Factors influencing teaching effectiveness of industrial education teachers at community college level in the state of Iowa

by

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Signatures have been redacted for privacy
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CHAPTER I. INTRODUCTION

Effective teaching is defined as the extent that the teacher acts in ways that are favorable to the development of basic skills, understanding, work habits, desirable attitudes, value judgments and adequate personal adjustment of the pupils (Ryans, 1970, page 2). Research findings indicate that effective teaching is crucial to teacher education, teacher selection, teacher performance and ultimately to the survival of the society (Donald, 1975, page 27). Bost (1976, page 640) saw the need for effective education in vocational schools when he stated: "The public's growing demand for its money's worth in education creates further urgency to teacher evaluation. This cry for accountability continues to spread. We must be able to show proof that we are doing our jobs effectively and efficiently."

This concern led the Iowa State General Assembly to appropriate the sum of $25,000 (twenty-five thousand dollars) for educational research in 1959 (Iowa Department of Public Instruction, 1975-76).

As a result of the study by Gibson (1975) it was recommended by the Iowa State General Assembly that counties should merge together and establish area community schools to provide Iowans with further education after high school. This recommendation was accepted by Iowa State General Assembly, documented and published authorizing the merged areas to establish area community colleges. Fourteen of the fifteen merged areas offered some education programs during 1966 - 1967 school
year and the fifteenth began offering programs during 1967 - 1968 school year.

Today, there are fifteen area community colleges operating in Iowa with 154 vocational training programs. The community colleges spent $90 million in 1975 to provide comprehensive programs to youth and adult populations. This expenditure forced Arnold Garson to ask the question: "Area Colleges: Can the public afford them?" (Garson, 1975, page 1).

In this study the researcher attempted to evaluate teacher performance or the extent to which the teacher of industrial and vocational education acts in the classroom that is favorable to the development of basic skills, understanding work habits, desirable attitudes, value judgments and adequate personal adjustment of the pupils at the community colleges in the state of Iowa.

The Problem of the Study

The problem of this study was to compare the perception of school administrators, teachers, and college students regarding factors which influence teaching effectiveness of industrial education teachers in Iowa's community college programs. Factors that were considered included:

1. teacher's verbal communication,
2. teacher's knowledge of subject matter,
3. teacher's human relations with students, and
4. teacher's motivation of students.
The Objectives

The objectives of this study were:

1. to determine the teacher's ability to communicate technical and related knowledge to students verbally,
2. to determine the teacher's ability to stimulate in students drive, desire, interest, and willingness to learn his subject,
3. to provide the teacher educators, as well as school administrators, the necessary information to guide them in the selection of teaching personnel and teacher's promotions, and
4. to supply information for setting education policies and improve communications between teachers and supervisors.

Questions to be Answered

Four pertinent questions were asked in order to identify the factors in teaching effectiveness of industrial education teachers.

1. Is there any difference between the perception of school administrators, teachers, and students regarding the teaching effectiveness of industrial education teachers?
2. Is there any difference between the perceptions of both school administrators and college students about the teacher's ability to communicate ideas and facts of the subject matter verbally to the students?
3. Is there any difference between the ratings of the administrators, teachers, and that of the students about the teacher's interaction with the students during instruction?
4. Is there any difference between the views of the administrators, teachers, and those of the students with regard to the teacher's motivational ability of his or her students as measured with the developed instrument?

Definition of Terms

To increase the readers comprehension of the research report, the following terms have been defined.

Perception: Good (1959) defines perception as the awareness of external objects, conditions and relations as a result of sensory stimulation.

Industrial Education: Good (1959) defines industrial education as a generic term used to designate various types of education of industrial nature, vocational industrial education, industrial arts, technical education and apprenticeship training in both public and private schools.

In relation to education at the community college level, Good's definition refers to various kinds of education programs dealing with the development of specific knowledge, skill, and attitude essential for initial entry into occupation.

Effective teaching: Popham and Baker (1970) stated, "Effective teaching is concerned with particular instructor dealing with particular learners in a particular environment as he attempts to achieve a particular instructional goal by presenting the ideas and activities involved"
in a teaching unit that most facilitates the regular and systematic
development of the learners."

Community college: As defined by Iowa Board of Public Instruction
(1977) the community college is a publicly supported school which offers
as its curriculum two years of liberal arts, professional or other
instruction partially fulfilling the requirements for a baccalaureate
degree and which offers in whole or part the curriculum of a vocational
school.

Subject matter: Subject is defined in Webster's Third New Interna-
tional Dictionary as a branch of knowledge of study especially when
arranged and formulated for teaching as an integral part in a system
of studies.

Matter: Matter is defined as the substance of a branch of knowl-
edge: something that forms the subject of any field Gove (1966).

Subject matter can be defined as the substance of a branch of
knowledge especially when arranged and formulated for teaching as an
integral part in a system of studies.

Interpersonal relations: Guralnik defines relations as connection
between or among persons. In the classroom the term refers to the
interaction between the teacher and the students. This includes the
amount of friendship, love, tolerance, respect, and cooperation or
lack of these under the condition of teaching and learning.

Motivation: Callahan (1966) defined motivation as a combination
of forces that:
1. begin the movement towards a desired goal,
2. determine the direction this movement will take, and
3. sustain goal directed behavior, or as the personal, internal
   process that determines the strength and direction of a
   person's behavior or line of action.

Skill: Macdonald (1964) defines skill as expertness, expert knowledge:
   a craft accomplishment, a complex movement or action carried
   out with facility as a result of practice.

   In vocational and industrial education this refers to physical or
   mental performance with ease and precision.

Assumption of the Study

In an attempt to compare the perceptions of students, teachers,
and school administrators concerning the teaching effectiveness of
industrial and vocational teachers the researcher assumed that:

1. teaching effectiveness can be measured and quantified to
   serve as a valid source of information in predicting effective
   teaching in industrial and vocational education,
2. Industries and other services require new skills in order to
   cope with rapid technological changes. These new skills can
   be provided especially by effective instruction in industrial
   and vocational education, and
3. when teaching in industrial education is effective, industrial
   employers will not complain that community college graduates
   are incompetent for industrial work.
The Limitations of the Study

The study was limited to five community colleges in the state of Iowa, 250 final year students of community colleges, 30 teachers, and 30 departmental heads. The sample was drawn from a number of industrial and vocational education departments.

Due to limited time and resources available to the researcher for transportation, printing, mailing, college schedules, and work involved it was impossible to make use of a larger sample.
CHAPTER II. THE REVIEW OF LITERATURE

The quest for educational efficiency has led to many attempts to develop valid and reliable measures of teacher effectiveness. Concern for evaluation has also been expressed by several educators including Smith (1967) who stated: "Interest in the evaluation of teaching emerged at the beginning of the century when the efficiency movement in industry was at its height. Studies of time and motion in industry had shown that the worker could be trained to produce more in less time and with less energy. As the function of the school expanded and school budgets mounted, it was natural to apply to the operations of the school the procedures for upgrading efficiency that had been successful in industry. One phase of this quest for education took the form of the teacher rating scale introduced in the early years of the century."

The studies conducted were devoted to:

1. the inability to identify elements of effective teaching,
   Peronto (1968), Pratt (1977),
2. the lack of standardized criteria, Ryans (1970),
   and
3. the problem of definition, Bar (1968), Smith (1967).

Teacher effectiveness seems to mean different things to different people. To some parents it is the grade they think their children should receive. Gage (1964) said that teacher effectiveness is the teacher's effect or realization of some value. Usually the value takes
the form of some educational objective, defined in terms of desired pupil behaviors, abilities, habits or characteristics.

According to Bar (1968) teacher effectiveness can be described in two ways, one that describes it in terms of the personal prerequisites and one that describes it in terms of professional competency.

Smith (1967) stated that teacher effectiveness covers two separate and distinct things - those factors which belong to the teacher as a person and those which belong to patterns of instruction and management. But, to the researcher and hopefully to increasing numbers of administrators and supervisors, it is the ability of the teacher to make use of verbal communication, knowledge of subject matter, interaction with students and student motivation in the classroom situation, to create an environment which will develop in the students ability, salable skills, work habits, good attitudes towards self and others, and provide them with necessary information which will enable the students to solve their present and future life problems.

The College of Education of Michigan State University conducted a study on the financing of post secondary education. In this study the students were asked to name one single most important reason for their enrollment in post secondary institutions. The results of the study indicated that 34 percent said it was for self-development, 25 percent said it was for employability; others include income 16 percent, sociability 14 percent, and general skill 9 percent. This study revealed that self-development and employability were the top reasons
given by students for seeking education beyond high school. The ultimate measure of an industrial education teacher's effectiveness must therefore be in his ability to modify students' behavior to produce the intended outcomes.

Based on the findings of the mentioned study, it is therefore the purpose of this study to identify factors which differentiate an effective teacher from a less effective teacher.

**Verbal Communication**

In this study verbal communication is defined as the passing of information from one person to another through verbalization. This communication involves:

1. message: information in verbal form,
2. source: who communicates to whom in the classroom,
3. the channel: voice, words, air, and
4. the receiver: who receives the message in the classroom.

In this literature review on communication, the message is the content of the subject matter which the originator (the teacher) tries to transmit verbally by medium of sound waves through the air to the receiver (the student). The communication is only effective when the student reacts by answering, questioning or performing mentally or physically. There is then a return or response loop of this cycle from receiver to sender. This response loop is called feedback. Feedback enables the originator to correct omissions and errors in the transmitted message or to improve the coding (interpretation) and
transmission process or even assist the recipient (the student) in understanding the message.

Communication between one person and another takes place on a verbal and non-verbal, and conscious and unconscious levels, Russell and Black (1972).

In verbal communication, the teacher exhibits verbal actions that direct, admonish and inform pupils, and the preponderance of teaching behavior consists in verbal communication, Smith (1967).

By the above statement Smith indicates that by means of words the teacher performs particular actions. He gives directions, tells his pupils what to do and how to do it. He may tell them how to use an index; how to set up a piece of laboratory equipment. He does not only give directions but also performs admonitory acts. He praises and reprimands; he advises and enjoins. These sorts of acts make up what psychologists refer to as reinforcement. In addition, the teacher defines, classifies, names, reasons, explains, evaluates and requires his pupils to perform these acts. These sorts of verbal behaviors are the heart of teaching in so far as cognitive objectives are concerned. This is so because they make up the intellectual operations by which the subject matter, as a means of learning outcomes is manipulated. This makes verbal communication an important factor in effective teaching.

Cline (1977) confirmed this statement by saying that verbal ability appears to be the most important teacher characteristic involved
in the process of instruction. Anita et al. (1969) supported this idea by stating that people in many professions use "technical language" to help them talk precisely about behaviors or phenomenon within their profession and points out that it is an available tool to transmit knowledge accurately from the practitioner (teacher) to another (the student).

In teaching situations the teacher voices out the message to the students. Effective communication does not occur until there is a feedback from the students to the teacher.

Kemp (1975) had a similar opinion when he stated that effective communication depends upon the receiver being active, and that feedback enables the originator (the teacher) to correct omissions and errors in the transmitted message.

The foregoing make verbal communication between the teacher and the student an indispensable factor in classroom instruction. For this reason Graber (1976) recommended that great care is required in selecting the most effective verbal approaches for each occasion.

In non-verbal actions are found to be forms of communication - the gesticulative and performative.

In gesticulative behavior the teacher exhibits his psychological state and he feigns it through the expressions of the face and eye, tone of voice and posture. The teacher typically gives signs of how he feels. Such gestures are often read by the pupils as signs of approval or disapproval as cries for coming event.
Performative behavior on the other hand is engaged in the teacher demonstrating what something is, what it is used for, or how something is done. While such behavior is non-verbal it may be accompanied by discourse. The teacher manipulates objects such as equipment and talks at the same time. He may be showing how to read blueprints and at the same time, he may be telling what he is doing or how he is doing it. But telling is an accompaniment rather than a part of the performative behavior.

The Nature of Communication

Barry and Johnson (1964) in discussing the nature of communication said it is dual in nature. They continued that teachers who succeed in achieving a general pattern of cooperative group behavior always develop two-way communication systems. Furthermore, both stated that children should be given opportunities to express themselves, so that mutual understanding is built between members in the group and between members and teachers. In this way while children express themselves the teachers should pay special attention to what the children are trying to communicate. Teachers should be able to understand what the children are trying to express even though the meaning might be obscure. Barry and Johnson in a concluding statement wrote that successful teachers consciously or unconsciously recognize that to help children to learn (whether the learning is in the area of skills, or content or it pertains to attitudes and values) it is as important for the teacher to know what the children are saying as it is for the children to
understand what the teacher is trying to say to them.

Another reason for establishing an effective two-way communication system is to enable the students to raise questions about problems that trouble them, Barry and Johnson (1964).

Fleishman (1967) in a research conducted by Carl R. Rogers on "Barriers and gateways to communication", reported that the major barrier to interpersonal communication was "our very natural tendency to judge, to evaluate, to approve (or disapprove) the statement of the other person or the group".

By this Fleishman meant that interpersonal communication fails when the receiver of the information interprets the message from his or her own point of view, rather than from the sender's own frame of reference.

Secondly, Fleishman reported that this barrier to interpersonal communication can be broken by "listening with understanding". By listening with understanding he meant that the respondent should see the expressed idea and attitude from the other person's point of view, sense how it feels to him, and achieve his frame of reference in connection with what he is talking about.

From the above findings, verbal communication in the classroom, therefore, is effective only when the student sees the teacher's expressed ideas and attitudes from the teacher's own point of view.
The Teacher's Knowledge of Subject Matter as Related to Effective Teaching

In the state of Iowa, the requirements for certification to teach in community colleges (grades 13-14) include the following:

1. masters degree,
2. graduate major in the principal field of instruction, and
3. six (6) semester hours of appropriate professional preparation for college teaching, Woellner (1976).

These requirements indicate that the community college teacher must be an authority in his or her own field of specialization. This characteristic of a specialist makes a great contribution to the quality and quantity of information the teacher delivers to the students during instruction.

The art of teaching is a culmination of an intricate process. The teacher who really understands the importance of his work and sincerely tries to do it to the best of his ability begins by drawing up a plan and setting up objectives to be attained. He then selects the subject matter for the realization of his plan, analyzes the task, and organizes the subject matter into units suitable for presentation to the students. A teacher who is not a specialist in his area of learning cannot accomplish the above tasks in the same logical manner. This shows that it is necessary for a community college teacher to be an authority in his field of speciality.
The Subject Matter as a Source of Content Analysis

The traditional source of the performance objectives, content analysis methods, student activities, evaluation materials, teaching aids is the subject matter discipline in which the teacher is teaching. In selecting the objectives the teacher has to identify major ideas in his field and attempt to generate objectives that exemplify them (Popham and Baker, 1970).

In content or trade analysis the teacher makes a complete list of all things one should know how to do and all the things about which one should possess trade information. According to (Bollinger and Weaver, 1945) the first things to know and identify are those things that a beginner has to be shown and told about the subject matter in order to aid him in becoming a tradesman. This task is technical in nature and unless a teacher is well-trained in the occupational area he or she teaches, there is doubt that he or she will be capable of analyzing the trade effectively. Ramp and Reeder (1973) seem to support the view that knowledge of subject matter is essential for trade analysis and effective teaching. In their research report of the findings of Walsh on determining the competencies most important for the success of trade and industrial teachers across the nation in 1960, they identified nine areas of competency. The first of these areas was trade analysis.

The methods and teaching aids are determined by the nature of the subject matter. One of the principles that should guide a teacher in delivering a lesson as stated by Fryklund (1970) showed that the teacher
must understand the learners, know what he is to teach (subject matter), and how best to present the particular lesson. He should know what method of presentation to use and have a thorough knowledge of the various aids and devices that have proved useful in teaching. Other authors that support this idea include Mathew (1974) and Gillie, Sr. (1974).

Just as the subject matter is determined through trade analysis, the methods and teaching aids and student activities are also influenced by specific subject matter. Earnest and Benton (1971) stated that vocational education teachers should draw their learning activities which will provide learning experiences from the content of all subject matter fields. Brown and Thornton, Jr. (1963), Callahan (1966), and Ryans (1970) all supported this concept.

Tolonen (1973) wrote in an article entitled "Accountability is for everyone" that a student from Oregon Community College, who by school standards had successfully completed electronics training, alleged that he was turned down for employment because he lacked acceptable entry skill. This student brought suit against the school. The school was held accountable for the product, and the teacher was held responsible. This evidence indicates that effective teaching in college, like effectiveness in any other activity, cannot be achieved through magical formulae. According to Brown and Thornton, Jr. (1963) effective teaching can be accomplished by a happy combination of common sense, knowledge of subject matter, teaching skill and force of personality, artful judgment, and plain hard work.
"As the designated classroom leader, the teacher is responsible for developing and maintaining a class climate conducive to learning. To achieve this objective, the teacher must be aware of the dynamics that operate in groups and be able to use these forces to his advantage. The teacher must understand how groups form, become cohesive, formulate goals and exert influence. This understanding must be translated into classroom practice and enhanced through application of group leadership technique", Muro and Brown (1973).

Muro and Brown recognize the teacher as the class leader, the developer and maintenance of class climate conducive to learning. The teacher must understand the objectives, interests, abilities, and capabilities of his students. He must then use these forces to promote interpersonal relationships between students and student and himself. This relation attitude removes fear and creates friendly atmosphere which promotes free expression, confidence, and willingness to perform classroom activities.

Bush (1954) supported this idea when he stated that teachers should possess "in the head" knowledge about each pupil in their classes, in at least five fields: health; ability; aptitude competencies and interests; ambitions, purpose, and desires; special block/stresses or strains and cultural milieu including home situations.

Baird (1972) emphasized the importance of good teacher-student relationships in the classroom. He further stated that good teacher-student relationships are a major professional obligation to an
Frymier (1965) wrote that people who behave in a democratic way are psychologically healthy and have compassion for their fellow man. They believe in the worth of ideas and are open to learning and change and growth. Teachers who would be effective in their teaching must both manifest and teach these ways to all. What Frymier meant was that teachers who want to make their teaching effective should be democratic, and provide a climate of affection which will make the students feel wanted and valued.

Hargreaves (1975) stated the positive and negative labels used by teachers regularly in their verbal interactions with pupils. These labels were outlined by Hargreaves as follows:

<table>
<thead>
<tr>
<th>Positive Labels</th>
<th>Negative Labels</th>
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<tbody>
<tr>
<td>General: good lad</td>
<td>nuisance</td>
</tr>
<tr>
<td>sound</td>
<td>pain in the neck</td>
</tr>
<tr>
<td>nice</td>
<td>fool</td>
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<tr>
<td>making progress</td>
<td>trouble maker</td>
</tr>
<tr>
<td>promising</td>
<td>going to dogs</td>
</tr>
<tr>
<td>Instructional: hard worker</td>
<td>idler</td>
</tr>
<tr>
<td>bright</td>
<td>thick headed</td>
</tr>
<tr>
<td>neat</td>
<td>untidy</td>
</tr>
<tr>
<td>polite</td>
<td></td>
</tr>
<tr>
<td>Discipline: quiet</td>
<td>chatter box</td>
</tr>
<tr>
<td>polite</td>
<td>cheeky</td>
</tr>
<tr>
<td>Peer: leader</td>
<td>ringleader</td>
</tr>
<tr>
<td>friendly</td>
<td>bully</td>
</tr>
<tr>
<td></td>
<td>lonewolf</td>
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</table>

Based on research by Hargreaves, he concluded that positive labels provide positive reinforcement to the pupils' behavior.
With reference to research findings conducted in Great Britain and United States on pupils attitude toward teachers, Hargreaves (1975) reported that a teacher liked by the students is one who under the category of discipline, keeps good control, is fair, has no favorites, gives no extreme or immoderate punishment; under instruction, explains and helps, and gives interesting lessons; and under personality is cheerful, friendly, patient, understanding, has a good sense of humor, and takes an interest in pupils as individuals.

A teacher disliked by the students is one who under discipline, is too strict, is too lax, has favorites, picks on pupil, punishes and threatens excessively or arbitrarily; under instruction, does not know subject well, gives dull or boring lessons; and under personality, nags, ridicules, is sarcastic, bad tempered, unkind, has no sense of humor and ignores individual differences.

In the above report the instruction area was perceived as the most important, bearing about 40 percent of the weight, with discipline next at 33 percent, and personality last with 25 percent. The pupils in this research saw the instructional area as the primary source of their life in the classroom. They approved that the teacher who put across the subject in an interesting way, and whose pleasant disposition creates a warm, relaxed, friendly climate of personal relationship within which the learning process can proceed is effective.

According to Bush (1954) human relationship of school life is the heart of the educational process -- the teacher-pupil relationship.
The notion of interaction includes both emotional and cognitive communication. What is too often ignored in classroom operation is the emotional component. Until a person is at ease (gets to know others) he will not be able to concentrate fully on the cognitive component of the communication. Sensitivity and knowing each other can be developed in the classroom, and its value to learning of the subject is great (Gorman, 1974).

A committee of the Phi Delta Kappan, 1938 (an organization that publishes articles concerned with educational research, service and leadership) in support of the above idea stated that the sympathetic person must share in others desires, participate in their interests, and cooperate with them in their efforts. Unless the teacher can enter into this living relationship with his pupils, he cannot contribute all that he should.

This statement means that a teacher must be pupil-centered. He will have to allow students to cooperate with him in running the class within the limits set by educational policies. He will concentrate on both subject matter and student discussion and decision-making skills and he will have to declare open expression of feelings to be as important to the classroom situation as open expression of facts and concepts. This approach will help group maturity and enhance learning in self-direction and affect education. If direct expressions and feelings are blocked, this may result in yelling, seat changing by the teacher and in restlessness, inattention, open defiance or less open "fooling around" by students. Here it is impossible to achieve
effective teaching without good interpersonal human relationship.

Teacher's Motivation of the Students as a Factor in Effective Teaching

Authors seem to be in agreement on the definition of motivation as it relates to classroom situations.

Klausmeier et al. (1975) defined motivation as an aroused state of the individual characterized by the students initially attending to the teacher and learning activities and then working at assignments and activities until they are completed.

Callahan (1966) also defined motivation as a state of arousal in which individuals wish to achieve a specified goal and exert efforts to do so.

These definitions of motivation indicate that the motivation of students is probably a major responsibility of the teacher. How responsive a learner is to an instructional situation and how hard he will work to achieve a goal will depend upon his motivation. If a student sees that instructional objectives parallel the direction of his personal values, he will be strongly motivated.

When one examines a few principles of motivation of students in the classroom, there seems to be evidence to show its importance to effective classroom teaching, and particularly in trade and industrial education.
Principles related to motivation:

1. All behavior is motivated (except that governed by autonomic nervous system),

2. The mind may be stimulated by external force, but it is the learner's reaction to the stimulus that results in learning,

3. Motivation is best viewed as a tool to assist instruction, not as an end in itself,

4. Interests motivate students and in the absence of them learning does not take place, and

5. Learning that brings reward and satisfaction to the students acts as a motivation for further learning, Callahan (1966).

The proper use of motivation therefore is to promote learning by assisting the student in achieving success, for success often serves as an effective motivator.

According to Baird (1972) motivation is a very important topic for consideration on the part of industrial education teachers. Furthermore, the value of motivation of students in classroom learning can be distinctly shown when the behavior of low and highly motivated students are compared.

Frymier (1965) in his research on "Low Motivated Students" found that they were unhappy and afraid, lacked confidence in themselves, resisted change and new ideas, were unduly concerned with the objective and materials, and dislike school intensely.

Pascarella (1977) in a research on "Student motivation as a differential predictor of course outcomes in personalized system of
instruction and conventional instructional methods" indicated that highly motivated individuals tend to work twice as hard at a problem when it looks as if they do not know the answer and liked to return to a task they had previously failed. Thus the motivational state of individual pupils is directly related to how well they learn and achieve, as well as how they conduct themselves.

In general Peront (1968) in his research to identify factors that differentiate good teachers from poor teachers found that only knowledge of subject matter, pupil, and professional knowledge were the established discriminating factors between good and poor teachers.

Ryans (1970) after forty years of research on the characteristics of teachers noted that the general tendency for high teachers to be extremely generous in appraisal of the behavior and motives of others, possess strong interests in reading and in literary affairs, interested in music, painting and the arts in general, participate in social groups, enjoy pupil relationships, prefer non-directive classroom procedures, manifest superior verbal intelligence and be above average in emotional adjustment.

Turning to the low teachers, they tend generally to be restricted and critical in their appraisal of other persons, prefer activities which do not involve close personal contacts, express less favorable opinions of pupils, manifest less high verbal intelligence, and show less satisfactory emotional adjustment.

Rick (1978) in the editorial to Professional Educator, Spring 1978, outlined the characteristics of good teachers as identified by students.
thus:

1. organize and prepare for class,
2. encourage good study habits,
3. maintain an atmosphere conducive for study,
4. allow independent as well as supervised activity,
5. treat all students equal and fair,
6. provide opportunity to practice concepts and skills,
7. show relationship of classwork to realistic life situations,
8. base instruction on student's interests and attitudes,
9. use a variety of teaching styles and techniques, and
10. allow student input and open discussion.

The outcome of this research on effective teaching of trade and industrial education teachers will be compared with the above-mentioned general findings by earlier researchers.
CHAPTER III. METHOD

The methodology employed in conducting this study describes the sample and the development of the measurement instrument.

Sample: Five community colleges in the state of Iowa were geographically selected. These included:

1. North West Iowa Technical College, Sheldon,
2. Iowa Central Community College, Fort Dodge,
3. Des Moines Area Community College, Ankeny,
4. Iowa Western Community College, Council Bluffs, and

From each of the five community colleges selected, 50 second-year students for 1978, 6 teachers and 6 department heads, all from various trade and industrial education departments were randomly selected. Each second-year student had to rate two teachers - one effective, the other less effective. The department heads also rated two teachers, the effective and the less effective. Each of the teachers rated two peers - an effective and less effective peer.

On the whole 250 students, 30 instructors and 30 department heads from the five community colleges made up the subjects of the research study.

The Characteristics of the Sample

Within the 3 groups of the research study, the students, the teachers, and the department heads, the 250 students were in their final
year and having remained in the colleges for one or two years were better able to evaluate their teachers. Also the teachers who were evaluated had three or more years of teaching experience in their respective specific subject areas of trade and industrial education. The department heads who were involved headed different vocational subject areas. Department heads who had not put in a year of service in the college were excluded in the study.

North West Iowa Technical College

North West Iowa Technical College is centered on a spacious rolling 146 acre campus located at Sheldon, Iowa - a growing community of 5,000. The career programs offered are taught in modern facilities which included the mechanical annex, the powerline installer practice field, welding, mechanical drafting and auto mechanics.

Iowa Central Community College

Iowa Central Community College with administrative headquarters in Fort Dodge is a comprehensive multi-center education unit. It provides educational programs for students in college parallel, vocational technical and career education, secondary career education, and in community education. The college operates on a semester basis with an extension for vocational technical programs in auto mechanics, bricklaying, carpentry, mechanical drafting, electronic technology, machine shop and welding. Dormitory housing for 420 students is available at the Fort Dodge Center.
Des Moines Area Community College

Des Moines Area Community College main campus is located on a 320 acre site at Ankeny with entrances from Highway 69 and Patrol Road. The college is a multi-campus operation with three major attendance centers: the Ankeny campus, the former Boone Junior College, and the Urban Center in Des Moines. Operation is basically year-round on the quarter system. Housing is available to Boone campus students. Technical programs involved in the study included auto mechanics, building trades, and electronics.

Iowa Western Community College

Iowa Western Community College is a growing comprehensive college (situated on hilly ground at the outskirts of Council Bluffs). It offers career education, college parallel and adult education programs. The major attendance centers are located at Council Bluffs and Clarinda. Dormitory and cafeteria facilities are available at Council Bluffs and Clarinda. The college operates on a quarter system and classes are conducted 12 months a year like those at Ankeny center. The vocational industrial programs include courses in civil technology, electronics technology, machine tool and die, welding and auto mechanics.

Kirkwood Community College

Kirkwood Community College is located in Cedar Rapids, a population of 115,000. The school operates on a quarter system. Dormitory facilities are not available. Only two vocational industrial programs,
auto mechanics and electronics departments, took part in the survey.

It was difficult to include such trades as architectural drafting, telecommunication, welding, water and waste water technology because these subject areas had only one instructor. It was, therefore, impossible to evaluate one teacher as effective and less effective at the same time. So these subject areas were excluded.

The Measuring Instrument

Only one instrument was used in collecting the data - the questionnaire.

It was very difficult to identify a standardized test which could measure teaching effectiveness in trade and industrial education based on the criterion measures of verbal communication, teacher's knowledge of subject matter, his interpersonal relationship with students and his ability to motivate students for effective learning. The researcher, therefore, developed an instrument strongly based on:

1. "The Purdue Rating Scale for Instruction" by H. H. Remmers and D. N. Elliott (1950),
2. Rating scale developed for the evaluation of teaching competencies by C. D. Dzuiban and T. J. Sullivan (1978), and
3. The characteristics listed as being important to teaching effectiveness in the classroom by French (1974).

The specific purposes for which this questionnaire was intended were to identify factors to predict success as measured by students, teachers and department heads and to detect differences in perceptions
between groups.

The questionnaire was made up of 48 items. The first dozen items measured verbal communication, the second dozen items measured teacher's knowledge of subject matter, while the third dozen concentrated on interpersonal relationships and the fourth dozen was centered on student motivation.

The instrument was delivered by the researcher in person, who gave verbal direction on how the questionnaire was to be completed. The completed forms were later mailed by the vocational program coordinators in each of the community colleges to the researcher.
CHAPTER IV. FINDINGS

Statistical Treatment of the Data

Data from the questionnaire were coded and punched for computer analysis at the Iowa State University test scoring center and processed in the computer center at Iowa State University using the SPSS (1975) programs. The statistical treatment of the data for this study was performed using analysis of variance for the comparison of the differences between the perceptions of department heads, teachers, and community college students in the state of Iowa, with regards to the four main variables of verbal communication, knowledge of subject matter, human relations, and motivation as essential variables for effective teaching in trade and industrial education. The second statistical treatment of the data for the study was factor analysis. This statistical treatment was chosen to enable the researcher to identify factors from the instrument that contribute to effective teaching and to verify the previous subjectively determined scales.

The first question to be answered in the proposal was: Is there any difference between the perceptions of the school administrators, teachers, and college students concerning more or less effective teacher's ability to communicate ideas and facts verbally to the students?

From the means presented in Table 1(A) it appeared that the school administrators, teachers, and the community college students agree that verbal communication is an essential tool for effective teaching. The average mean for the three groups was 27.61 reflecting
Table 1. Verbal communication: Group comparison of means of subscale scores on A, combined teachers (N=436); on B, effective teachers (N=262); and on C, less effective teachers (N=173)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Administrators</th>
<th>Teachers</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>A. Combined teachers</td>
<td>(1.97)</td>
<td>(2.10)</td>
<td>(2.33)</td>
</tr>
<tr>
<td></td>
<td>23.61</td>
<td>8.14</td>
<td>25.26</td>
</tr>
<tr>
<td>B. Effective teachers</td>
<td>(1.59)</td>
<td>(1.5)</td>
<td>(1.76)</td>
</tr>
<tr>
<td></td>
<td>19.09</td>
<td>5.61</td>
<td>18.00</td>
</tr>
<tr>
<td>C. Less effective teachers</td>
<td>(2.56)</td>
<td>(2.71)</td>
<td>(3.24)</td>
</tr>
<tr>
<td></td>
<td>30.71</td>
<td>6.24</td>
<td>32.53</td>
</tr>
</tbody>
</table>

Note: Figures in parentheses indicate scale values of the measuring instrument.

* Probability < .01.
1. Strongly agree
2. Agree
3. Neutral
4. Agree
5. Strongly disagree

X = Effective
0 = Less effective

Figure 1. Means of effective and less effective teacher ratings by administrators, teachers, and students on verbal communication.
an average item scale value of 2.3. On the scale 1-5, the value of 1 indicated highest agreement, the mean indicated an above average agreement. The findings did not reflect any statistical significant difference among the perceptions of the three groups.

Table 1(B) reflects a group comparison of the mean perceptions of the school administrators, teachers, and students of effective teachers based on the use of verbal communication. The three groups agree that an effective teacher in industrial education should be able to communicate information and ideas clearly. This agreement is indicated by the fact that there is no statistical difference in the perception of the three groups. The administrators place the effective teacher at an average scale value of 1.59, the teachers at an average scale value of 1.5 and the students at an average scale value of 1.76 on the instrument scale with regards to communications.

Table 1(C) reflects the mean perceptions of the administrators, teachers, and students with regards to the ability of less effective teachers to communicate technical and related information verbally to students. The perceptions of the three groups reveal a significant difference at $P < .01$ level.

Figure 1 shows a group comparison of the means of effective and less effective teacher ratings by administrators, teachers, and students on verbal communication. In this figure the three groups rated the effective teacher with respect to communications higher between 1.59 and 1.76 scale value while these same groups rated the less effective teacher lower between 2.56 and 3.24 scale value. Teachers rated
higher on their communication ability were perceived to be more effective teachers.

The second question of the proposal to be answered was: Is there any difference between the judgments of school administrators, teachers, and students concerning the combined effective and less effective teacher's skill and knowledge of subject matter?

An examination of Table 2(A) illustrates the perceptions of the respondents regarding the influence of teacher's knowledge of subject matter on effective teaching in trade and industrial education at the community college level. The findings indicated a significant difference in perception among the three groups $P < .05$. This difference cannot be accounted for by random variation. Evidently, the administrators and teachers rated teacher's knowledge of subject matter more highly than did the students.

Table 2(B) reflects a group comparison of the mean perceptions of the administrators, teachers, and students concerning the value of teacher's knowledge of subject matter in effective teaching. The three groups seem to agree strongly that for a teacher to be effective he/she must be a master of his subject matter area. This agreement is revealed by the fact that there is no statistical difference in the perception of the three groups. The administrators and teachers rated effective teacher at 1.58 and 1.55 value respectively on a scale of 1-5, while the students placed same teacher at 1.73 scale value. These values reflect a moderately strong agreement.
Table 2. Knowledge of subject matter: Group comparison of means of subscale scores on A, combined teachers (N=436); on B, effective teachers (N=262); and on C, less effective teachers (N=173)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Group</th>
<th>Administrators</th>
<th>Teachers</th>
<th>Students</th>
<th>One-way ANOVA</th>
<th>F-statistics</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>X</td>
<td>O</td>
<td>X</td>
<td>O</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>A. Combined teachers</td>
<td></td>
<td>(1.95)</td>
<td>23.35</td>
<td>7.55</td>
<td>24.52</td>
<td>10.16</td>
<td>28.02</td>
</tr>
<tr>
<td>B. Effective teachers</td>
<td></td>
<td>(1.58)</td>
<td>18.90</td>
<td>5.17</td>
<td>18.56</td>
<td>4.55</td>
<td>20.71</td>
</tr>
<tr>
<td>C. Less effective teachers</td>
<td></td>
<td>(2.48)</td>
<td>29.71</td>
<td>5.62</td>
<td>30.12</td>
<td>10.87</td>
<td>39.30</td>
</tr>
</tbody>
</table>

Note: Figures in parentheses indicate scale values of the measuring instrument.

** Probability < .01.

* Probability < .05.
Table 2(C) indicates the mean perceptions of administrators, teachers, and students of a less effective teacher concerning the effect of the possession of knowledge of subject matter on teaching effectiveness. The findings show a significant difference in perception among the three groups at $P < .01$. This difference cannot be accounted by random variation. Evidently the administrators and teachers rated knowledge of subject matter more highly reflecting an average scale value of 2.48 and 2.51 respectively as contrasted to the students 3.28 rating.

A group comparison of the mean perceptions of the administrators, teachers, and students of an effective teacher and the less effective teacher on the use of knowledge of subject matter is shown in Figure 2. In this figure the three groups rated the effective teacher higher reflecting an average scale value lying between 1.58 and 1.73 and the less effective lower with an average scale value of 2.48 and 3.28. The fact that the three groups had to identify the teachers they perceived as effective and those who were less effective may have influenced their individual ratings.

The third question to be answered dealt with human relations. The question was: Is there any difference between the ratings of the administrators, teachers, and students concerning the teacher's interaction with the students during instruction?

An inspection of Table 3(A) on human relations indicated that there was no difference in the perception of the administrators, teachers, and students with regard to the importance of human relations as
1. Strongly agree
2. Agree
3. Neutral
4. Agree
5. Strongly disagree

X = Effective
0 = Less effective

Figure 2. Means of effective and less effective teacher ratings by administrators, teachers, and students on knowledge of subject matter.
Table 3. Human relations: Group comparison of subscale scores on A, combined teachers (N=436); on B, effective teachers (N=262); and on C, less effective teachers (N=173)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Administrators</th>
<th>Teachers</th>
<th>Students</th>
<th>One-way ANOVA F-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>O</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>A. Combined teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Effective teachers</td>
<td>(1.6)</td>
<td>6.01</td>
<td>(1.52)</td>
<td>5.69</td>
</tr>
<tr>
<td>C. Less effective teachers</td>
<td>(2.80)</td>
<td>33.57 10.81</td>
<td>(2.88)</td>
<td>34.53 11.07</td>
</tr>
</tbody>
</table>

Note: Figures in parentheses indicate scale values of the measuring instrument.

*Probability < .01.
an influential factor in effective teaching in trade and industrial education. All three groups moderately agreed that human relations help to promote effective teaching. This agreement is reflected by the average scale values of 2.07, 2.20 and 2.44.

From Table 3(B) it can be seen that there seemed to be a consensus of opinion between the administrators, teachers, and students as reflected by the average scale values of 1.6, 1.52, and 1.80 respectively. This agreement shows that human relations is a quality an effective teacher should possess in order to be perceived as an effective teacher.

Looking at Table 3(C) one can observe a significant statistical difference in the perception of the administrators, teachers, and students of a less effective teacher in considering his/her attitude towards students during instruction $P < .01$. This difference cannot be accounted for by a random variation. Evidently, the administrators and teachers rated the less effective teacher as a moderately average mixer as shown by the average scale values of 2.80 and 2.88 while the students regard him/her as a poor mixer as indicated by the scale value of 3.44.

A group comparison of the subscale scores on the effective and less effective teachers on human relations is shown in Figure 3. In this figure the administrators, teachers, and students agreed that an effective teacher should be empathetic, sensitive and able to make students learn effectively. The three groups also perceived the less
1. Strongly agree
2. Agree
3. Neutral
4. Agree
5. Strongly disagree

X = Effective
0 = Less effective

Figure 3. Means of effective and less effective teacher ratings by administrators, teachers, and students on human relations.
effective teacher as one who lacks enough of these human relations qualities.

The last question to be answered in the study follows: Is there any difference between the views of the administrators, teachers, and those of students with regards to the teacher's ability to motivate students to learn as determined by the developed instrument?

Data contained in Table 4(A) indicate that the administrators, teachers, and students' perceptions of the importance of motivation in trade and industrial education teaching is the similar. There was no significant difference in their perceptions with regards to the ratings of teacher's motivation ability in instructional situations. The three groups agree in their perception that motivation is an influential factor of teaching effectiveness in trade and industrial education as indicated by the means for ratings of more effective and less effective teachers. The average scale values for the three groups were 2.18, 2.43, and 2.53 respectively.

In Table 4(B) the administrators, teachers, and students seem to support the idea in perception that motivation is an important factor of effective teaching. The three groups rated the effective teacher at average scale value ranging from 1.72 to 1.90 (strongly agree and agree range).

On the other hand the administrators, teachers, and students rated the less effective teacher at average scale value of 2.85 - 3.51 (between neutral and disagree range). This shows a significant
Table 4. Motivation: Group comparison of subscale scores on A, combined teachers (N=436); on B, effective teachers (N=262); and on C, less effective teachers (N=173)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Group</th>
<th>Administrators</th>
<th>Teachers</th>
<th>Students</th>
<th>One-way ANOVA F-statistics</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Combined teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>X (2.18)</td>
<td>X (2.43)</td>
<td>X (2.53)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>O 26.18</td>
<td>O 10.45</td>
<td>O 11.44</td>
<td>F 1.21</td>
<td>0.2979</td>
</tr>
<tr>
<td>B. Effective teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>X (1.72)</td>
<td>X (1.79)</td>
<td>X (1.90)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>O 20.60</td>
<td>O 6.04</td>
<td>O 6.17</td>
<td>F .982</td>
<td>0.3758</td>
</tr>
<tr>
<td>C. Less effective teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>X (2.85)</td>
<td>X (3.03)</td>
<td>X (3.51)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>O 34.14</td>
<td>O 8.34</td>
<td>O 7.10</td>
<td>F 8.125</td>
<td>0.0004*</td>
</tr>
</tbody>
</table>

Note: Figures in parentheses indicate scale values of the measuring instrument.
* Probability < .01.
difference of \( P < .01 \) as indicated in Table 4(C). This finding implies that the three groups perceived that the less effective teacher motivates his students to a lesser degree.

Figure 4 shows a comparison of the perceptions of the administrators, teachers, and students of both the effective and less effective teacher with regards to the use of motivation in instructional situation. In this figure, data support the finding that the effective teacher seems to motivate students more than the less effective teachers as reflected by the average ratings for each group. For the effective teacher the average rating is 1.8 scale value, but for the less effective teacher the average rating is 3.4 scale value.

From the analysis of the data for the four major factors of the study there were variations in the subscales.

The first factor was verbal communication which had a variance of 32.3 percentage points. The second factor was knowledge of subject matter with percentage of variance of 26.6, third factor was human relations with a percentage of variance of 22.2, and the fourth factor was motivation having percentage of variance of 18.9 points.

The factor analytical results for the responses of the total sample to the 48 items of the evaluation instrument for effective and less effective teachers combined, indicated that the analytical results correspond to a high degree with the theoretical factors. The underscored numbers in Table 5 represent the largest correlations between items and theoretical factors. The first observed factor was identified as verbal communication due to its high correlation with
1. Strongly agree
2. Agree
3. Neutral
4. Agree
5. Strongly disagree

X = Effective
O = Less effective

Figure 4. Means of effective and less effective teacher ratings by administrators, teachers, and students on motivation.
### Table 5. Factor analytic results for the responses of the total sample to the 48 items of the evaluation instrument for effective and less effective teachers combined (N=436)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor I</th>
<th>Factor II</th>
<th>Factor III</th>
<th>Factor IV</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.6699</td>
<td>0.3307</td>
<td>0.2629</td>
<td>0.2051</td>
<td>0.6694</td>
</tr>
<tr>
<td>2</td>
<td>0.5171</td>
<td>0.3452</td>
<td>0.2738</td>
<td>0.3199</td>
<td>0.5639</td>
</tr>
<tr>
<td>3</td>
<td>0.5508</td>
<td>0.1839</td>
<td>0.4421</td>
<td>0.2534</td>
<td>0.5969</td>
</tr>
<tr>
<td>4</td>
<td>0.6708</td>
<td>0.2136</td>
<td>0.2204</td>
<td>0.3548</td>
<td>0.6835</td>
</tr>
<tr>
<td>5</td>
<td>0.6104</td>
<td>0.3492</td>
<td>0.2852</td>
<td>0.2091</td>
<td>0.6195</td>
</tr>
<tr>
<td>6</td>
<td>0.4871</td>
<td>0.3096</td>
<td>0.4867</td>
<td>0.0936</td>
<td>0.5787</td>
</tr>
<tr>
<td>7</td>
<td>0.5530</td>
<td>0.4041</td>
<td>0.1673</td>
<td>0.1740</td>
<td>0.5274</td>
</tr>
<tr>
<td>8</td>
<td>0.4863</td>
<td>0.3579</td>
<td>0.0189</td>
<td>0.3377</td>
<td>0.4790</td>
</tr>
<tr>
<td>9</td>
<td>0.5629</td>
<td>0.3742</td>
<td>0.2676</td>
<td>0.1088</td>
<td>0.5404</td>
</tr>
<tr>
<td>10</td>
<td>0.5896</td>
<td>0.3154</td>
<td>0.2685</td>
<td>0.3769</td>
<td>0.6612</td>
</tr>
<tr>
<td>11</td>
<td>0.5095</td>
<td>0.2268</td>
<td>0.3041</td>
<td>0.3554</td>
<td>0.5298</td>
</tr>
<tr>
<td>12</td>
<td>0.5978</td>
<td>0.2335</td>
<td>0.3230</td>
<td>0.3816</td>
<td>0.6618</td>
</tr>
<tr>
<td>13</td>
<td>0.6032</td>
<td>0.2238</td>
<td>0.2702</td>
<td>0.3662</td>
<td>0.6222</td>
</tr>
<tr>
<td>14</td>
<td>0.6846</td>
<td>0.3090</td>
<td>0.1260</td>
<td>0.3463</td>
<td>0.0999</td>
</tr>
<tr>
<td>15</td>
<td>0.6984</td>
<td>0.3227</td>
<td>0.2578</td>
<td>0.2488</td>
<td>0.7203</td>
</tr>
<tr>
<td>16</td>
<td>0.4985</td>
<td>0.2781</td>
<td>0.5210</td>
<td>0.1799</td>
<td>0.6296</td>
</tr>
<tr>
<td>17</td>
<td>0.5805</td>
<td>0.3247</td>
<td>0.4213</td>
<td>0.3174</td>
<td>0.7206</td>
</tr>
<tr>
<td>18</td>
<td>0.3846</td>
<td>0.0850</td>
<td>0.4087</td>
<td>0.5871</td>
<td>0.6669</td>
</tr>
<tr>
<td>19</td>
<td>0.3724</td>
<td>0.2009</td>
<td>0.4725</td>
<td>0.4855</td>
<td>0.6380</td>
</tr>
<tr>
<td>20</td>
<td>0.4297</td>
<td>0.3660</td>
<td>0.3260</td>
<td>0.4478</td>
<td>0.6255</td>
</tr>
</tbody>
</table>
Table 5 (continued).

<table>
<thead>
<tr>
<th>Item</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>Communalities</th>
</tr>
</thead>
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<tr>
<td>21</td>
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<td>0.3084</td>
<td>0.6651</td>
<td>0.7351</td>
</tr>
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<td>22</td>
<td>0.3169</td>
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<td>0.2996</td>
<td>0.6794</td>
<td>0.7199</td>
</tr>
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<td>0.3356</td>
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<td>0.7781</td>
</tr>
<tr>
<td>24</td>
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<td>0.3891</td>
<td>0.2208</td>
<td>0.6479</td>
<td>0.7286</td>
</tr>
<tr>
<td>25</td>
<td>0.2392</td>
<td>0.7165</td>
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<td>0.7401</td>
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% of variance for the 4 factors: 32.3, 26.6, 22.2, 18.9
items in the original theoretical factor on the subscale. The items
listed below with their factor loadings were in the original verbal communication scale:

The instructor:

1. communicates information on a given topic in a logical order (0.68),
2. explains his/her lessons clearly to the class members (0.67),
3. uses students' answers and comments to determine whether the students understood the lesson (0.61),
4. explains new terms, especially names of materials, tools, and parts of machines (0.60),
5. explains the "hows" and "whys" in each point (0.59),
6. involves students in summarizing the lessons (0.56),
7. states test questions clearly as well as directions for answering them (0.55),
8. speaks so clearly that students can easily hear and understand him/her (0.55),
9. encourages questioning and discussions (0.52), and
10. encourages students to prepare for future lessons (0.51).

Four other items which were theoretically under knowledge of subject matter, not verbal communication, showed up in actual analysis to correlate with the factor related most highly to verbal communication. They were:

The instructor:

1. interprets abstract ideas and theories clearly (0.70),
2. develops the lesson point by point (0.68),
3. demonstrates the ability to interpret teaching materials (0.60), and
4. is able to transmit the skills to students so that they are able to perform them (0.58).

One other item which was theoretically under the section of motivation showed up in actual analysis to be correlated most highly to verbal communication. This item was:

1. the instructor connects the new elements to be learned with something in previous experiences.

These results imply that in practical application verbal communication was perceived as a factor that influences teaching effectiveness in any instructional situation.

Again, the factor analytical results in Table 4 under items (12-24) for knowledge of subject matter reflect the following underscored items as essential for effective teaching in trade and industrial education.

The student:
1. can plan, organize, and produce an acceptable product (0.68),
2. exhibits positive attitudes towards safework conditions and practices while using tools and materials (0.68),
3. is able to recognize good workmanship (0.67),
4. can evaluate his/her work (0.65), and
5. the instructor emphasizes quality of workmanship (0.59).
One other item which was theoretically included in the section under human relations showed up in actual analysis to correlate with the factor motivation. This item is:

1. the instructor shows a sense of humor.

From the factor analysis, the following underscored figures in Table 4 within items (25-36) human relations were identified and perceived as essential for effective teaching.

The instructor:

1. is patient and sympathetic (0.79),
2. respects students' opinions (0.78),
3. makes students feel important (0.75),
4. is friendly towards students (0.71),
5. invites criticism (0.67),
6. mixes freely with his/her students (0.63),
7. has genuine interest in his/her students (0.61),
8. is willing to help students (0.55),
9. praises students' performance (fair, good, excellent) (0.55),
   and
10. shows a sense of humor (0.50).

This result implies that in the instructional situation teachers' empathy, sensitivity and making students feel good are factors that influence effective teaching.

In Table 4 under the section for motivation, a number of significant figures have been underscored to show the weight of each item in
the scale. These figures correspond to the following items of the instrument.

The instructor:
1. uses motivational and attention-getting devices (0.65),
2. plans and conducts field trips to industries and places where practical experience can be obtained (0.63),
3. presents information with TV and video-taped materials, overhead projectors (0.59),
4. motivates students to do best work (0.55),
5. states why the objective is important in terms of students' needs (0.53), and
6. gets the students in the proper mood for learning (0.51).

Two other items under the factor motivation also showed up to correlate with the factor related most highly to verbal communication. They were:

The instructor:
1. reviews all the important points covered in the lesson (0.54), and
2. leaves students with a clear idea of what they accomplished during the lesson (0.53).

The findings indicate that motivation of students was perceived as an important factor in making teaching in trade and industrial education effective.
CHAPTER V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This study was designed to compare the perceptions of school administrators, teachers, and college students regarding factors which influence teaching effectiveness of Industrial Education teachers in Iowa's community college programs. Four main factors were considered:

1. teacher's verbal communication,
2. teacher's knowledge of subject matter,
3. teacher's human relations with the students, and
4. teacher's ability to motivate his/her students to study.

Five community colleges in the state of Iowa were geographically selected to participate in this study:

1. North Western Iowa Technical College, Sheldon,
2. Iowa Central Community College, Fort Dodge,
3. Des Moines Area Community College, Ankeny,
4. Iowa Western Community College, Council Bluffs, and

From the above community colleges, 30 administrators, 30 teachers, and 250 students were selected to supply the necessary data for the study.

The instrument used to gather the data was developed by the researcher but was strongly based on: the Purdue rating scale for instruction, rating scale developed for the evaluation of teaching competencies by Dzuiban and Sullivan (1978) and the characteristics
listed as being important to teaching effectiveness in the classroom by French (1974). The data were collected by means of mailed questionnaires. It should be noted that because of the limited number of administrators and teachers in those colleges, only 9 administrators, 17 teachers and 192 students responded.

Summary of Findings

The findings of this study supported the contention that administrators, teachers, and students perceived that verbal communication, knowledge of subject matter, human relations, and teachers' ability to motivate students are factors that influence teaching effectiveness. The administrators rated knowledge of subject matter higher for both effective and less effective teachers than did the students, hence there was a statistical difference in perception at $P < .05$ level when examining the combined data on effective and less effective rates.

The administrators and the teachers place the effective teacher at the strongly agree and agree scale. On the other hand, the administrators see a less effective teacher as mediocre, while the students see the less effective teacher as below average.

In the final analysis a teacher who possessed the following qualities was perceived as an effective teacher, but if a teacher, however, lacked them, he/she was perceived as a less effective teacher.
Verbal communication

The instructor:

1. communicates information of a given topic in a logical order,
2. explains his/her lessons clearly to the class members,
3. uses students' answers and comments to determine whether the students understood the lesson,
4. explains new terms, especially names of materials, tools, and parts of machines,
5. explains the "hows" and "whys" in each point,
6. involves students in summarizing the lessons,
7. states test questions clearly as well as directions for answering them,
8. speaks clearly so the students can easily hear and understand him/her,
9. encourages questioning and discussions,
10. encourages students to prepare for future lessons,
11. interprets abstract ideas and theories clearly,
12. develops the lesson point by point,
13. demonstrates the ability to interpret teaching materials, and
14. is able to transmit the skills to students so that they are able to perform them.

Knowledge of subject matter

The student:

15. can plan, organize and produce an acceptable product,
16. exhibits positive attitudes towards safework conditions and practices while using tools and materials,
17. is able to recognize good workmanship,
18. can evaluate his/her work, and
19. the instructor emphasizes quality of workmanship.

**Human relations**

The instructor:

20. is patient and sympathetic,
21. respects students' opinions,
22. makes students feel important,
23. is friendly towards students,
24. invites criticism,
25. mixes freely with his/her students,
26. has genuine interest in his/her students,
27. is willing to help students,
28. praises students' performance (fair, good, excellent), and
29. shows a sense of humor.

**Motivation**

The instructor:

30. uses motivational and attention-getting devices,
31. plans and conducts field trips to industries and places where practical experience can be obtained,
32. presents information with TV, audio-taped materials, and overhead projectors,
33. motivates students to do best work,
34. states why the objective is important in terms of students' needs, and
35. gets the students in the proper mood for learning.

Research Conclusions

The following conclusions have been made as a result of the findings of the study:

1. Out of the 48 items listed in the instrument, 35 of them were identified and perceived by administrators, teachers, and students as items of importance for effective teaching in industrial education (Verbal Communication 14, Human Relations 10, Motivation 6, and Knowledge of Subject Matter 5),

2. the administrators and teachers rated their perception of more effective teachers higher than did the students, and

3. the students rated their perception of the importance of knowledge of subject matter lower than administrators and teachers, hence a statistical difference exists in their perceptions at P < .05 level of significance.
The Implications of the Study

1. The instrument used in data collection seemed to be effective in identifying individual perceptions of factors that influence teaching effectiveness.

2. The findings also seem to provide information which can help administrators in promoting teacher effectiveness in trade and industrial education at community college level in the state of Iowa.

3. The findings identify areas where in-service training for less effective teachers might be focused for the improvement of instruction in future.

4. The supervisor who knows the items that have been rated high or low in this study would be better able to aid the teacher to review his strengths and weaknesses.

5. Community college students are one good source for the evaluation of teaching effectiveness in trade and industrial education.

Recommendations

In view of the findings of this study it seems appropriate to recommend that:

1. by using community college students as sources for the evaluation of teachers and administrators effective evaluation can occur,
2. more research work should be done in the area of knowledge of subject matter to explore the source of differences among administrators, teachers, and students regarding their perceptions of effectiveness of teaching, and

3. educators in teacher training colleges should place emphasis on the importance of verbal communication, knowledge of subject matter, human relations, and motivation to their present and future trainees.


Gibson, Raymond C. *Opportunities in Iowa's Area Schools*. Published by The Department of Public Instruction, Des Moines, 1975.


Remmers, H. H. and Elliot, D. N. The Purdue Rating Scale for Instruction. Lafayette, Indiana: Purdue Research Foundation, Purdue University, 1950.


ACKNOWLEDGMENTS

The completion of this study would not have been possible without the patience and guidance of Dr. W. D. Wolansky. I also wish to express my gratitude to Dr. T. Howe and Dr. T. H. Arcy who served as committee members, professors and most of all as mentors. A special thanks is also extended to Dr. Netusil. Finally I appreciate the cooperation, patience and help of Dr. W. G. Miller.
APPENDIX A. LETTERS TO SUPERINTENDENTS AND TEACHERS
May 15, 1978

Mr.

Sir,

As a part of my master's degree research at Iowa State University, I am required to complete a thesis.

My name is Nwokoukwu Onyendi and I am a graduate student in the Department of Industrial Education at Iowa State.

My research is concerned with the teaching effectiveness of trade and vocational technical education teachers at community college level in the state of Iowa. The purpose of this study is to identify factors which contribute to teaching effectiveness of vocational subjects. Such factors when identified may be used to improve vocational classroom teaching, evaluating teaching effectiveness, as well as provide information that is needed by administrators for vocational teacher recruitment and training.

Your participation in responding to this questionnaire will provide necessary responses and will contribute towards better understanding of the problems we face in this important area of teacher effectiveness.

It will be appreciated if you will complete the questionnaires prior to __________ and return them in the enclosed stamped and self-addressed envelope.

Yours faithfully,

Nwokoukwu Onyendi

Major Professor and Head of Department

Date 5-16-78

/___/ Please check if you are interested in the research findings.

Address

and
Sir,

As a part of my master's degree research at Iowa State University, I am required to complete a thesis.

My name is Nwokoukwu Onyendi and I am a graduate student in the Department of Industrial Education at Iowa State.

My research is concerned with the teaching effectiveness of trade and vocational technical education teachers at community college level in the state of Iowa. The purpose of this study is to identify factors which contribute to teaching effectiveness of vocational subjects. Such factors when identified may be used to improve vocational classroom teaching effectiveness, as well as provide information that is needed by administrators for vocational teacher recruitment and training.

I seek your permission to administer the questionnaire for this study to the students. This is for research purposes and your professional interest will be protected as the data will be analyzed as group data and treated as confidential. The data will not be communicated to the superintendent.

Your cooperation and approval is voluntary, but will be appreciated. Please indicate in the space below your willingness for me to administer the questionnaire, and return in the enclosed stamped self-addressed envelope.

Yours faithfully

Nwokoukwu Onyendi

[Signature]

Date 5-30-78
APPENDIX B. QUESTIONNAIRES
QUESTIONNAIRE FOR GATHERING DATA

DIRECTIONS

This questionnaire contains 48 items regarding the teaching effectiveness of Trade and Industrial and Technical education teachers at community college level. The purpose of this research is to help identify factors that contribute to effective community college industrial education teaching. Findings will help the teachers to improve their instructional techniques necessary to obtain greater students learning efficiency.

This instrument will be used to gather data from administrators, teachers, and students. No names should be included. Data will be treated anonymously.

HOW TO FILL OUT THE QUESTIONNAIRE

First record the following information by placing a check mark (✓) in the spaces provided below:

Your Position:  □ Dept. Head  □ Teacher  □ Student

Now select two teachers in Trade and Industrial or Technical Education and complete this instrument for each. One of the teachers should be effective in your judgement, the other considerably less effective. Fill out one questionnaire for each teacher:

□ effective
□ considerably less effective in your judgment

Sex of teacher:  □ Male  □ Female

Age Range of Teacher:
□ Under 25
□ 26 to 50
□ Over 50

Education:
□ Less than Bachelors degree
□ Bachelors degree but less than Masters
□ Masters degree but less than Ph.D.
□ Ph.D. degree

For each statement, please indicate your perception on the following 6 point scale.

0 - Uninformed on this point or (I don't know)
1 - Strongly agree
2 - Agree
3 - Neutral
4 - Disagree
5 - Strongly disagree
VERBAL COMMUNICATION

The Instructor -

1. explains his/her lessons clearly to the class members
2. encourages questioning and discussions
3. speaks clearly so that student can easily hear and understand him/her.
4. communicates information on a given topic in a logical order.
5. uses students' answers and comments to determine whether the students understood the lesson.
6. expresses enthusiasm in the lesson (e.g. does the teacher use speech and physical gestures to communicate enthusiasm to the students?)
7. states test questions clearly as well as directions for answering them.
8. explains his/her grading system properly
9. involves students in summarizing the lessons.
10. explains the "hows" and "whys" in each point.
11. encourages students to prepare for future lessons.
12. explains new terms, especially names of materials, tools, and parts of machines.

SKILL AND KNOWLEDGE OF SUBJECT MATTER

The Instructor -

13. demonstrates the ability to interpret teaching materials.
14. develops the lesson point by point.
15. interprets abstract ideas and theories clearly.
16. has interesting styles of presenting the lesson (different methods, ways, techniques).
17. is able to transmit the skills to students so that they are able to perform them.
18. emphasizes quality of workmanship.
19. emphasizes safety of the individual in the demonstrations with machines.
The Student -

20. can use special equipment to proper advantage after the teacher's demonstration.

21. is able to recognize good workmanship

22. exhibits positive attitudes towards safe work conditions and practices while using tools and materials.

23. can plan, organize and produce an acceptable product.

24. can evaluate his/her work.

HUMAN RELATIONS

The instructor -

25. is friendly towards students.

26. makes students feel important.

27. is patient and sympathetic.

28. respects students' opinion

29. invites criticism.

30. knows if the class is understanding him/her or not

31. has genuine interest in his/her students

32. shows a sense of humor.

33. is willing to help students.

34. encourages interaction between peers.

35. praises students' performance (fair, good, excellent)

36. mixes freely with his/her students

MOTIVATION

The Instructor -

37. gets the students in the proper mood for learning.

38. connects the new element to be learned with something in previous experiences.
39. states specifically what the objective(s) of the lesson is in terms of student performance (e.g. did the teacher tell students specifically what they will be able to bend, shape, solve, etc.)

40. states why the objective is important in terms of students' needs. (e.g. the object is important for student to learn because of safety reasons, a future job, greater skill development.)

41. uses motivational and attention getting devices. (e.g. teacher tells a related story, presents background information, asks provocative questions or makes startling statements.)

42. motivates students to do best work.

43. is fair in grading students' work/product (no favor, consistent).

44. makes use of test grades as an aid to Remedial teaching (reteaching ideas not clearly understood).

45. reviews all the important points covered in the lesson.

46. leaves students with a clear idea of what they accomplished during the lesson.

47. plans and conducts field trip to industries and places where practical experience can be obtained.

48. presents information with TV and video-taped materials overhead projectors.