves less consideration than has been given to it, let him sit down and write four or five good questions which might be used in teaching a first grade lesson on the dog; a fifth-grade lesson on the Southern states; a seventh-grade lesson on making jelly; or a high school class on the law of gravity. The teacher who will get some one to write down for her the questions which she asks in a single recitation will be surprised both at the number (it will be almost unbelievably large) and the quality of the product. If the writer could be sure that any group of teachers would try conscientiously to improve in the art of questioning he would be just as sure that these same teachers would be rated by any impartial critic as superior to those who are willing to trust to inspiration in this most important part of the teacher's work.

2/
Thomas has this opinion:

Good teachers do not rely on questioning alone in directing class discussion. Sometimes a brief suggestion or direction, now volunteering some pertinent information, now calling attention to facts which have been overlooked, occasionally a few words of criticism or appreciation - all these are effective means of equal value with questioning in furnishing effective guidance in the recitation.

1/ George Drayton Strayer, The Teaching Process. New York: The MacMillan Company 1918. pp. 115-116; 120-121.

2/ Frank W. Thomas, Principles And Technique Of Teaching. Boston: Houghton Mifflin Company 1927, pp. 272-274.

TECHNIQUES OF QUESTIONING

Many educators have compiled long lists concerning techniques to be utilized while questioning. Due to the lack of space, it will be treated here in an abbreviated fashion.

1/ Bossing and 2/ Douglass have voluminous lists, but in essence they say:

1. Questions should be stated concisely.
2. All questions should require some thought.
3. Beware of ambiguous questions.
4. The age and mental ability of the pupil should be taken into consideration.
5. The form of the question should not suggest the answer.
6. Questions should avoid a "yes" or "no" response.
7. Questions should involve single ideas; try not to cover too much ground with one question.
8. Definite purposes should be reflected in each question.
9. Do not use textbook wording.
10. Aid the pupil in relating different questions on the same topic if necessary.
11. Questions should frequently be assigned to inattentive pupils.

1/Nelson Louis Bossing, Ph.D. Progressive Methods For Teaching In Secondary Schools. Houghton Mifflin Company, Riverside Press Cambridge 1935, Chapter #10 p. 348-353.

2/Harl R. Douglass, Modern Methods In High School Teaching. Boston: Houghton Mifflin Co., 1926, pp. 34.

12. Do not repeat the questions.
13. Try to use a natural tone of voice.
14. No special order should be followed when asking questions in the school room.
15. Make sure the questions are well distributed.
16. Address questions to the class before calling a specific person.
17. Sufficient time should be given to formulate the answer.
18. Organize questions around pivotal ideas.
19. Try not to repeat the answers.
20. Try not to embarrass pupil who does not know the answer.

1/
Cole introduces the important practice of training the pupils to use complete sentences when answering written questions. She states the advantages not only in language arts, but also in all the other subjects.

2/
Earhart warns her readers about the narrow scope of questions used in many class rooms. She attempts to stress the fact that, it is better not to give a choice of answers through the question because such questions limit the thought.

1/Luella Cole, The Psychology Of The Elementary School Subjects.
New York: Farrar and Rhinehart, 1934, pp. 165-166.

2/Lida B. Earhart, Ph.D. Types of Teaching. Boston: Houghton Mifflin Company 1915, pp. 97-100.

1/
Rivlin makes this observation:

When questions are asked in rapid succession, only the brightest pupils are able to grasp the significance of the answers. Few teachers stop to consider whether the entire class understands the answer that has been given by a pupil, or even whether the children have heard it. The teacher who comes to class thoroughly prepared appreciates the pattern of her lesson and knows that each answer she accepts has a definite place in the development of the topic for the day. However, a great many pupils may not be able to keep up with those who set the pace for the lesson; the slower pupils experience such difficulty in understanding the work that they welcome the relief of being categorized as stupid and the subsequent relegation to a minor part in the class discussion.

2/
Stormzand brings out the fact that in a discussion group all the pupils must be made to understand the answers to the question given. He suggests that answers must not be taken until all the pupils understand adequately what has transpired. To accept an answer from one of the faster pupils, might destroy the interest and value of the study for the majority of the class.

3/
McMurray volunteers this information:

Occasionally, as one feature of a lesson, a class might propose a new points of view for the review of some subject. For example, if the Western states have been studied in geography, some of the various

1/Harry N. Rivlin, Ph.D. Educating For Adjustment. New York:
D. Appleton - Centrury Company 1936 pp. 342-344.

2/Martin J. Stormzand, Progressive Methods of Teaching. Boston:
Houghton Mifflin Company, 1927 pp. 263-264.

3/F.M. McMurry, How To Study And Teaching How To Study.
Boston: Houghton Mifflin Co., 1933, pp, 81-82.

ways in which they are of interest to man might be indicated by questions, thus: What about the Indians in that region? What pleasure might a sportsman expect there? What sections would be of most interest to the sightseer? How is the United States Government reclaiming the arid lands, and in what sections? What classes of invalids resort to the West, and to what parts? How do the fruits raised there compare with those further east in quality and appearance? How is farming differently conducted there? In what respects, if any, is the West more promising than the East to a young man starting in life?

1/

Reed synthesized the experimental work done on questioning in the social studies. His results are:

1. Placing questions at the head of an assignment or interspersing them at the heads of paragraphs.
2. Using advance questions in connection with supplementary reading.
3. Training pupils in the use of appropriate forms for answering different types of questions.
4. Having pupils outline the main points in an assignment after they have been trained how to do it.
5. Having pupils write summaries of the main points of an assignment after they have been taught how to do it.
6. Combining the use of the following procedures in the order named: evaluating, outlining, summarizing, and answering questions.
7. Intensive rather than extensive reading, unless the circumstances favor the latter.
8. Combining the whole procedure and part procedure in the following manner:
 - (a) discussion of the whole unit
 - (b) directed study of the unit
 - (c) assignment of daily units according to the part method

1/Homer B. Reed, Psychology Of Elementary School Subjects.
Boston: Ginn and Company 1938 pp. 422-423. Ch. 10.

- (d) review of the entire unit
- (e) test and discussion

CHARACTERISTICS OF GOOD QUESTIONS

Practically every author that includes a chapter in his book on questioning also had a list of the characteristics of good questions. Naturally much overlapping was prevalent. In most cases the lists brought out the following:

1. Clarity--Child must understand what is wanted.
2. Simplicity--The Language of the child must be used in formulating questions.
3. Challenge--Good questions stimulate children to think, to compare, to evaluate and to draw inferences and conclusions.
4. Specificity--Questions should require specific rather than general answers.
5. Definiteness--Question should be so stated that only one answer is correct.
6. Questions should bring out the subject-matter in the order of dependence, or logical relationship, if such exists.
7. Formulate questions free from ambiguity.
8. Tempo must be reasonable, compatible with the types of questions being asked.
9. Aim questions at important rather than trivial facts.
10. Questions must consider individual differences. Do not make questions too difficult or too easy.
11. Spontaneity--Never read questions from a book. Teacher should seek this assistance before hand because it tends to destroy confidence in the teacher, prevents the pupils from feeling at ease, and gives a mechanical appearance to the whole proceedings.

12. Animation—Ask questions in a good clear voice, try to put feeling into your speech voice, inflections are a requisite. Teachers should have a pleasing and spirited manner.
13. Avoid long pauses; slow, dull, heavy questions bring on monotony and sleep rather than answers.
14. Phraseology—Vary the wording and seek in every way to kindle interest and enthusiasm about the lesson.
15. Questions should call up associated facts.
16. Questions should not be ends in themselves, but should carry the thought forward.
17. Questions should not be so indefinite as to permit guess work.
18. Questions should be interrogative in form, not declarative in all but the final word.
19. Questions should be asked only one time in the best possible form.
20. Questions should deal with materials worthy of consideration.
21. Questions should be addressed to the whole class rather than to a single individual.
22. Questions should be distributed evenly among the pupils.
23. Conciseness—The questioner must know that he wants for an answer as well as the person being questioned.
24. Questions should seek for a more extended and explicit answer than that of yes or no.
25. Questions should not contain unnecessary words.

1/
Simpson and Yoakam list the following outcomes of questioning:

1. The limitations of their knowledge and of their ability to reason should have been discovered.
2. The need for new knowledge, for more thinking, should have been established, or progress should have been made toward this end.
3. New interest and new curiosities should have become apparent.
4. Errors in knowledge and in thinking should have been cleared up.
5. Opportunities for the statement of questions which have arisen in the minds of the pupils should have occurred.
6. A good deal of reorganization in the knowledge of the pupils and in their thinking should have taken place.
7. Considerable connected talking should have been done by the pupils; complete rather than fragmentary answers should have been the rule.
8. Important points and essential conclusions should have been emphasized.
9. Improvement in the attitude of the pupils toward the subject should be apparent.
10. Some information with respect to the study habits and abilities of the pupils may have been gained, not every day, but often.
11. The extent and the character of the pupil's preparation for the discussion should have been ascertained.
12. Definite impressions of what the important aspects of the subject are, should have been gained by the pupils.
13. Definite impressions of the progress or lack of progress made by the pupils should be gained by the teacher.

Questions should be planned so that they develop or bring out the unity of the lesson. In good questioning one question usually leads to another so a series develops. Step by step the true facts are brought out until the pupil has a complete picture.

This reiterates the fact that teachers must know their subjects thoroughly so that the right questions are asked at the proper moment.

Pupils questions should show the teacher the specific needs of the class. This should be the starting point for further learning discovery, and emphasis.

All answers should be adequate, mature, and well expressed. Pupils should be taught to organize and express their ideas with confidence.

TEACHER REACTION TO PUPIL QUESTIONS

Summarized from Bossing's ^{1/} study:

1. Student questions should be encouraged. When pupils ask good questions learning is taking place.
2. Make sure the question is significant before you answer. Teacher must distinguish between trivial and important or sincere questions.
3. Courtesy and timeliness of questions is important. At times the teacher must use his discretion as to answer a question or not.
4. Grant earnest students the right to challenge the teachers position. Without a clashing of ideas a great purpose for questioning will have been defeated. Pupils should be encouraged to think for themselves.
5. If a teacher does not know the answer to a question, let him admit it. Never resort to bluffing, the class may lose all respect for the teacher. The teacher if caught short may check on the answer and bring it in for the next class, make the problem the basis of an assignment, or if it seems unimportant, he may dismiss it as such. Always try to anticipate the pupils questions and problems and act accordingly.
6. If foolish questions are offered, it is a sign that discipline of the class is bad. The offense must be regarded as a breach of rule and treated accordingly. A mistake arising from ignorance ought never be treated as a foolish question.

TEACHER REACTION TO STUDENT RESPONSE

1. The teacher should show an appreciative attitude toward student response. The teacher should be sympathetic, understanding, and tolerant. The chances are the child will venture other responses.
2. Interpret sincere response to the advantage of the student. Sometimes its a good idea to give the child the benefit of the doubt, especially in partly answered questions.
3. At times use the class to evaluate a partially correct answer.
4. Normally students should not be helped when giving their response.
5. Correct thought and grammar should be evident in a students response.

1/

Burton confronts us with this information about "teacher activity.

1. Does the teacher manifest ability to word questions clearly and concisely? Avoid series of short, fragmentary questions?
2. Does she avoid vague "discuss," "tell-all-you-know" questions?
3. Does she adjust easily to legitimate interruptions, disposing of them or following them up with clear-cut direct questions? Does she encourage independent questioning by the pupils?
4. Does she quickly see that her language or construction is confusing to the class? Can she reword statements quickly?

1/William H. Burton, *The Nature And Direction of Learning*.
New York: D. Appleton-Century Co., 1929, pp. 467-48: 476-79.

5. Does she use thought and drill questions in right proportion? Directed at proper material? Does she vary the pace?
6. Does she distribute questions over the class fairly well? In terms of individual differences?
7. Does she avoid answering the questions herself? Avoid repeating them except in legitimate cases? Insist on clear, intelligent answers? Avoid repeating the pupil's answer?"

FAULTS IN ANSWERING QUESTIONS

Some modern educators believe that answering questions with a complete sentence slows down the recitation. It seems that nobody insists upon a complete sentence but teachers, and they do not use them themselves outside of class. In the rapid fire conversation held every where today, it would ostracize a person who would repeat a question and then attempt to answer it. Some educators believe that the only excuse for requiring a complete statement is the inability of some pupils to make a short, crisp answer that carries the main idea. Occasionally a complete sentence is necessary but insistence upon it makes the class work drag and die.

^{1/}
Burton compiled the following faults in answering questions:

1. Students begin to answer before thinking out the complete implication of the question.
 - (a) A fragmentary answer results.
 - (b) Minor points may be magnified and major points neglected.
2. Students seem to expect continued stimulation from the teacher.
 - (a) Fragmentary, choppy, answers result in which a point at a time is given.

3. Students feel that they have answered a question if they give any one or two of several points which could be given.
 - (a) Inadequate, unorganized answers are given.
4. Students feel no responsibility for organization, sequence, and coherence.
 - (a) Rambling discursive answers result.
 - (b) Relative values are neglected.
5. Students seem to be seeking to discover what the teacher wants, rather than to evolve answers based on the data and implications.
 - (a) Answers are dictated by suggestibility rather than analysis and thought. Obviously these points overlap, but they are stated separately for the sake of emphasis. It is equally obvious that the teacher's mode of questioning, and the type of answer she accepts, develop proper or improper habits of answering.

1/

Butler makes this strong conviction about poor questions asked by teachers:

When we say that a teacher's questions are poor, we actually mean that her knowledge and thinking are weak. Why not be honest and call a spade a spade? We endeavor to improve everything by techniques; on the contrary, the source responsible for the weakness should be strengthened and invigorated. It would be out of order to condemn any method if bits of information are the highest aims in the teacher's mind. To ask thought questions without first having thoughts is as inconceivable as having objects fall upward. If the fundamental weakness is poor aims, then fault should be found with the aims and not with the procedure, for a procedure is a means which can be used for various purposes. The same pen that was used to write the Declaration of Independence could be manipulated to write a scandalous story, and likewise, the questioning procedure can produce meritorious or ineffective results. The possibilities in a procedure, as in a pen, depend upon

1/Frank A. Butler, The Improvement Of Teaching In Secondary Schools.
Chicago, Illinois: The University of Chicago Press 1939,
pp. 191-204.

the purposes within the mind of the user. To expect the blind use of any method to produce good teaching and profitable learning is expecting too much. Absence of woth-while aims can tone down the effectiveness of instruction and learning to the vanishing-point.

1/
Butler although very dogmatic at times, offers these naive criteria for improving questioning:

1. The sequence of questions should lead to the development of a particular understanding, idea, appreciation, or ideal. Rambling questions keep learners in a confused state of mind.
2. Train pupils to give well-rounded answers to questions, that is to develop the full import of the questions.
3. Ask questions within the range of pupils' experience and knowledge. As a rule, adults forget that young persons are learners and not learned.
4. Give time for reasoning and other higher mental process to operate.
5. Be conversational and natural during questioning. Be a helper, not an inquisitor.
6. Be jovial and cheerful. Learning can be delightful and pleasant, cooperative and profitable, only if the personal relationships between pupils and teacher are conducive to mutual helpfulness and understanding.
7. Encouragement motivates, discouragement represses.
8. Encourage pupils to ask questions. Their questions, if sincere, show exactly what the difficulty or interference is in the path of progress.
9. If there is anything in the answer which can possibly be salvaged, use it.
10. Have pupils feel responsible for the answers to questions asked by their own classmates. The teacher should not feel that she must be the quick and final authority. Shift responsibility to pupils in so far as possible.

1/Op. Cit.

11. Don't feel it necessary to answer every question asked by pupils. Never resort to "bluffing."

Basically, there is nothing wrong or inefficient in questioning as a way of teaching, but there is often something fundamentally wrong and inefficient in the purpose for which it is used.

1/

Simpson and Yaokam have prepared a list that intends to show the outcomers of questioning after a period of time.

1. The limitations of their knowledge and of their ability to reason should have been discovered.
2. The need for new knowledge, for more thinking, should have been established, or progress should have been made toward this end.
3. New interest and new curiosities should have become apparent.
4. Errors in knowledge and in thinking should have been cleared up.
5. Opportunities for the statement of questions which have arisen in the minds of the pupils should have occurred.
6. A good deal of reorganization in the knowledge of the pupils and in their thinking should have taken place.
7. Considerable connected talking should have been done by the pupils; complete rather than fragmentary answers should have been the rule.
8. Important points and essential conclusions should have been emphasized.
9. Improvement in the attitude of the pupils toward the subject should be apparent.
10. Some information with respect to the study habits and abilities of the pupils may have been gained, not every day, but often.

11. The extent and the character of the pupil's preparation for the discussion should have been ascertained.
12. Definite impressions of what the important aspects of the subject are should have been gained by the pupils.
13. Definite impressions of the progress or lack of progress made by the pupils should be gained by the teacher.

DEFECTS OF THE RECITATION METHOD

All modern educators have one pet peeve and the recitation seems to be "it". For the readers benefit a few educators will be quoted to give the readers a vicarious journey on the rough sea of recitation.

Frederick, Ragsdale, and Salisbury^{1/} have catalogued these defects and objections to the recitation method:

1. Under the recitation method the teacher becomes a hearer of lessons. The work of the teacher is primarily one of testing to see how well the child or his relatives or friends have taught him the lesson.
2. An air of distrust and suspicion permeates the classroom in which the recitation is frequently used.
3. Trickery thrives in the classroom in which the recitation method is habitually used.
4. Bad as it is to make tricksters of teachers, it is far worse to employ a method of teaching which stimulates the use of deception by the pupils. They learn to hold

^{1/} Robert W. Frederick, Clarence E. Ragsdale, Rachel Salisbury, Directing Learning. New York: D. Appleton-Century Company 1938, pp. 169-175.

their heads so as not to be called on; they learn to fidget when a question is announced that they know; they learn to guess which line of the translation they will be asked to do; they learn to ask a question to ward off a question being asked of them; they learn to put on a blank look when in reality they know the answer; they become skillfull in the manufacture of excuses for not knowing their work.

5. The question-and-answer recitation so widely used in the classroom of the American secondary schools no doubt contributes to the nervous tension which is so prevalent among the population today. In the recitation, the child is continually on the spot in the sense that he lives for hour after hour in class after class under the threat of a challenge he may not be able to meet.
6. Pupil-teacher relationships, we are told, should be one of friendly co-operation. The recitation method--which of course is only a continual oral test--militates against such a friendly spirit. In fact the method makes a competitive attitude mandatory.
7. The recitation method encourages the neglect of the assignment.
8. "Pumping" as a technical education term has practically disappeared from professional literature, but the act has not been banished from the classroom. "Pumping", in which process an answer is dragged from a bewildered pupil, may still be seen in our high schools. A more inhuman form of torture cannot readily be imagined.
9. The recitation is restrictive; it stifles initiative; it fosters rote memorization.
10. The recitation was no place to assist individuals.
11. The vast majority of teachers used the single textbook as the sole basis of the work in history, social studies, general science, and other subjects.
12. A supervised learning method of teaching, as we shall soon discover, is difficult to plan and execute. The conduct of a course by recitations from a text is easy for it makes unnecessary long-time or even short-time planning of the work.

13. The recitation method develops habits of slovenly speech. In few recitations are pupils given the opportunity to carry on sustained discourse or to express a continuous train of thought.
14. Success is preferred to failure by all people whether they be students, teachers, or just plain persons. As a consequence of this fact, the aggressive, capable pupil often monopolizes the work of the class period.
15. Retention of the oral recitation is an age when the co-operative spirit is so sorely needed cannot be defended, for the recitation is completely and inescapably individualistic.
16. The oral recitation wastes time.
17. One of the most damning charges that can be brought against the recitation is that it has no counterpart in life.
18. First impressions are not always the most lasting and most powerful. A different emphasis is cast by modern psychology on the doctrine of recency, frequency, vividness. It is, however, beyond doubt that hearing wrong impressions is not the most effective method of learning. In spite of this fact, recitations which involve many wrong answers are permitted to continue.
19. The recitation is almost invariably, though not necessarily, analytical or piecemeal.
20. Finally in this catalogue of the evils of the recitation, it must be made clear that the recitation is teacher-centered rather than pupil-centered. The activity and initiative is necessarily concentrated in the teacher.

1/
 Bagley puts forth his views on the recitation method:

The disadvantage of the question-and-answer method is its tendency to become discursive, to wander from the point. It requires great skill on the part of the teacher, in fact, the art of teaching probably finds its widest scope in the

application of this method. By the same token, it is the pitfall of weak teachers.

Among some educators there is a superstition that the question-and-answer method is the only true method of instruction. This exaggerated view finds expression in the unwillingness to impart information in any way save by Socratic questioning. Valuable time is spent in attempting to get children to discover unimportant truths, under a vague and hazy notion that it doesn't matter much what the truth is so long as the child discovers it for himself; and so anxious is the teacher to have him discover it for himself that he spends twenty or thirty minutes in a "pumping" process to get a result which could have been stated in as many seconds.

It is this tendency to "beat about the bush" that constitutes the most dangerous pitfall of the question-and-answer method. Some judgments are not worth developing; they may better be stated as clearly and tersely as possible. The danger of confusing the pupil with a mass of details is also a source of some inadequate results in the application of this method by unskilled teachers. If the teacher is himself incapable of keeping system and unity in his thinking, he will find that his pupils cannot do it for him.

1/
Betts stresses these two points on the dangers of the question-and-answer method:

One of the greatest dangers in the use of this method is that pupils will come to depend on the questions as a crutch to help them along mentally when they should be able to proceed by themselves.

It is very much easier to answer a series of questions upon a subject than to discuss it independently. This method is well adapted to younger children; and this very reason makes it a danger when over-used with more advanced pupils.

The second danger we note in the question-and-answer method is that it does not give as much opportunity for training in self-expression as the topical method. In

1/George Herbert Betts, The Recitation. Boston: Houghton Mifflin Company, 1910, pp. 39-40.

teaching by the question-and-answer method, the teacher occupies nearly or quite as much time with the questions as the class do with the answers.

1/
Robbins makes this comment:

As the great defect of the ordinary recitation is the preponderance of the teacher, the socialized recitation aims to magnify the importance of pupil-activity. The monopolizing teacher is replaced by group-activity. Furthermore, the formalism which often characterizes the work of the class is broken up by the freedom which is necessary in the socialized class. The cooperative pursuit of common purposes is used as a means of removing the lifelessness of the recitation of the cut-and-dried variety.

1/Charles L. Robbins, Ph.D. The Socialized Recitation. Boston: Allyn and Bacon 1920. pp, 22.

CHAPTER IV

QUESTIONS IN EDUCATION

Types of Questions

In reading the sundry of material dealing with the techniques, methods, and procedures in the presentation of questions, we seem to find a basic unanimity among authors on the subject. Their general conclusions seem to follow the same logic and reasoning. However, when one deals with the type and classification of questions, an altogether more difficult problem arises.

In determining types of questions we must first decide upon the point of view we are to be guided by. Bossing^{1/} says that we can classify questions either according to their teaching function or the mental processes that they evoke. In the case of the former each question would have a teaching function with the main purpose to emphasize and teach a particular skill. We would have a question emphasizing drill, another dealing with analysis, and so forth. On the other hand we could classify our questions according to the mental processes that each evoke, or stated probably more correctly, involved. Bossing^{2/} feels that this would include two broad classifications, mainly memory questions and thought questions.

A memory question in this case would be a fact that is automatically recalled. One important aspect should be recognized

^{1/}Nelson L. Bossing, Progressive Methods for Teaching in Secondary Schools, Houghton Mifflin Company, Cambridge, 1935, p. 295.

^{2/}Idem.

by those concerned with questioning. That fact, as Bossing points out, is that a fact that is automatically recalled now, may have in the past, required a great deal of analysis, assimilation, and other aspects of learning before the present condition or unreflected response is possible.

Therefore, an answer to a question that requires a great amount of thought on one level, may on a higher level, due to the conditioning process, become automatic.

The thought questions, which require reflective thinking, are for the most part, the most valuable according to Bossing^{1/} because he feels that problem solving is the most valuable of the mental activities. This would also bring into play many other aspects of mental activity.

If, in classifying, we arrange the questions under their mental processes, then we will have a situation in which many of the questions that would normally be listed separately under the teaching function category are grouped together under one general section heading, and their difference then becomes one of degree rather than function.

^{2/}Maxwell and Reusser feel that there are many kinds of questions, including review, analysis, comparison, and problem to name a few. In terms of large categories they group their questions under the

^{1/}Idem.

^{2/}C. R. Maxwell, W. C. Reusser, Observation and Directed Teaching in Secondary Schools. Prentice Hall Inc., New York, 1939, p. 296.

heading of "drill" and "thought" questions. A drill question would be a question used in formulating fixed associations; it would be an automatic response with little or no thought. The thought question would add to the recalling of facts and information, such processes as evaluation, comparison, and the application of these facts.

Though there may be many questions listed under the broad heading of "thought questions" they will vary as to the amount of thought each may require, and although at the present time a question may require a lot of thought it may become a memory question at a later stage.

Though these authors list large classifications concerning the type of questions, others break down these classifications.

^{1/}
Douglass in his classification of questions lists three types of thought questions.

1. "Pure recall or memory questions.
2. Thought questions necessitating recall and in addition some mental task or reaction with respect to the material recalled.
3. Thought questions in which the large part of necessary facts are furnished the student, and in answering which the task is very little recall but largely reaction."

Though other authors list the memory question as a separate type Douglass feels that it should be listed under thought questions.

^{1/}Harl R. Douglass, Modern Methods in High School Teaching.
Houghton Mifflin Company, Boston, 1926.
P. 38.

^{1/}
 Monroe says that questions in which the students are able to recall ready-made answers can be considered as "fact" or "memory" questions, while those in which they must make an answer for are considered "thought" questions.

A question which requires reflective thinking by a student to-day becomes a fact question for him tomorrow, provided he remembers the answer which he evolved by means of his thinking. In other words, whether the question requires thinking or the mere reciting of the remembered answer is determined by the status of the student's education rather than by any characteristics of the question itself. A thought question is a new question, or at least one for which the student does not remember the answer. On the other hand, the question, 'Compare the early settlers of the Massachusetts Colony with those of the Virginia Colony,' will usually require the recalling of facts and then comparison and evaluation. Thus the term 'thought question' may be used to designate those questions which usually require reflective thinking, and 'fact questions' those for which students are expected to acquire ready-made answers."^{2/}

^{3/}
 Douglass states the following:

Though questioning perhaps contributes more directly to the development of information and appreciations, the development of habits and skills of all sorts may be facilitated by questioning. The degree of development of such may be tested by questioning which brings forth a performance which may be judged, and interest in improvement also may be stimulated. Training in thinking in problem-solving and in generalizing may be given very effectively by questioning.

The habit of thinking twice before speaking, the habit of restraining one's self in cases of doubt, and the habit of considering alternate possibilities, along with many others, may also be developed by good questioning procedure.

^{1/}Walter S. Monroe, Directing Learning in the High School. Doubleday, Doran and Company Inc., New York, 1927, pp. 240-2.

^{2/}Idem.

^{3/}Harl R. Douglass, Op. Cit., 33-34.

From what has been said by these authorities in the field of questioning, the following conclusions can be drawn.

In deciding upon a type of question to use we must first decide upon the purpose or function that is to be served. The choice was given as to the classification of these questions either by the teaching function or skill that each may bring out, or the mental processes that each may call into play. As we stated in the purpose of this study, we are interested more in the mental pattern that each question type may elicit, rather than the skill or teaching function.

When dealing with the mental process, most of the questions seem to fall into one of two large groups; mainly, that of memory or automatic response and that of a thought classification where the varying degrees of the thinking process are used in solving or answering a problem.

When one is concerned with the automatic response type of question, one important aspect should be kept in mind. A question that a certain grade level calls for an automatic response today may have in the past required a great deal of the thinking process before any such memory response was possible. Likewise, a question that now may bring into play a great many of the mental functions, may in the future in turn become an automatic response.

In the thought question classification each particular question may require a varying amount of reflective thought to solve that particular answer. That is to say that one question may only require

the recalling of a single fact while another question may in addition to the recalling process call for more elaborate and conclusive thinking.

We recognize that there are certain levels to the thought process, and that certain questions only reach a certain stage in the process. Therefore before we formulate any questions we should know and understand something about this process, so that, when we do make questions we can recognize the degree of thinking, or the level of thinking, it is going to require the recipient of the question to attain.

BASIC MENTAL PROCESSES

NECESSARY

IN ORDER TO ANSWER QUESTIONS

IN A PROPER AND ACCURATE MANNER

Psychological

^{1/}
Symonds feels that teachers cannot make any great progress in teaching children to think in an independent manner until they, the teachers themselves, know something about the thought process. This is an important observation from the questioning point of view also, for the teacher who has working knowledge of the levels and techniques involved in the thought process can formulate questions in a manner that not only require informative content, but also exercise processes involved in thinking.

In his chapter, "Analysis of Thinking,"^{2/} Symonds feels that certain processes are basic and appear more often in the reasoning procedure. Among the more frequent processes seem to be analysis, selection, generalization, and organization. Basic to the complete operation of thought are these fundamental psychological processes.

1. Fundamental Psychological Processes

A. Observation

1. Attention
 - a. Analysis
 - b. Selection

B. Memory

1. Observation
2. Association
3. Recall and recognition
4. Selection

C. Perception

1. Association
2. Analysis
 - a. Discrimination
 - b. Comparison

^{1/}Percival M. Symonds, Education and the Psychology of Thinking, New York: McGraw-Hill Book Company, 1936, p. 14.

^{2/}Ibid., p. 183

3. Synthesis
4. Selection
5. Recognition

In explaining these psychological processes Symonds point out a number of items of interest that have a direct relation to the formulation of questions from the mental function point of view.

Fundamental to everything seems to be observation, which through the sensitivity of certain sense organs to environmental stimuli enables an organism to react to the outside world.

Efficient observation depends on the direction of the attention Attention has two features that are worthy of note--it is analytic and selective. One can direct the attention to a narrow phase of the total situation and shut out, ignore, and fail to react to the rest of the total situation. The very process of attending to one feature of the total setting is selective. Hence analysis and selectivity are complementary in character for one cannot very well give one's attention to one element without having selected that one and rejected others in the same field.

Memory is a process of associating or of relating or of connecting, particularly those objects which represent means in the act of moving toward ends. Association must rely on accurate observation in order that one may have clear impressions of the objects to be related.

Memory has been said to have four stages (1) acquiring, (2) retaining, (3) recalling, (4) recognizing. The process of recall is one that comes in again and again in a consideration of the higher thought processes. Much thinking depends on ability to recall promising associations at strategic points in the solution of a problem.

Following attention one comes to perception, which by drawing on memory gives meaning to what is observed and attended to. Perception has several characteristics. It depends upon association or rather associations which experience has provided between objects, events, etc. Perception is more than mere observation in that it depends upon the association of what is being attended to in the present with experiences that have occurred in the past. Perception, like attention, requires analysis, but analysis of a higher order. For, since perception involves the relating

of the present with the past, analysis takes the form of discrimination, which involves comparison (including contrast) and the recognition of likeness and difference. Perception can proceed as far as the limits of sensory discrimination.

Perception also involves the seeing of things together, of sensing a pattern on a back ground or field. It is only as the various objects in the field are thus grouped into some sort of pattern of relationships that they can acquire meaning or significance. It is not merely a matter of selecting the elements for attention, but the grouping of these elements after they have been selected.

Finally, in perception there is a matter of recognition. Present impressions become cues or signs for objects only partially presented. We act upon the present situation or the basis of a sign which we take to be representative of or to indicate a total of which the present signal is a part or token. 1/

Here we have shown some of the basic psychological processes that are fundamental to our thinking. If we briefly follow through the total thought pattern we can see how these processes are applied.

II. Concepts

- A. Generalization
- B. Abstracting

III. Organization of Concepts

- A. Classification
- B. Definition
- C. Illustration

IV. Judgment

- A. Judgment of fact
- B. Judgment of value
- C. Evaluation

V. Organization of Judgment

- A. Outlining
- B. Summarizing

VI. Syllogistic Reasoning

VII. Argument - the Organization of Syllogisms.2/

1/Ibid., pp. 185-6.

2/Ibid., pp. 183.

Symonds lists under the second stage, "Concepts," two sub-divisions; mainly generalization and abstraction.

If we observe closely this stage in the thought pattern we can see how the fundamental processes are being used.

Language enables man to conceptualize his mental processes....This process of conception increases the power of thought manifold over perception.

The same processes which were at work in perception are also present in conception, but at a higher level. The process of forming concepts involves abstracting and generalizing.

Abstracting is not essentially different from analysis, except that, since we can reserve a word or sign or symbol for the object, quality, or relation to be worked with, the process of abstraction into evanescent, transcendent, tenuous aspects of the environment proceeds much further than is possible without the aid of language.^{1/}

This is an illustration that is clear enough so that one can see the use of some of the basic psychological processes on higher levels of the thought order. As is stated, "Abstraction is not essentially different from analysis...", we can see that if one can perform the fundamental processes he has the tools to master the higher levels of the thinking pattern. If one can analyse in perception he is using the basic root that is involved when one abstracts in conception.

In formulating questions then, we must be sure that the question asked of the pupil is in line with these basic processes, especially if the problem is a difficult one.

^{1/}Ibid., p. 186.

These fundamental psychological processes should be recognized by the teacher as the foundation in the thinking process. They can be compared to the tools of a workman in that they must be used logically by some uniting force to achieve the solution of a problem. When one is confronted with a thought problem he must unite these processes in some logical order to find the solution.

The procedure used in attaining the solution is often referred to as problem solving or reflective thinking. According to Crow and Crow,^{1/} reflective thinking occurs when there is an obstacle that must be overcome before the solution of a problem is attainable. It follows that if and when solutions are clear no reflective thought is required.

The vehicles of thinking are words. These symbols (abstractions) make possible, through the meaning associated with the words, the ideas that are the outgrowths of the interrelatedness of experience. Through these abstractions an individual passes from his existing mental patterns to the solution of the problem. The greater the experience with a word of an object, the greater possibilities that variations of meaning will be attached to either. The word red may have many connotations, but when we limit it to red meat it sets up within us definite associations; to red letter day, still others; to red flag, an entirely new set of associations are begun.^{2/}

When the question or problem is put to an individual he must utilize his experience, knowledge, and skills in order to extract relevant information to be reassembled to meet the requirements for the solution of the new problem.

^{1/}Lester D. Crow and Alice Crow, Educational Psychology, New York: American Book Company, 1948, p. 310.

^{2/}Ibid., p. 310.

Crow and Crow point out **some** of the mental processes involved in meeting a problem situation.

1. Interest and attention directed toward a goal....
direction.
2. Perception of relationships....interpretation.
3. Selection and recall of relevant experiences....
selection.
4. Recognition of relationships among the component experiences....insight.
5. Formulation of new mental patterns....creation.
6. Evaluation of the workability of solution....
criticism.^{1/}

In viewing these six levels we can see the fundamental processes of Symonds existing at practically all of the levels.

Regardless of the degree that each person follows through on a problem many educators try to classify complete steps in the solution of a problem. Probably the most famous steps of the act of reflective thinking were put forth by John Dewey. He felt that there were definite stages, from readiness to mental reaction, involved in the act of thinking. His five stages of the act of reflective thinking are well known to the educational world.

In a general summary of these steps of Dewey we may list them in this order.^{2/}

1. A felt need or difficulty...a realization that the problem exists.
2. Finding the difficulty and understanding and comprehending the problem. (Defining the problem)

^{1/}Crow and Crow 311 (Ibid).

^{2/}John Dewey, How We Think, Boston: D.C. Heath & Company, 1910, pp.68-78.

3. Propose several possible solutions.
4. Develop any suggestions to the degree that they can be applied to the material at hand.
5. Apply the solution or solutions and observe them in order reject or select the solutions.

^{1/}
Symonds feels that the attempts to apply Dewey's formal steps to problems have not proven altogether as successful as some would believe. For one thing it would seem that all thinking does not take place in the same kind of problem situation, and that this situation does not always require a complete thought act. Also he feels that this philosophy is essentially synthetic rather than analytic. It seems to be taken as an all inclusive whole not overlooking anything, while psychologists feel that the complex act of thinking can be broken down into parts with each one of these parts a matter of learning and skill itself.

This is an important fact for those who formulate questions for it is in this interpretation we can see that there are questions that require a process of complete thought while others can be solved with the use of only a few of the mental skills. In fact Symonds breaks up his thought questions in just this manner. His questions are either of a complete nature or of a partial form.^{2/}

Let us now summarize up to this point. Basic to our thinking as a whole are certain fundamental processes of a psychological nature. These processes remain the root of thinking regardless of the

^{1/}Symonds, Op. Cit., p. 8.

^{2/}Ibid., pp. 8-9.

level of abstraction that may be attained.

These mental skills although they work together, can be separated and used in an independent nature. Now when a problem arises and the individual uses reflective thinking to arrive at a solution, he calls upon these skills. He may only need one skill or he may need many at various abstract levels. If the solution calls for a relatively few skills then we call the problem a partial problem; on the other hand if it requires a full amount of these skills at a number of levels then we can call the problem a complete one.

Since many problems are presented in the question form all this applies directly to the questioning procedure. Let us look at a few types of questions and see what steps may be necessary in the solution of the proposed problem.

The following types of questions will attempt to give the reader the means of arriving at a solution for a given question.
^{1/}
 They have been formulated from Symonds.

1. Learning the meaning of word, term, or phrase.

What is an island? First the learner must experience situations containing the element referred to by word. He then must form associations between the situation and the word. The element should be made to stand out with little attached detail. Attention should be concentrated on the element itself. Many situations should be experienced in which the element in question appears. Finally, pairs of situations should be presented containing the element and its opposite.

^{1/}Symonds, Op. Cit., 21-177.

2. Statement of Relationships.

The first step in stating a relationship is analysis. Attention must be given the various aspects of the terms being considered. Then there must be some sort of comparison and contrast to note similarities and differences. Next the relationship should be named either in its personal existence, or in the general sense if that is not possible. Finally recall is necessary. They must be experienced, named, recognized, and recalled.

3. Classification.

First of all there should be an object or item which is to be identified with a particular group. This object should be carefully examined and/or analysed to put it into a more complete form. There should be a familiarity of the different classes into which the item may qualify. Not only must one command a familiarity with the various classes, but he should understand the outstanding characteristics of each class. In order to finally classify the item into one of the classes the student must identify some of the characteristics of the item with some of the outstanding characteristics of one of the classifications.

4. Formulating a definition.

The first desirable step is to possess a clear picture of the concepts involved. This is followed by a classification of the term into a group. The items must be clearly described that distinguish the term from others in the class. It might be added that adequate concepts are also necessary.

5. Giving examples.

Basic to giving an example or an illustration is association. It is this law of association which tends to determine what is to be recalled. It follows that this association must have been made in the individual's past wealth of experience. It also may be assumed as true that recency, frequency, and intensity add to the accuracy of recall. If there is a blocking of the recalling factor it is usually the best approach to call up as many associations as possible. Often if the recalling factor is subject to emotional factors the original or even the true association is blocked.

6. Selective recall.

In selective recall the first step is the arousal by one of the terms of the question of some particular instance of the term by means of an image or verbal association. For example if the word animal appeared in the question the individual should recall kinds

of animals. Secondly we test the recall examples that are brought to mind to see if they satisfy the terms of the question. The recall brought about the particular animal suggestions, but the trial and error procedure to see which particular animal fits the requirements of the question could better be called recognition. Naturally if one is to answer the requirements of a question he must have some sort of experience with the recalling item.

7. Comparison

In comparing any two things one must first of all analyse the parts. The basic characteristics must be first of all determined. When the wealth of characteristics are provided the job arises to select the most important, significant, or the most interesting characteristics depending on the point of view of the comparison. These characteristics can be quite personal from an individual's point of view since they may touch the desires, wants, and needs of any one person. Since these characteristics are influenced in meaning by the personal feelings of the individual, the more accurate interpretations of these should be derived from experts or an over all, systematic inquiry with all interpretations represented or with all bias a minimum factor. In all cases it should be clear as to whether the comparison, especially if there is a difference, is of a superficial or deep-rooted nature.

8. Comparison on a single basis.

First the method of comparison must be determined. We can determine this method from one of the following: measurement, counting, or the less exact method based upon observed sensory differences. This is followed by the actual carrying out of one of the previously stated methods. Often the actual method is not carried out by the individual, but rather in its place the work or word of an authority is taken and used. Finally the decision is to be made whether one of the components is greater or less than the other, or if there is little difference.

9. Evaluating recall.

This type of recall makes use of the selective recall in that it demands that all the important items which satisfy the conditions of the problem be recalled. Secondly the basis upon which the evaluation will be made is determined. This is followed by the measuring, counting, or estimating the attributes of items recalled in order to see if they are possible candidates in the evaluation. From these select the items that satisfy the conditions imposed. That is limits are defined and we select those items from those recall which fall within the limits of the conditions set.

10. Outlining.

First of all one must read through the material that is to be outlined. When one starts to read he immediately starts a process of selecting and relating. As one reads each item is catalogued and related with the others. Many relationships are found but some of the information is related in a subordinate manner.

11. Summarizing.

In summarizing, many of the functions that are used in outlining are again used in summarizing. Here the clear meaning must be expressed in a true representative picture. All superfluous ideas must be excluded.

12. Problem solving.

First of all we must isolate and define the values that operate in the situation. For example if you are at the fork in a road we must make our decision as to which turn we will take depending the goal we want to achieve. A variety or at least two solutions to the problem should be presented. When solutions have been presented we must estimate the consequences of the alternative hypotheses proposed. This includes the collecting of the facts, etc., and the calling up of the general principles that will aid in interpreting these facts. We must select the most probable in the light of relationships. Finally we must make a decision as to the best course of action.

13. Explanation.

We must first of all set up a cause and effect situation and recall facts about the situation. From this wealth of material we must draw pertinent material which has in some way been related to the situation before. The third step in indicating cause and effect is the recalling of principles from learning or experience that are suggested by the recalling facts. This is followed by a form of the syllogistic reasoning where by the recalled facts are related to the general principles, and the general principles are in return related to the specific problem in question.

14. Application.

First of all we must search for rules and principles. In addition to knowing the mere word of the principle we should grasp the relationships implied. This should be followed by an analysis of the problem situation with these principles kept in mind. Then we must match some principle out of the vast number recalled to some part of the situation to which it particularly corresponds. The final step is the following of directions.

15. Making a decision.

First of all isolate the values involved. We then must make a decision in selecting between the values presented. We then must discover the facts with regard to the situation. We should estimate the consequences in the light of the values that we have considered important. This should be followed by the weighing of the strengths that come from the values of the situation. These should be both the weak and strong points. And finally the decision for the situation.

16. Criticism.

In criticism there must be a breaking away from the line of reasoning of someone else. There must be a retracing of the reasoning process to a point of divergence. This causes a different analysis and selection of data. From this there should be a comparison and recognition of the differences. It is here that new factors should be brought into light that require different conclusions.

This is a breakdown of a few types of thought questions that seem to be quite common in the classroom questioning program of the schools today.

COMMON FAULTS FOUND RESPONSIBLE
FOR
INACCURATE ANSWERS TO QUESTIONS

The Carter and Monroe study dealing with the use of different types of thought questions followed up these questions with a discussion on the common faults of procedure in answering different types of questions.^{1/}

1. In the recall question where the basis for the question was given, the pupil often fails to see the real basis upon which an evaluation should be made.

2. In comparing two things on a single designated basis a common fault is the failure on the part of the student to stay within the limits of the single designated basis. Whether one compares in a particular or general sense does not make too much difference in committing these faults. Often the student starts to give his answer before he has thought out what answers would best be included in his comparison. Many time the student lists minor points of comparison and fails to recognize the more important ones. In addition to the failure to recognize the important facts from trivial ones we have the additional problem of pupil prejudice influencing the answer.

3. In the case of questions that call for cause and effect answers we find that the causes are often confused with the effects. This type of question requires real thinking and reasoning and that is the hardest thing to ask of a child. Often the pupil will know that an answer is true but cannot give causes or reasons.

^{1/}Carter, Monroe, Op. Cit., 18-21.

9. In outlining we find that the student instead of breaking his material into heading and topics, he makes long statements, often one after another, and fails to correctly place steps in their correct order or sequence.

10. In general we can say that the children do not read in order to first get an understanding of the subject-matter. They fail to summarize, outline, or discuss in a manner where logical arrangement of ideas is important. They fail to know their material well enough. Also there is a great deal of carelessness in reading the question, especially so in Algebra. Other faults include the saying of the first thing that comes into the mind without recalling and applying it to see if it is the correct answer and is capable of fitting the situation.

A CLASSIFICATION
OF
THOUGHT QUESTIONS

1. When a person observes the field of thought questions he sees many individual questions, each requiring to some degree a mental response, and each different in its teaching function. With such a difference a classification is always a difficult problem. However in observing the many individual questions at hand we feel that they could basically be broken down into four (4) general classifications.

1. The memory question.

Our memory questions basically require answers that can be automatically solicited on presentation of the question. The answers are largely dependent upon the degree in which the individual has remembered (or put to memory) the material that was introduced to him in order to be learned in a partial or complete verbatim form, or to be recognized in a state of association when related materials are present.

2. Questions of Digest.

These questions basically require organization or reorganization, of the factual material presented, into a new order of some degree.

3. Problem solving questions.

This type of question requires the student to solve a particular problem presented within the framework of a question. The problem may be of a simple nature requiring only simple recall, or it may require all the energies of reflective thinking down to and including personal judgment.

4. Questions of personal evaluation.

In this question an evaluation is made on a problem that has already been answered. It too may require all the energies of good reflective thinking. It differs from the third type of question in that it is based on a conclusion. If a student was given a problem to solve, the question form of that presentation would require him to solve the problem, possibly up to and including judgment. If, however, the instructor took the conclusions of the answer and presented them to another student for his opinion, criticism or judgment this new question to the new student would become a question of personal evaluation since he is asked to evaluate the problem in some way not to solve it.

The classifications of some thought questions might look like this.

I - Memory

- A. Drill
- B. Recognition
- C. Recall

II - Digest

- A. Analyse
- B. Summarize
- C. Classification
- D. Outline
- E. Reorganize (Organize)

III - Problem

- A. Statement of Relationships
- B. Comparisons
- C. Cause and Effect
- D. Decision
- E. Illustrate

IV - Evaluation

- A. Criticize
- B. Judgment

Examples

"My Uncle gave me several big pumpkins for Halloween lanterns. We made them in our back yard. We cut off the tops first. We cleaned out the pumpkins. We cut eyes and mouths of different shapes. We made some look funny. We made some look cross. We put a candle inside each pumpkin. We lighted the candles that night. We thought the faces seemed to come to life."^{1/}

Questions.I. Memory

1. What was put inside each pumpkin?
2. The pumpkins were to be used for _____?

II. Digest

1. Outline the steps in making a Halloween lantern?

III. Problem

1. Would squash or pumpkins make the better lanterns? Why?

IV. Evaluation

If the answer to III was squash the question might be asked of a new student;

1. Criticize the line of reasoning in this answer?

Example

"Southern Alaska is a long, rugged land. Steep, high mountains reach down to meet the sea. Their lower slopes are covered with dense, green forests. At the top of the high mountains one finds only snow, ice, and bare rock.

If you will look at the map on page 320, you will see that the coast of southern Alaska is bordered by many islands. Long arms of the sea, called fiords, reach deep into the mainland. These fiords have been partly carved out by the sinking of the coast, and partly by the crushing weight of slow-moving rivers of ice known as glaciers. One of them alone is bigger than the State of Rhode Island....

^{1/}Harold G. Shane, et'al., Easy Steps to Good English, Chicago: Laidlaw Brothers, 1952, p. 43.

Southern Alaska drips with rain. The winds which blow from the Pacific bring rain to this long narrow land about two hundred days out of the year. A hundred and twenty inches of rain may fall in a single year! Although this part of Alaska has heavy rainfall and is often veiled in fog and low clouds, its climate except in the high mountains, is mild in both winter and summer. Its winter temperatures are only a few degrees colder than the weather in western Oregon and Washington. This seems strange for a land so far north."¹/

Questions.

- I. Memory
 1. What are the long arms of the sea?
 2. Slow moving rivers of ice are ____?
- II. Digest

Analyze the weather of Southern Alaska?
- III. Problem

Where would you rather live, in Southern Alaska or the Yukon Plateau? Why?
- IV. Personal evaluation

Asking another student to give his opinion on the answer given in III.

Let us look at some illustrations.

1. Grant was faced with the problem of whether he should or should not attack Richmond. This to Grant was a problem. After weighing the facts on both sides he made a decision. He attacked the city. This is a problem solving situation.

In a history class the teacher may ask the student to evaluate Grant's judgment. In this case the facts are in, the decision has been made and the student must evaluate the decision. This is more personal evaluation rather than just solving a problem.

Other problems to be solved may include:

1. Compare Grant and Lee in the ability to make the best use of artillery?

¹/Gertrude S. Brown, Your Country and Mine, Boston: Ginn and Co., 1951, p. 321-2.

2. Contrast the life of George Custer as a student at West Point and as a famous general?

An evaluation question might read: Do you think Custer's personal life was becoming an officer in the United States Army? The student knows the facts of his life he is only asked to criticize or evaluate it.

These examples have tried to illustrate different classifications that we have put thought questions into. We feel that the thought questions that we have come across seem to fit at least one of our categories of classification.

CHAPTER V

SUMMARY AND SUGGESTIONS FOR
FURTHER STUDY

CHAPTER V

Summary and Suggestions for

Further Study

It has been the purpose of this study to organize and present some of the materials, phases, techniques, criteria and processes, that when combined, give a basic foundation to the art of good questioning.

A summary of this material reads as follows:

1. History shows that the importance of questioning in the field of education was recognized by early writers and educators.
2. Thought questions are considered one of the main-springs to healthy mental activity.
3. Improvement can be made in the classroom concerning the use of questions in the learning process.
4. For the most part a large number of questions asked by the teacher in the classroom is usually an indication of poor instruction.
5. Fundamental psychological processes are essential for logical reasoning in answering thought questions.
6. There are many kinds of thought question each leaving a different function.
7. There seems to be a lack of understanding as to the many functions of the question in our school systems of today.
8. There seems to be similarity and overlapping pertaining to the characteristics of good questioning.
9. There has been too few theses written on the topic of questioning and its phases.

10. Theory in the field has given many suggestions for improving questioning.
11. Opinion varies as to which type of thought question is the most difficult.
12. Thought questions require some degree of mental activity and often this activity is found being used in the solution of another thought problem.
13. In the past little attention was given to individual differences in formulating and presenting questions.
14. Attempts have been made to classify kinds of mental processes essential in answering certain types of thought questions.
15. Certain questioning techniques have been submitted to experimentation with good results.
16. Though there have been many classifications of questions, no one classification is yet outstanding.
17. The questions still has not reached its full potential in education.

It is the hope of the writers that this thesis, in some small manner, may contribute to the field of education some worthy bit of information that may, in some future day, be helpful in solving and overcoming the challenge that the question and its methods present to us today. Though this thesis has just scratched the surface of questioning, the writers would like to suggest other possible studies that would contribute to the field.

1. Good questioning procedures that could be taught to prospective teachers in college.
2. Examples of questions, that if presented correctly, would aid in the training of the mind in order to carry out the functions required by the question in a logical order.
3. A written test that could be constructed in such a way as to enable an individual to check on paper the order of mental processes a pupil uses in solving certain given questions.
4. Studies of questioning methods in various geographic localities for the purpose of comparison.
5. A work book with questions and problems arranged to strengthen the use and order of the mental processes in solving problems.

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