

**EDUCATION REFERENCE GUIDE**



**THE PROCESSES OF  
CLASSROOM  
MANAGEMENT**

**SECOND EDITION**

THE EDITORS OF  
**SALEM PRESS**

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**The Editors of Salem Press**

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## Introduction

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A teacher's classroom management style can affect all facets of the class, including its organization, environment, and pedagogical and curricular elements. Likewise, a student's learning experience and performance level can often rely primarily on the effectiveness of the management style. Fortunately, teachers can choose from a wide variety of techniques to create the classroom environment works best for them and their students while promoting growth and encouraging learning.

The *Education Reference Guide* series is designed to provide a solid foundation for the research of various educational topics. This volume offers an introduction to the processes of effective classroom management. The essays begin by examining classroom organization options before reviewing instructional methodologies and classroom management techniques.

The collection opens with John W. Loeser's overview of classroom management techniques as they apply to common practices, such as setting clear expectations and enforcing rules and theoretical approaches, like choice theory, congruent communication, class meetings, and respectful classrooms. Loeser goes on to describe multiage classroom, a system of classroom organization in which students of varying ages and grade levels are grouped together within the same class. While this environment has been shown to have positive effects on students' self-esteem, social interaction, and confidence levels, there is a lack of definitive research that demonstrates any specific academic benefits. Another form of collaborative learning is peer interaction, which Tricia Smith describes as a valuable way for students to help one another learn the curricular content. This method of educational organization has proven to be effective for all age groups and across all areas of education. Other peer-assistance models also exist, including student mentoring, which can improve academic outcomes for at-risk students. Team-teaching models can also drastically impact the success of a classroom, as there are two or more teachers who instruct and supervise a group of students, allowing for the enhancement of "professional growth for teachers and learning outcomes for students."

There are a number of distinct instructional methodologies that teachers can employ to structure their pedagogical practices and the curriculum's content. As Smith describes, direct instruction is a model that teachers use when dealing with at-risk students who require the presentation of new material in small steps, and benefit from feedback and independent student exercise. Loeser then discusses instructional modeling, a management technique in which educators demonstrate the desired behaviors or skill sets that they would like their students to possess. Technology can also enhance the systematic development of instructional methods in a process known as programmed instruction. This method helps to break up the curriculum into manageable frames, similar to instructional design. Differentiated instruction is a methodology that attempts to present the curriculum in a variety of ways so as to reach all students regardless of their individual learning styles. Charles Fischer explains the Socratic method, a classroom dialogue method which can be either teacher-directed or student-centered. Smith returns with a summary of reflective teaching, a pedagogical method which emphasizes the thoughtful consideration and evaluation of the methods that do and do not work effectively for an individual educator. Perhaps one of the most important and widespread classroom management tools is lesson planning. Teachers are able to use this valuable approach to provide an outline for structuring activities and curricular content. Finally, Jennifer Bouchard reviews the subject of plagiarism and the importance of managing and addressing this issue as it arises in the classroom.

Together, these essays will guide researchers through the processes and techniques of effective classroom management and provide a thorough review of organizational and instructional methodologies. Complete bibliographic entries, a list of suggested readings, and relevant terms and concepts finish the essay.

# Classroom Management

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## Overview

Classroom management techniques refer to the strategies that teachers employ to effectively create safe, respectful classroom environments that reinforce positive behaviors and eliminate behaviors that negatively impact learning opportunities. Management strategies range from specific "rules of thumb" recommended by educators such as ensuring expectations are clearly identified and responses are consistent to more comprehensive theories that emphasize human relationships and respect for diversity such as choice theory (Glasser, 1998).

Although there are common classroom management techniques used in most classrooms to create optimal learning opportunities for students, teachers often develop their own management systems from a variety of techniques that work well for their particular grade level or school population. Management techniques may work well in some classrooms but not in others. Teachers need to be acutely aware of the needs of different student populations.

No matter what techniques teachers employ, the behaviors they must respond to in the classroom setting generally are the same across grade levels and among different student demographics. When developing classroom management systems, teachers who recognize behavior as form of communication, respect diversity, and value human connections and relationships, find the most success in responding to common behavioral issues.

### Most Common Behavior Problems

Bullock & Brown (1972) conducted a study to identify the most common behavior problems that teachers face in the classroom setting. Their research pinpointed ten challenges including acting out, aggression, hyperactivity, poor social relationships, defiance, immaturity, poor academic achievement, poor attention span, and inadequate self concept (Wilhite et al., 2007). Although this study was conducted nearly half a century ago, the challenges identified continue to pose problems for teachers today.

Tulley & Chiu (1998) approached research on common behavioral challenges from a different perspective by surveying a group of sixth grade students to identify the top discipline problems experienced in class. The students indicated that disruptions, defiance, aggression, incomplete work and other miscellaneous

## Abstract

This article explores a variety of classroom management strategies teachers use to create safe, respectful classroom environments. Discussion focuses on the critical importance of respecting diversity, developing relationships, and recognizing behaviors as a form of communication. Common classroom management techniques are provided such as setting clear expectations and consistently enforcing rules and expectations. Furthermore, more robust classroom management theories are highlighted including choice theory[2], congruent communication[4], class meetings[3], and respectful classrooms.

behaviors are among the most common challenges experienced. Their study further illuminated six discipline strategies that teachers most often employ to respond to the common challenges discussed: rote punishment, removal punishment, explanation, presentation punishment, threats and warnings, and no action or ignoring the behavior completely (Tulley & Chiu, 1998). Although these are the most common responses, they are ineffective at managing classroom behavior and they create disrespectful and unsafe classroom environments.

The challenges described above as well as the common responses teachers employ are representative of what occurs in many classrooms across the nation from Kindergarten through Grade 12. In fact, over the years, the challenges described have become more complex and the responses have become more intricate given the changing context of the world in which we live. Holliday (2005) indicates that schools and teachers are expected to recognize and expertly control emotional, social and cognitive variables that influence student learning. Furthermore, Holliday asserts that teachers are increasingly expected to fill the gap caused by poor parenting, poverty and learning disabilities (p. 23).

In order to successfully address these issues, teachers need to ensure they have a strong classroom management system in place that appropriately responds to behavioral challenges and creates a safe, respectful classroom environment. Although behavioral issues differ from school to school and even classroom to classroom, effective management techniques ensure that challenges are minimal and learning opportunities are maximized.

### **Recognizing Diversity**

Whether teachers develop an eclectic collection of classroom management techniques or subscribe to a specific management theory, one common thread runs through all management systems - acknowledgement of and respect for diversity. Manning & Bucher (2005) indicate that teachers must recognize student diversity and aim to understand student perceptions of and reactions to diversity. They state that students demonstrate culture, gender, social class, and developmental differences. All of these characteristics must be considered when implementing classroom management strategies (Manning & Bucher, 2005). In addition, Mills & Keddie found that, across many parts of the world, at the same time that the student population is becoming increasingly diverse, bringing to classrooms divergent racial, ethnic, cultural, and socioeconomic experiences, the teacher population is becoming more homogeneous, primarily white and middle class (Mills & Keddie, 2012).

Behaviors are a form of communication. When students misbehave, become distracted, have difficulty handing in assignments on time, or experience any other common difficulty in the classroom, they communicate to teachers that some element of the experience is not working for them. Teachers must be acutely aware of the diverse backgrounds and needs that students bring to the classroom and must develop management strategies that are responsive and respectful of these differences.

### **Relationships & The Human Connection**

A second common thread that runs through all classroom management systems and all classroom experiences, in general, is the critical importance of human relationships. No classroom can operate effectively unless teachers and students develop relationships and understand the unique qualities that each individual brings to the partnership. Holliday (2005) emphasizes that in order to effectively manage a classroom, teachers must build the human connection first, sometimes one student at a time. Holliday (2005) further highlights that in order for students to connect to curriculum and become engaged in learning, teachers must create classroom environments that communicate their love and passion for the material and reasons it is important for students to learn the material. Most important, teachers must do everything possible to communicate that they will help every student succeed.

### **Applications**

As noted, no "cookie cutter" classroom management system exists. Effective classroom management strategies come from years of experience working with students and years of research related to the types of responses most effective at eliminating undesirable behaviors in the classroom. The following discussion highlights some of the most common classroom management techniques that teachers employ as well as more specific management theories such as choice theory (Glasser, 1998), congruent communication (Ginott, 1972), class meetings (Glasser, 1969), and respectful classrooms (Wessler, 2003; Miller & Pedro, 2006).

### **Common Classroom Management Techniques**

Babkie (2006) provides a comprehensive overview of common classroom management practices. First and foremost, Lock suggests that it is extremely important for teachers to establish rules and communicate clear expectations from the first day of class. Students need to know the parameters and boundaries that exist in a classroom and must have a clear understanding of the consequences that will occur should they cross a boundary. Rules and expectations are the foundation of any classroom management system and must be concise and fair to ensure that students internalize standards for behavior.

Babkie (2006) asserts that once rules and expectations are clearly established and communicated, teachers need to be consistent and fair when enforcing rules. The quickest way to undermine any classroom management system is to enforce expectations for one situation and not the next. When this happens, students become confused and often misinterpret when certain behaviors are acceptable and others are not.

Another common classroom management technique involves establishing clearly defined routines (Babkie, 2006). For example, teachers may develop specific routines students should follow when handing in assignments, completing class work,

working in groups, completing missed assignments, recording homework, etc. Routines establish structure within a classroom environment and create a strong sense of predictability for students. Coupled with the development of class routines, teachers must also explicitly teach transition skills (Babkie, 2006). When teachers transition from whole group discussion to individual or small group work and when class begins or ends, students need to be equipped with the skills necessary to make these transitions with ease.

Organization plays a crucial role in effective classroom management (Babkie, 2006). Factors including how desks are arranged, where materials are located, how easy it is to move quickly around the classroom all determine how effectively teachers can manage classroom expectations and student behaviors. Teachers need to be proactive when determining the layout of the physical classroom environment to anticipate any management issues that may arise in order to address them before they actually occur.

Both Holverstott (2005) and Babkie (2006) discuss the critical importance of making learning engaging and real world applicable. When students are invested in what they are learning, they are far less likely to misbehave or disrupt other students. Erwin (2003) states that unmotivated and non-engaged students often do poor work or no work, learn very little, and exhibit irresponsible and disruptive behavior. When teachers find out what motivates students and create lessons that appeal to students' interests, they create the conditions necessary for complete engagement in the learning process. Holverstott (2005) further asserts that by giving students an active role in deciding what they learn about, teachers help students exercise self-determination and thereby help diminish classroom management issues.

Developing lessons that meet the learning needs of students is equally as important as creating ample opportunities for student engagement (Babkie, 2006). The majority of classroom management problems occur when students are either too challenged or not challenged enough. When learning becomes stressful and overwhelming, or when students are bored and uninterested, there is a high likelihood they may become distracted or misbehave. Differentiated instructional methodologies related to student readiness levels, learning style and interest help teachers optimally match student needs and thereby minimize management difficulties (Tomlinson, 1999). Furthermore, when students are allowed to demonstrate understanding through multiple modes of expression, they feel empowered and directly involved in decisions related to their own learning (Babkie, 2006).

Holverstott (2005) encourages educators to model good choices for students to help them internalize behavior expectations. Through role modeling, teachers help students develop strategies for dealing with conflict both in and outside of the classroom. Moreover, when teachers explicitly teach students what to do when they are distracted, confused or unmotivated, they provide students with a "tool kit" of strategies to help them effectively manage a variety of situations that can occur in a classroom

setting. Additionally, "school directors should display model behaviors which are consistent with the school's vision. They should keep the values of the school alive and organize the resources to actualize the targets of the school," according to Fatih Toreman and Onder Sanli (Toreman & Sanli, 2011).

Cooperative learning situations are common in many classrooms. In order to effectively manage group learning situations, teachers must anticipate group dynamics and personality conflicts when designing such activities (Babkie, 2006). If teachers do not consider these factors when developing group tasks, there is a high likelihood that classroom management problems will exist. Wisneski (2000) asserts that in cooperative learning situations teachers must expect spontaneity, noise, confusion and uncertainty at times. However, it is critically important for teachers to communicate clear expectations for acceptable levels of noise and excitement.

In individual cases when behavioral issues directly affect other students' learning opportunities, teachers can design behavior contracts to examine inappropriate behavior and provide a system to address related issues (Babkie, 2006). Behavior contracts explicitly reference problem behaviors and provide immediate assessment and evaluation for students to monitor progress. Behavior contracts can also be valuable when they build a link between school and home (Hawkins et al., 2011). Behavior contracts are usually temporary and provide praise and encouragement for students to improve behavior.

Holverstott (2005) reminds educators that all behavioral and classroom management issues are a form of direct communication. Students may be overwhelmed, bored, or unhappy with group or partner dynamics, upset about events occurring at home or facing many other stressors. Transitions may be difficult, routines may not work, and contracts may fail. It is imperative for teachers to search for the underlying reasons a student may be misbehaving or why a management policy is ineffective in order to directly address the core issue. By applying the common techniques discussed, teachers ensure that behavioral and management issues have a minimal impact on teaching and learning.

### **Choice Theory**

Erwin (2003) emphasizes that the most important rule of classroom management is to develop a strong relationship with each student. Part of maintaining a strong relationship involves creating a classroom environment that values intrinsic motivation over extrinsic motivation. Choice theory, developed by Glasser (1998) and described by Erwin (2003), provides a framework for teachers to follow when thinking about effective classroom management practices. The theory illuminates five principles that guide all human behavior including survival, love and belonging, power, freedom and fun.

In order to create classroom environments where students feel safe and thus can thrive, teachers can employ a variety of strate-

gies including developing consistent classroom procedures and routines that provide a sense of order and security and developing behavior guidelines that emphasize safety and respect (Erwin, 2003). To address the need to feel loved and a sense of belonging, teachers can conduct regular class meetings to build relationships, solve problems and model appropriate choices. Giving students power and a voice in class further intrinsically motivates them to behave well and meet classroom expectations (Erwin, 2003). When teachers solicit student input regarding classroom rules and expectations or gather feedback regarding interest, teachers empower students to feel a sense of ownership for the classroom and its policies and procedures. When addressing freedom in the classroom, teachers can allow students to choose their own seating arrangement, their own partners, the type of assignment or performance task they want to complete to demonstrate understanding, etc. (Erwin, 2003). Finally, creating a fun and engaging classroom environment directly affects classroom management simply because when students are invested and enthusiastic about learning, management issues are minimal (Erwin, 2003).

### **Ginott's Congruent Communication**

Manning & Bucher (2001) discuss congruent communication, a model of classroom management first proposed by Haim Ginott in the 1970's. Ginott suggests that teachers create positive class environments by communicating with students in ways that are in sync with their feelings about themselves, by inviting and encouraging cooperation, and by promoting discipline as opposed to punishment (Ginott, 1972; cited in Manning & Bucher, 2001).

Ginott's theory proposes myriad ideas that teachers can employ to effectively manage classrooms. First and foremost, teachers should communicate clearly with students and always make students feel accepted, even if they make a mistake (Manning & Bucher, 2001). Furthermore, when students misbehave, teachers should always address student behavior as opposed to character (Ginott, 1972; Morris, 1996). Often, it is very easy to get caught up in the moment and negatively comment on a student's personality without addressing the actual situation or incident that occurred. Ginott encourages teachers to refrain from punishment, handle anger appropriately and always demonstrate acceptance and acknowledgement. Moreover, he discusses the critical importance of avoiding sarcasm, using "I" messages as opposed to "you" messages, and respecting students' privacy (Manning & Bucher, 2001). Most important, Ginott proposes that teachers should always praise students for their efforts and accomplishments to instill a sense of success. Ginott's theory is extensive and involves additional ideas that can be employed in the middle school and secondary classroom. Manning & Bucher (2001) indicate that congruent communication has great potential and can be used in conjunction with already established classroom management models.

### **Class Meeting**

Class meeting is another classroom management strategy that is primarily employed in elementary and middle school classrooms to provide a forum for students to express thoughts, feelings, concerns, ideas, etc. Class meeting empowers students and provides them with an opportunity to voice their ideas in a respectful setting. Lickona (2001) describes the model, first proposed by William Glasser (1969), as a time set aside each day for students to express their views about anything related to school and to discuss ways to solve problems and conflicts. Topics for discussion can be student generated (sometimes anonymously) or teacher directed. Class meeting provides an opportunity for students to become active decision makers in matters closely related to their school experience and simultaneously creates a safe forum for teachers to learn about what is important to students. Watkins (2005) indicates that classroom management models, such as class meeting, create a sense of community where governance is shared and responsibility is developed.

### **The Respectful Classroom**

Miller & Pedro (2006) explore the conditions necessary to create respectful classroom environments. They assert that when there is a feeling of respect, behaviors that demonstrate respect will follow. Wessler (2003) describes a respectful classroom as a place where students feel physically and emotionally safe and valued. In a respectful classroom, teachers are acutely aware of student interactions and practice zero tolerance for harassment or social exclusion (Miller & Pedro, 2006). Teachers model respectful behavior for students and require students to respond respectfully to one another, thus creating a safe environment.

Miller & Pedro (2006) claim that the development of meaningful relationships is a major component of a respectful classroom. Strong teacher-student and student-student relationships are essential for respectful interactions. In such classroom environments, diversity is respected, students are willing to share more, and a meaningful exchange of ideas and multiple perspectives is encouraged.

### **Conclusion**

The management techniques and theories discussed above represent a sampling of the strategies available to teachers to effectively manage classrooms. No one technique or theory is superior to another. Teachers often develop their own eclectic systems that work best for the classroom environment and school in which they teach. Research continues to highlight the different ways students learn best and the causes for the behaviors that often interfere with optimal learning. Strong teachers are flexible in their approach, willing and open to new management techniques, and always in touch with the diverse backgrounds and needs that students bring to the classroom.

## Terms & Concepts

**Behavior Contract:** Behavior contracts explicitly reference problem behaviors and provide immediate assessment and evaluation for students to monitor progress. Behavior contracts are usually temporary and provide praise and encouragement for students to improve behavior.

**Choice Theory:** Choice theory, developed by Glasser (1998) and described by Erwin (2003), provides a framework for teachers to follow when thinking about effective classroom management practices. The theory illuminates five principles that guide all human behavior including survival, love and belonging, power, freedom and fun.

**Class Meeting:** Class meeting is a classroom management strategy that is primarily employed in elementary and middle school classrooms to provide a forum for students to express thoughts, feelings, concerns, ideas, etc. Class meeting empowers students and provides them with an opportunity to voice their ideas in a respectful setting.

**Congruent Communication:** A model of classroom management first proposed by Haim Ginott in the 1970's. Ginott suggests that teachers create positive class environments by communicating with students in ways that are in sync with their feelings about themselves, by inviting and encouraging cooperation, and by promoting discipline as opposed to punishment.

**Cooperative Learning:** An instructional technique developed to enhance academic achievement through social and interpersonal skill development. When creating cooperative learning groups, teachers must anticipate group dynamics and personality conflicts.

**Differentiated Instructional Methodologies:** Instructional methodologies developed to optimally match student readiness levels, learning style and interest. A strong repertoire of differentiated instructional methodologies helps teachers meet student needs and thereby minimize management difficulties.

**Modeling:** A management technique by which the teacher presents by example the behavior desired from students.

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## **Essay by John Loeser, M.Ed.**

John Loeser is an Assistant Head of an elementary school in San Mateo, California. He received his Master's of Education in School Leadership from Harvard University. His research interests include differentiated instruction, improving instructional practice, and strategic change and leadership in schools. He is a member of the National and California Association of Independent Schools, and the Association for Supervision and Curriculum Development. He currently resides in San Mateo, California, with his wife.

# Multi - Age Classrooms

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fidence through positive interactions between peers of varying age levels. While literature does not clearly identify specific academic benefits, supporters discuss various indicators that point toward increased academic achievement as a result of multiage pairings. Regardless of documented benefits, some educators hold strong that multiage classrooms require too much preparation and monitoring, confuse parents, and often do not match well with school based organizational schedules. This article provides a comprehensive overview of multiage education and highlights the dramatic increase of non-graded classrooms throughout the 1990's and the eventual decline in such classrooms in the early 21st century.

### Overview

Traditional graded classrooms group students according to age criteria and apply specific grade level distinctions (1st grade, 2nd grade, etc.) throughout a child's education from Kindergarten through Grade 12. Multiage classrooms ignore age distinctions and group children of varying developmental levels together, primarily in the elementary years. Gaustad (1992) defines multiage education as the practice of teaching children of different ages and ability levels without dividing them into grade specific classrooms based on age. Multiage classrooms are often referred to as non-graded classrooms due to the lack of grade level distinction.

Multiage classrooms date back all the way to the one-room schoolhouse. Aina (2001) discusses the unique characteristics of the one-room schoolhouse that still hold true in modern non-graded classrooms. Children remained with one teacher and the same classmates for many years throughout their education, creating a safe, stable and consistent environment for learning. The mix of different ages, ability and developmental levels provided many opportunities for increased social interaction, positive self-esteem development and enhanced responsibility. Children in one-room schoolhouses had no perceived ceiling with regard to what could be taught and what they could learn (Aina, 2001). All of these characteristics are true of modern multiage classrooms.

Multiage classrooms include a wide variety of backgrounds, abilities, ages, cultures, learning styles, and interests. The age range typically spans three or more years, thus creating an opti-

### Abstract

This article explores the philosophical framework and historical perspective of multiage education, common characteristics of multiage classrooms, and advantages and disadvantages of non-graded programs. Multiage classrooms ignore age distinctions and group children of varying developmental levels together, primarily in the elementary years. Researchers point to the social and emotional benefits of multiage classrooms asserting that such educational environments boost self-esteem and con-

mal learning situation for students of various developmental levels. Students in a non-graded classroom typically remain with the same teachers and students for many years as they progress at their own pace (Hoffman, 2003).

Team teaching is a common practice, and teachers employ many instructional methodologies to effectively reach all students in the classroom. Cooperative learning techniques are used extensively, as the emphasis is on student-centered learning as opposed to teacher directed instruction. With the realization that people learn in many different ways, differentiated instructional methodologies are used to meet the varying readiness levels, learning styles and interests in the classroom.

Often, people confuse multigrade and multiage classrooms. Both terms apply to classroom environments with more than one age level of students. However, the key difference is that multigrade classrooms continue to instruct students according to grade level distinctions, whereas multiage classrooms group students heterogeneously according to developmental and ability levels, interests, and learning styles without reference to age. It is common in multiage classrooms for students of different ages to work together on a cooperative task. Hoffman (2003) asserts that the difference between multigrade and multiage classrooms is often blurred in research and literature, thus making it sometimes difficult to separate studies concerning pure, authentic multiage environments from those referencing multigrade classrooms.

Horace Mann introduced graded classrooms in the early 1900's as a way to provide an education for the vastly increased population of the United States due to the flood of immigrants into schools (Aina, 2001). Thus the one room schoolhouse waned in popularity in most areas of the country, excluding rural areas. In the 1950's, multiage classrooms gained momentum, again due to an increase in population as the baby boom generation grew to school age (Viadero, 1996). In both cases, the sheer numbers of students drove schools to reconsider class configurations in order to provide an education for all school aged children. It was not until the 1980's that people began to think of multiage classrooms from an educational perspective considering the benefits of teaching and learning in a non-graded setting (Viadero, 1996).

During the early 1990's the movement was in full force, especially in primary grades, and involved a large number of supporters. Perhaps the biggest boost to the movement came in 1990, when the Kentucky Education Reform Act mandated that every school in the state provide a non-graded primary program. Kentucky fully embraced the multiage philosophy and required that all children be provided the opportunity to work from Kindergarten through 3rd grade at their own pace (Pardini, 2005). Interestingly, the biggest blow to the movement also came from Kentucky in 1998 when the state relaxed the non-graded primary mandate in response to teachers and administrators who yearned for more flexibility with regard to grouping children and development of curriculum objectives (Pardini, 2005). The No Child Left Behind Act of 2001 has further driven the movement off

course as teachers and administrators are being held accountable for student mastery of grade-specific standards. By the year 2005, multiage classrooms had found it increasingly more difficult to meet the rigid standards required by the legislation (Pardini, 2005). In 2012, the administration of President Barack Obama distributed waivers to the act, which exempted states from certain aspects of the educational standards (Klein, 2013).

### **Characteristics of a Multiage Classroom**

Robert Anderson (1993) discusses specific criteria that multi-age classrooms must meet or come close to meeting in order to be considered authentic multi-age experiences. First and foremost, he indicates that such classrooms must be void of specific grade level distinctions. Classrooms must be created with at least two heterogeneous groups of students of different ages to create opportunities for flexible grouping and collaborative learning opportunities. When assessing students, teachers need to replace traditional grading and assessment tools with methodologies that truly reflect student performance and growth without comparison to other students. Curriculum must be interdisciplinary in nature and teachers must have the freedom to be as flexible as necessary with curriculum objectives to ensure that all children succeed. Finally, Anderson asserts that schools need policies consistent with the multi-age philosophy and must stick to them to ensure success.

Hoffman (2003) further articulates common beliefs held by multiage classroom teachers. He asserts that teachers need to know their students well in order to adapt their lessons to meet a wide range of learning abilities and styles. Moreover, teachers need to employ flexible groups as often as possible while taking on the role of facilitator of learning, as opposed to director. Teachers must also take student interest into account while building opportunities for student choice. Most important, multiage classroom teachers must create the conditions necessary for students to appreciate and celebrate the diversity of learners (Hoffman, 2003).

One of the key hallmarks of a multi-age classroom is the fact that deep relationships are formed between students, teachers and parents. Hoffman (2003) indicates that students in a multi-age classroom celebrate differences and appreciate one another for their unique personal characteristics and qualities. In graded classrooms, students from cross grade levels usually attach a specific grade level identity to individual students and may not socialize or engage in learning opportunities with others simply because of this grade level distinction.

Because multi-age classrooms highly value interpersonal relationships and include a wide variety of learners with different developmental levels, ability levels, interests, and cultural and family backgrounds, they create ideal conditions for capitalizing on collaborative learning opportunities. Additionally, because the range of ages in a multiage classroom generally spans three years, teachers cannot rely heavily on whole group instruction. Much of the daily routine, therefore, is designed to take maxi-

mum advantage of cooperative and peer based learning activities. Teachers use a variety of grouping practices ranging from individual and partner work to small and large group discussions. Such flexible grouping strategies allow teachers to effectively meet the needs of students in a multiage classroom (Chapman, 1995).

## Applications

Hoffman (2002) highlights three of the most common group configurations in a multiage classroom including interest groups, shared task groups and dyads. Students form their own groups when participating in common interest activities which usually take the form of learning centers. Kaplan et al. (1980) defines a learning center as an area in the classroom containing a variety of activities or materials developed specifically to teach, reinforce, or extend a skill or concept. Common interest groups allow students to investigate and explore their own interests with other students within the structure of an already designed center and are often organized to encourage meaningful connections between content areas (Hoffman, 2002).

Another common grouping practice involves student-led shared task groups. Small heterogeneous groups consisting of four to five students arranged according to ability, gender, or age work together on a common task (Hoffman, 2002). These tasks are developed in such a way that different abilities are required and each student plays an integral role in completion. Dyads are also used as a way to form permanent relationships between "old timers" and "new timers." Usually, in the beginning of the school year, those students who have been in the class previously pair up with students new to the class to help them learn the daily routines, etc. These relationships usually blossom throughout the school year (Hoffman, 2002).

Cushman (1990) further describes alternative methodologies used to create cooperative learning opportunities within a multiage classroom. Often, problem based groups are developed for students to work in teams on a common unsolved problem. Such groups require students to apply problem solving strategies in a collaborative nature and touch on different developmental and ability levels. Needs-requirement groups are created to instruct students in a specific concept, skill or value. These groups are usually developed homogeneously for a group of students who all need instruction in a particular skill or understanding. The main goal of this strategy is to reach with students the mastery level before moving on to a new skill (Al-Makahleh, 2011). Reinforcement groups are used for learners who need extra work, support, or re-teaching and learning style groups are developed to capitalize on the variety of learning preferences that students bring to the classroom experience. Howard Gardner's research (1993, 1997) regarding multiple intelligences acts as a guide for teachers with regards to developing learning style groups. Gardner discusses eight major intelligences including verbal/linguistic, logical/mathematical, visual/spatial, bodily/kinesthetic,

musical/rhythmic, naturalist/environmental, interpersonal and intrapersonal. Sternberg (1988, 1997) adds another element for teachers to consider with research related to analytical, creative, and practical intelligences.

Teachers in multiage classrooms often employ many differentiated instructional methodologies. Differentiated instruction is a philosophy of teaching that stems from the belief that all students are different. Students differ with regard to how they learn best, their strengths and weaknesses, their cultural and family backgrounds, what they are interested in learning about, etc. In addition, Mills & Keddie found that, across many parts of the world, the student population is becoming increasingly diverse, bringing to classrooms divergent racial, ethnic, cultural, and socioeconomic experiences (Mills & Keddie, 2012). Nowhere are these differences more apparent than in a multiage classroom.

Multiage classrooms provide ample opportunities for student choice, a hallmark of differentiated instructional methodologies. As Benjamin (2006) indicates, when students have choice, it provides them with a sense of self-determination that translates into increased commitment. Since students are afforded this freedom of choice, they often move at their own pace from easier to more difficult material. As students move at different paces through different material according to developmental and ability level, teachers need to employ alternative assessments including checklists, portfolios, observations, and anecdotal records (Gaustad, 1992). Furthermore, teachers often use weekly student-teacher conferences to check in, set goals, review progress, and directly instruct when necessary (Miletta, 1996). Throughout the learning experiences in a multiage classroom, teachers act more as facilitators of learning as opposed to directors.

## Viewpoints

### Advantages of Multiage Classrooms Social Benefits

Kolstad & McFadden (1998) indicates that students in multiage classrooms often improve and acquire social behaviors through direct involvement with a diverse age group. In fact, research overwhelmingly asserts that students make considerable advancement in social and affective skills in such a classroom (Kolstad & McFadden, 1998). Older students act as positive role models for younger students and children and by nature, care for and help each other more in a multiage setting. This role modeling and peer tutoring translates directly into increased positive self-esteem (Aina, 2001).

Due to the significant emphasis on cooperative learning experiences and differentiated group practices, students often work together on common tasks requiring varying skills sets. These learning experiences encourage students to work through both positive and negative group interactions, thus enabling them to acquire unique perspectives on group dynamics. Hoffman (2002) highlights the fact that students in a multiage classroom

learn to accept differences in abilities and social behaviors through shared work experiences. Allen (1989) further illustrates that because no grade level distinctions exist, students are more likely to find and belong to social groups without reference to age or maturation.

### **Academic Benefits**

In a multiage classroom, older students reinforce their own learning by teaching younger peers (Viadero, 1996). Conversely, younger students stretch academically, at times, when working with older peers. Multiage classrooms operate on the principles of Vygotskian theory and research regarding the zone of proximal development. According to Vygotsky (1978), the zone of proximal development refers to the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under the guidance of an adult or when collaborating with more capable peers. When an older student helps a younger student work on a task that he/she might not be able to do on his/her own, the older student works to "pull" the younger student through his/her zone of proximal development. Multiage classrooms create just the right conditions for application of Vygotskian theory (Hoffman, 2002).

Multiage classrooms also seek support in Piaget's theory that learning and conceptual development is more likely to occur in contexts where there is mutuality of power and influence (Hoffman, 2002). When students choose groups based on interest they exercise power over their own learning. When older students work with younger students and provide scaffolding when grappling with difficult concepts, students exert influence over each other's learning. Thus, power and influence play a crucial role in the theoretical underpinnings of the multiage classroom.

Grant (1993) provides additional insight into how multiage classrooms require students to take on more responsibility for their own learning. Without frequent whole-group teacher directed lessons, students find themselves in charge of their own learning opportunities. Students often set their own goals for learning, choose their own interest groups, navigate through social interactions, and work cooperatively on shared tasks and assignments. Although teachers guide and facilitate learning in a multiage classroom, student directed learning takes precedence. Thus, students benefit tremendously from increased responsibility and self-confidence.

### **Continuity Benefits**

Students in a multiage setting usually remain in the same classroom with the same teachers for a number of years. This continuity from year to year helps teachers to have a much stronger sense of each individual student's strengths and weaknesses as compared to teachers in traditional graded classrooms. In a typical graded classroom, teachers begin each year with very little knowledge of student learning profiles and family backgrounds. In a multiage classroom, teachers know the students and their families well. This familiarity helps teachers, par-

ents and students feel comfortable because they understand the philosophy, routines and expectations for learning (Kolstad & McFadden, 1998).

### **Disadvantages of Multiage Classrooms**

Although multiage classrooms encourage students to stretch academically, provide opportunities for students to exert power and influence over their own and others' learning, and creates opportunities for continuity from year to year, there is little research and evidence pointing to vast increases in student achievement. Veeman (1995) concluded that multiage classrooms are no better and no worse than single age classrooms largely because many of the instructional methodologies employed are also used in single grade classrooms due to a similar diversity of learning profiles.

### **Teacher Work-Load**

Teachers in a multiage classroom find that they must work extremely hard to ensure that they are able to plan a variety of activities that are developmentally appropriate for individual students. Similarly, teachers find that they need to consistently use ongoing assessments to monitor student performance and to create as many opportunities as possible for responsive teaching (Grant, 1993). Classroom management in a multiage classroom also poses much difficulty in that teachers need to be extremely adept and flexible enough to have many different groups working on a variety of tasks and activities at one time. As Chapman (1995) indicates, multiage classrooms involve an extensive amount of planning needed to constantly group and regroup students to maximize optimal learning situations.

### **Parent Misunderstandings**

Many parents misunderstand the philosophy of multiage education primarily because their experience in school involved graded or single age classes. Parents sometimes express that they believe their children will not be challenged enough as they become older because they will be paired with younger students in cooperative learning situations (Kolstad & McFadden, 1998). Some parents even feel that there will come a point when their child might reach a learning ceiling and won't be able to learn any more in such a setting. Similarly, parents of younger children sometimes feel that their child will be discouraged in learning situations when paired up with students of greater developmental and academic ability.

### **Schedule Mismatches**

Oftentimes, multiage classrooms coexist in the same school building with single age or graded classrooms. Kolstad & McFadden (1998) indicate that the schedule necessary for a multiage classroom to operate smoothly doesn't quite fit into traditional schedules in most schools. In order for multiage education to be successful, teachers need large chunks of time for learning centers, extended projects, student-teacher conferences, etc. With the emphasis on student directed learning opportunities, traditional forty or fifty minute classes do not provide enough time for the type of work that occurs in a multiage classroom.

## Decline of Multiage Classrooms

Many educators believe that multiage classrooms have fallen victim to the No Child Left Behind Act of 2001 (Pardini, 2005). With rigid standards for learning and mandatory grade level testing, multiage classrooms suffer because teachers feel their flexibility and creativity must be compromised to ensure success on standardized tests. Additionally, some educators attribute the decline in multiage classrooms to the sheer amount of work and preparation that must be invested to keep a multiage classroom operating smoothly. It is difficult to find teachers willing to invest the time and energy required to manage a multiage classroom, especially if their compensation is equivalent to their counterparts in traditional graded settings. Finally, some say the decline is due to the difficulty experienced when attempting to explain the multiage philosophy to parents, especially in schools where graded and multiage classes coexist (Pardini, 2005). Regardless of a marked decline in multiage classrooms, there still exists a cadre of educators who are committed to the philosophy and will remain so through any future obstacles.

## Terms & Concepts

**Common Interest Groups:** Groups that allow students to investigate and explore their own interests with other students within the structure of an already designed center and are often organized to encourage meaningful connections between content areas.

**Differentiated Instruction:** A philosophy of teaching that stems from the belief that all students are different. Students differ with regards to how they learn best, their strengths and weaknesses, their cultural and family backgrounds, what they are interested in learning about, etc.

**Dyads:** A way to form permanent relationships between "old timers" and "new timers". Usually, in the beginning of the school year, students who have been in the class previously pair up with students new to the class to help them learn the daily routines, etc.

**Learning Center:** An area in the classroom containing a variety of activities or materials developed specifically to teach, reinforce, or extend a skill or concept.

**Learning Style Groups:** Groups that are developed to capitalize on the variety of learning preferences that students bring to the classroom experience. Howard Gardner's research (1993, 1997) regarding multiple intelligences acts as a guide for teachers with regards to developing learning style groups.

**Multiage Classrooms:** The practice of teaching children of different ages and ability levels without dividing them into grade specific classrooms based on age. Multiage classrooms are often referred to as non-graded classrooms due to the lack of grade level distinction.

**Needs-Requirement Groups:** Groups that are created to instruct students in a specific concept, skill or value. These groups are usually developed homogeneously for a group of students who all need instruction in a particular skill or understanding

**Problem Based Groups:** Groups that are developed for students to work in teams on a common unsolved problem. Such groups require students to apply problem solving strategies in a collaborative nature and touch on different developmental and ability levels.

**Reinforcement Groups:** Groups that are used for learners who need extra work, support, or re-teaching.

**Shared Task Groups:** Small heterogeneous groups consisting of four to five students arranged according to ability, gender, and age that work together on a common task. These tasks are developed in such a way that different abilities are required and each student plays an integral role in completion.

**Zone of Proximal Development (ZPD):** Refers to the distance between the actual developmental levels as determined by independent problem solving and the level of potential development as determined through problem solving under the guidance of an adult or when collaborating with more capable peers.

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## Essay by John Loeser, M.Ed.

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# Peer Interaction

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been found effective for all ages, kindergarten through college, all learning styles and disabilities, and across all content areas (Topping, 1996).

### Overview

The action of giving and taking information that results in knowledge construction and cognitive development can be accomplished through peer-to-peer interaction (Lim, 2012). Peer interaction (or peer learning) is a term that represents a form of collaborative learning that capitalizes on active learning within a classroom. During peer interaction, there is a definite shift away from the traditional lecture format of instruction to a more personal experience and efficacy in learning (Saville, Zinn & Elliott, 2005). While the lecture disseminates information to the student, in peer interaction, the student is actively involved in the learning process. Through peer learning, students acquire knowledge and skill through active helping and supporting among status equals or matched companions (Topping, 2005). Students help each other to learn and learn themselves during the process. Tutors gain increased control over subject matter, develop self-esteem and social skills, and improved attitudes about school. Tutees receive extra attention and emotional support during the learning process (Anderson, 2007).

While peer interaction has always existed, the concept of students learning from one another has gained greater prominence as a classroom methodology in the past 25 years. In prior models of peer interaction, peers were used to assist the teacher in teaching to students who were less knowledgeable. This linear model of transmission of knowledge was transferred from the teacher to the student and then re-taught by that student to another student. Teachers chose only the most knowledgeable students to act as “pseudo-teachers.” The model has shifted, as teachers scaffold peers to teach one another important concepts or skills (Topping, 2005). Peer learning originally targeted core skill areas such as reading and mathematics (Topping, 1987; Topping & Branford, 1998). However, as teachers began to see the benefits in peer interaction, peer learning began to appear in lessons across the content areas. Peer interaction or learning has now become a theory with strong implications in classroom practice.

### Abstract

Peer learning is a form of collaborative learning that capitalizes on active learning. When involved in peer interaction, students help each other learn new content or skills. While peer interaction has always existed, the concept of students learning from one another has become more prominent in the classroom in the past 25 years. During the peer interaction process, the tutor manages the content or skills and modifies the material so that the tutee learns new content or skills. The tutor benefits through monitoring the learning process, as the tutor learns to detect, diagnose and correct misconceptions or understanding. Peer learning has

Research by Lev Vygotsky (1978) supports peer learning theory. Palincsar and Brown (1984) promote the using of scaffolding to reach Vygotsky's concept of the "zone of proximal development." Vygotsky's concept of the zone of proximal development is involved in the peer learning process. By scaffolding students, students can activate schemata, organize and retrieve knowledge, and monitor, evaluate and reflect on their learning (Palincsar, 1986). Learning becomes socially constructed during interaction and activity among peers (Vygotsky, 1978).

### **The Interaction Process**

Topping (2005) describes this process. The tutor manages the content or skills and modifies the material so that the tutee learns new content or skills. The tutor benefits through monitoring the learning process, as he or she learns to detect, diagnose and correct misconceptions or understanding. As Topping (2005) suggests, tutors can acquire valuable skills through tutoring, such as "listening, explaining, questioning, summarizing, speculating, and hypothesizing" (p. 637). In turn, the tutees benefit from trusted relationships with peers who have no authority over them. Both tutor and tutee add to and extend their capabilities by modifying that which they know and then building new understandings.

King (2002) suggests that it is important to match the peer learning approach a teacher chooses to the requirements of the learning task. The nature of the cognitive process is the critical trigger for selecting a strategy. While some tasks require primarily recall and repetition, other learning tasks require critical thinking, problem solving and/or decision making. Higher level cognitive processing in peer learning may involve "making inferences, drawing conclusions, synthesizing ideas, generating hypotheses, comparing and contrasting, finding and articulating problems, analyzing and evaluating alternatives, and monitoring thinking" (King, 2002, p. 34). Peers learn to exchange ideas, information, perspectives, attitudes and opinions (King, 2002; Cohen, 1994).

Conditions for positive peer interaction include shifting methodologies from a focus on individual achievement to creation of classroom environments that promote genuine collaboration. Challenging problem-solving must be "beyond the comfort zone of student knowledge in order to promote discussion," and teachers need to carefully select groups "to ensure respectful working relations" (Blair, 2004, p. 38). They also need to provide immediate feedback through quality discussion time.

### **Types of Peer Interaction**

There are many types of peer interaction:

#### **Peer Tutoring**

Peer interaction shifts the nature of instruction in such models as peer tutoring. Peer tutoring exists when two students take on specific roles as tutor and tutee. The focus is on learning content and is driven by a defined process of application. The tutor

is trained by the teacher and is given structured materials or is taught to follow a certain process for tutoring a peer. This model can be used in any content area. Topping (2001) states that teachers must consider certain elements for there to be successful peer tutoring sessions. While the tutee learns specific content or skills, the tutor benefits from the experience, as well. The tutor's social and communication skills are enhanced during the process.

The most simplistic form of peer tutoring is drill and practice, peer assisted rehearsal, or recall and repetition of material. Often this form is used when students are learning factual material. Students learn to work together, as they master skills or content (King, 2002). Through drill and practice, students are scaffolded with one another. Tutors and tutees communicate with one another by practicing a certain skill and provide feedback for one another during practice of the skill. They reinforce understanding or skill level (Topping, 2005).

#### **Peer Assistance**

Peer assistance is another simpler form of peer interaction, as peers aid students with disabilities by helping them read directions, gather classroom materials, or take notes for them. Mastropieri, Scruggs, and Berkeley (2007) point out that peers who assist those with disabilities "promote social responsibility and stronger understanding of other's needs" (p. 2).

#### **Peer Instruction**

Peer instruction is defined as "an instructional method aimed at exploiting student interaction during lectures by focusing students' attention on underlying concepts" (VanDijk, VanderBerf, & VanKuelen, 2001, p. 4). The teacher presents key points in lecture form and the students are given questions to answer individually. The students then pair off or work in small groups, discussing their answers with one another. This form of peer interaction breaks up the traditional lecture, as students think through the concepts presented (Mazur, 1997).

#### **Peer Grouping**

Peer grouping (also called interpretive communities) is an effective group strategy often seen in writing classes. Weaver, Robertson and Smith (1999) state that peer grouping provides students the opportunity to investigate how their writing might impact readers. Teachers who are committed to peer grouping during writing workshops must develop community skills within their students, allowing time for students to develop trust in one another and provide supportive and useful feedback (Weaver, Robertson & Smith, 1999).

#### **Peer Review Editing**

Peer review editing also involves the writing process. In this process, students edit and respond to one another's writing. The teacher is freed from the task of reading and editing every student paper (Karegianes, Pascarella, & Pflaum (1980). Students are thrust into the role of being responsible for one another's success in writing.

### **Peer Questioning**

Peer questioning is often used to promote high-quality questioning among peers. There are several types of questioning approaches such as strategic questioning. In strategic questioning, students are provided with strategic questions that specifically develop problem solving (King, 2002). Pairs squared develops reasoning skills in argumentation (King, 1995). In guided reciprocal peer questioning, the teacher structures peer interaction that promotes high-level cognitive processing. Question starters are given to peers in the form of formatted questions that promote student thinking during discussion (King, 2002).

### **Interteaching**

Interteaching is defined as "a mutually probing, mutually informing conversation between two people" (Boyce & Hineline, 2006). In this type of active learning methodology, the teacher designs and distributes guides that lead students through course material. Questions are in the guide and trigger the learning process, with some questions focusing on factual knowledge and others emphasizing application and synthesis. Students pair with one another and discuss the questions and their answers. The teacher acts as a mentor, clarifying questions, evaluating student understanding, and supporting the students in this interactive process (Saville, Zinn, & Elliott, 2005; Boyce and Hineline, 2002).

### **Peer Monitoring**

Peer monitoring occurs when peers support one another's learning behaviors by "observing and checking" the behaviors of group members during the process of peer group interaction (Brown, Topping, Hennington & Skinner, 1999). Students evaluate the processes and products of their peers in a group through peer assessment, assessing products through evaluation or grading.

### **Class-Wide Peer Tutoring Models**

Class-wide peer tutoring models are instructional options used throughout classrooms for enhancing reading skills, such as fluency and comprehension, as well as basic skills across content areas. In these models, students are placed in groups either randomly or through rank-ordering (based on pre-test results). The academic content of the materials are developed by the teacher, and they support community among peers. Class-wide peer tutoring (CWPT) is used to improve basic skills in lower performing students (Salend, 2005). Peer-assisted learning strategies (PALS) are used in improving reading skills. In class-wide student tutoring teams (CSTT), the teacher develops study guides or concept cards and peers take turns reading and responding to the materials (Harper & Maheady, 1999). Jigsaw peer models promote common goals, as peers work on individual contributions to group activities. Each group has members completing the same task as another member in another group (Aronson, Blaney, Stephan, Sikes, & Snapp, 1978).

### **Literature Circles**

Literature circles are small groups of students who work collaboratively "to share their reactions to and discuss various aspects

of books that all group members have decided to read" (Salend, 2005, p. 425). The student ownership and peer interaction in literature circles are critical in enhancing children's literacy development and helping them cultivate the skills to become lifelong readers (Marchiando, 2013). Each member of the literature circle has a specific role, such as:

- The discussion leader, the peer who monitors and fosters discussion;
- The passage reader, the peer who reads key passages aloud;
- The connector, the peer who links content to students' experiences;
- The definer, the peer who looks up and explains key vocabulary;
- The summarizer, the peer who reviews key points and the sequence of action; and,
- The illustrator, the peer who develops corresponding graphics (Salend, 2005, p. 425).

### **Advantages of Peer Interaction**

No matter which peer interaction model is activated in the classroom, teachers maintain a supportive role during the peer interaction process. They structure the groups and give explicit guidance in how to collaborate effectively so that high-quality thinking and discussion are ensured (King, 2002; Cohen, 1994). Teachers establish specific goals for the sessions, planning specific activities that reflect these goals (Salend, 2005).

In general, peer interaction has been found to be advantageous to student learning in a number of ways. Webb and Palincsar (1996) state that the process of providing and receiving explanations from peers can help students engage in deeper cognitive processes. Through peer interaction, students clarify thinking, reorganize information, correct misconceptions, and develop new understanding. Through the concepts and skills acquired during the process of peer interaction, students can successfully transfer these skills to other activities (Webb & Palincsar, 1996). Students also respond more frequently in peer interaction than in class discussion. Peer interaction also results in more time on task (Stenhoff & Linnugaris, 2007).

All in all, peer interaction or learning leads "to consolidation, fluency and automaticity of core skills." Through peer learning, students are more able to monitor and regulate "the effectiveness of their own learning strategies," thus enhancing their metacognitive skills (Topping, 2005). Peer learning has been found effective for all ages, kindergarten through college, all learning styles and disabilities, and across all content areas (Topping, 1996). As Stenhoff and Linnugaris (2007) point out, peer tutoring arrangements provide students with another option for helping all students access the general curriculum.

## Applications

### Training Effective Tutors

Carnine (2002) suggests several ways to train effective tutors. Teachers should establish expectations by modeling instructional and presentation behaviors with the tutors. Through role-playing, tutors can shape their corrective feedback techniques and performance-monitoring strategies. Through workshop settings, tutors can practice problem-solving scenarios, as well. Teachers should be particularly cognizant of matches between tutors and tutees. Allsopp (1997) emphasizes the importance of pairing tutors and tutees, choosing carefully to pair students of differing skills and abilities. Jenkins and Jenkins (1988) suggest that personal characteristics should also factor in the pairing of tutors and tutees. Haisley, Tell and Andrews (1981) advocate that tutees who are difficult to manage should be paired with tutors who are more aggressive so they will not be intimidated by these tutees.

### Types of Peer Groupings

Peers act as instructional agents for other students when peer tutoring is presented as a model in the classroom. Stenhoff and Linnugaris (2007) suggest several variations to peer groupings:

- In heterogeneous groups, peers are taught by tutors who are in the same grade-level but who possess a higher level of knowledge or skill.
- In homogeneous groups, tutors teach peers who possess similar skills.
- In cross-age tutoring groups, tutors teach younger students.
- In reverse-role tutoring groups, students with disabilities tutor other students who do or do not have disabilities (p. 10).

### Class-Wide Peer Tutoring Models

Class-Wide Peer Tutoring Models provide academic intervention across the classroom. Heron, Villareal, Ma, Christianson, and Heron (2006) suggest that there are common characteristics found within these evidence-based instructional models. Such commonalities include:

- Actively engaging all peers within the classroom simultaneously;
- Providing highly structured and evidence-based components by well-trained peers and diligent teachers;
- Developing reading and reading-related activities for all demographic groups;
- Training peers in tutor and tutee roles, such as presenting instructional items, evaluating performance, providing positive feedback, and correcting behaviors, when necessary; and,
- Assessing progress through formative assessment (p. 69).

### Interteaching

Interteaching is defined as "a mutually probing, mutually informing conversation between two people" (Boyce & Hineline, 2002). In this type of active learning methodology, the teacher designs and distributes guides that lead students through course material. Questions are in the guide that leads students through the learning process, with some questions focusing on factual knowledge and others emphasizing application and synthesis. Students pair with one another and discuss the questions and their answers. The teacher acts as a mentor, clarifying questions, evaluating student understanding, and supporting the students in this interactive process (Saville, Zinn, & Elliott, 2005; Boyce & Hineline, 2002). Saville, Zinn, and Elliott (2005) suggest that discussion makes up about 75% of the class period. Students assess their understanding of their learning by compiling an interteaching record that alerts the teacher about which questions they found difficult to answer, which ones they would like to have reviewed in class discussion or lecture, and which ones they found useful. The teacher can use this information for exploring ways to further enhance learning opportunities.

While interteaching is often used in lecture type classrooms, this active experience is an effective supplement to lecture classrooms. There are many benefits to the use of this model in the classroom. Interteaching promotes active learning; immediate social reinforcement from peers and the teacher; a cooperative learning environment; and retention of material (Saville, Zinn, & Elliott, 2005).

### Peer Tutoring

Peer tutoring exists when two students take on specific roles as tutor and tutee. The focus is on learning content and is driven by a defined process of application. The tutor is trained by the teacher and is given structured materials or is taught to follow a certain process for tutoring a peer. This model can be used in any content area. Topping (2001) states that teachers must consider certain elements for there to be successful peer tutoring sessions. Teachers can assure purpose and integrity in peer tutoring if there are:

- Clear contexts for using peer tutoring;
- Objectives that are clear and concise;
- Defined curriculum areas for its use;
- Participants who are clearly identified;
- Clearly defined methods of peer tutoring;
- Appropriate materials readily available;
- Adherences to time on task;
- Differentiation for diverse learners;
- There is a clearly defined training process;
- Processes that are closely monitored and evaluated;

- Tutors and tutees who are assessed regularly; and,
- Feedback sessions that are geared to improving future tutoring sessions.

While the tutee learns specific content or skills, the tutor benefits from the experience, as well. The tutor's social and communication skills are enhanced during the process. For these benefits to occur, teachers must watch for any differential in the learners, as too great a differential can cause lack of learning by either parties in the peer tutoring model (Topping, 2001).

## Viewpoints

### Criticism of Class-Wide Peer Tutoring Models

Class-wide peer tutoring models are instructional options used throughout classrooms for enhancing reading skills, such as fluency and comprehension, as well as basic skills across content areas. In these models, students are placed in groups either randomly or through rank-ordering (based on pre-test results). The academic content of the materials is developed by the teacher, and teachers support community among peers. However, teachers often face impediments to the learning process. Non-responders can be a problem in the peer interaction process. Also, if teachers are not properly trained in the model, they may provide unchallenging materials or fail to adhere to planned procedures. Other common problems in these models are increased noise levels, bickering among peers, and grade inflation (Greenwood, Terry, & Arreaga-Meyer, 1993).

## Terms & Concepts

**Active Learning:** Active learning is a term used in teaching methodology that refers to allowing students ample opportunities to clarify, question, apply, and consolidate new knowledge. Group discussions, problem solving, case studies, role plays, journal writing, and structured learning groups are strategies that are often associated with active learning.

**Collaborative Learning:** Collaborative learning is the grouping and pairing of students for the purpose of achieving an academic goal. In addition, the success of one student helps other students to be successful.

**Heterogeneous Groups:** Heterogeneous groups are groups where students have varying abilities.

**Homogeneous Groups:** Homogeneous groups are groups where students have similar interests or abilities.

**Metacognition:** Metacognition is an important concept in cognitive theory that is defined as a learner's awareness of his or her own learning process. Learners who are aware of their own learning process are able to monitor their learning progress and make changes to their process.

**Scaffolding:** Scaffolding occurs when students are paired with other students to support them in their learning.

**Schemata:** Schemata are a mental bundle of knowledge in the brain that holds everything a student knows about a topic. Learning occurs when learners integrate new knowledge with prior knowledge stored in this long-term memory, or schemata.

**Tutee:** A tutee is a student who is the recipient of the support of a tutor.

**Tutor:** A tutor provides expertise, experience, and encouragement to a tutee that needs this sort of support in learning.

**Zone of Proximal Development:** The zone of proximal development is the distance between a student's actual developmental level and the level of potential of a student.

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## Essay by Tricia Smith, EdD

Dr. Tricia Smith is an assistant professor of English at Fitchburg State College in Fitchburg, Massachusetts and teaches theory and pedagogy courses in English education. She has written several articles on on-line instruction, advising, and collaborative learning. Her other areas of interest include linguistics and young adult literature.

# Student Mentoring

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## Overview

### Definition of Mentoring Relationships

A mentoring relationship includes a student (mentee) and his or her mentor. Hinton (2006) describes a mentor as someone who serves in the role of a teacher, counselor, guide, protector or friend. There is a limited understanding of mentor education (teaching someone to be a mentor) in schools, and being a mentor is not recognized as a profession (Ulvik & Sunde, 2013). Programs abound, however, in business and, especially, education settings. A mentor and mentee are paired according to interests, personalities, common characteristics, and needs. According to Bernstein (2007), both individuals meet regularly on a one-on-one basis in scheduled meetings that are usually arranged by community organizations, corporations, or schools. Bernstein (2007) highlights that mentoring relationships help young people overcome obstacles and enhance their strengths. This sets them on a path of life equipped with the skills necessary to be successful. King et al. (2002) further illuminates the findings of the National Longitudinal Study of Adolescent Health that positive connections to adults or other students is the number one factor saving children from suicide, depression, substance abuse, early sexual involvement, and teen pregnancy.

Barton-Arwood et al. (2000) highlight three guiding principles that serve as a framework for the development of a mentoring program. First and foremost, mentoring programs allow individuals to build reciprocal relationships. Both the mentor and the mentee benefit greatly as each has something unique to share and gain from the experience. Secondly, Rockwell (1997; cited in Barton-Arwood et al., 2000) indicates that mentoring relationships are important for the purpose of completing tasks or achieving goals. Often, mentoring partnerships can take the form of peer-tutoring or peer-assistance dyads in which both partners work together toward a common goal or completion of a shared task or assignment. Lastly, Barton-Arwood et al. discuss the findings of Miller (1997) and Townsel (1997) that mentoring relationships help reinforce and model appropriate social values and norms such as honesty, sharing, and empathy.

King et al. (2002) indicate that mentoring programs offer safe environments, encouragement and support, empowering activities, and specific guidelines for behavior. Thus mentoring programs directly contribute to increased self-esteem,

### Abstract

This article explores mentoring relationships for at-risk youth with an emphasis on the guiding principles of effective mentoring programs and the steps necessary to initiate such programs for students K-12. Discussion focuses on the definition of a mentoring relationship, individuals engaged in such relationships; research based benefits of participation in mentoring partnerships, specific examples of successful mentoring programs, and recommended strategies for application in the K-12 educational and community setting. Specific programs highlighted include Big Brothers Big Sisters, Healthy Kids Mentoring Program, Architect, Construction Management, and Engineering (ACE), and more general peer-tutoring and peer-assistance models.

improved attitudes toward school, more appropriate behavior; fewer discipline issues and fewer absences from school. King et al. (2002) further highlight the fact that mentoring programs can assist students by focusing directly on academic achievement and connections between school, peers, family, and community. Factors influencing learning relate to sharing experiences, sharing information, reflection, observation and support. Additional categories include questioning and listening skills, and similarity and differences between both parties (Jones, 2013). Some mentoring programs are designed specifically to provide support and guidance to students who are considered at-risk and potentially likely to participate in negative, unhealthy behaviors.

King et al. (2002) indicate the overarching goal of a mentoring program is to reduce risky behavior by connecting a student in need to an individual from the school or community. The researchers indicate that mentors serve as positive role models while providing emotional, social and academic support. Britner et al. (2006) further assert that mentoring programs help students increase autonomy and assume responsibility for life choices. Ideal mentoring relationships capitalize on successful relationships to guide students toward increased responsibility for healthy, positive decisions. As students gain more autonomy and work toward making their own decisions, they continue to rely on the mentoring relationship for support and guidance.

According to Bernstein (2007), about 3 million young students in the United States participate in some type of a formal mentoring program. However, the need for additional mentoring relationships is astounding as the sheer number of youths who need a trusted role model is ever increasing due to pressures related to drugs, alcohol, sex, and other potentially risky behaviors. Furthermore, the number of young children and adults who would benefit from a mentoring relationship regardless of exposure to risky behaviors is vast and increasing. Mentoring relationships play a positive role in any student's life as long as they are willing and open to the experience.

### **Individuals Engaged in Mentoring Relationships**

Britner et al. (2006) indicate that mentoring programs are most often designed for abused and neglected youth, youth who have disabilities, pregnant and parenting adolescents, juvenile offenders, and academically at-risk students. The majority of mentoring relationships taking place in school settings are designed for students who are academically at risk. Such students are usually paired with volunteer teachers, older students, or adults from the community. Mentors and mentees meet on a regular basis to work on academic activities such as homework, reading, writing, projects, etc. (Britner et al., 2006). Mentoring for academically at-risk students takes place in a structured time, usually at school, when mentor and mentee can work productively on academic tasks while building a strong relationship. Academic tasks provide a structure for the mentoring relationship and create opportunities for mentors and mentees to interact and learn from each other.

Students with disabilities are the second most common youth group in school settings in need of mentoring relationships. Britner et al. (2006) indicate that research on the effects of mentoring for students with disabilities is limited. However, most educators agree that pairing a disabled student with a mentor with similar disabilities provides a positive role model for students who need as many positive examples as possible. Many students with disabilities have very few role models with similar disabilities to learn from, look up to, and emulate. Such mentoring relationships provide the conditions necessary for students to gain self-esteem and confidence. Mentors demonstrate, by example, that physical limitations do not deter individuals from achieving their goals.

In some school settings, students placed in foster care or alternative home settings may benefit tremendously from mentoring relationships. Rhodes (2002) indicates that students who have been in multiple home placements, in particular, may experience difficulty when trusting adults and therefore great care and consideration must be given to ensure optimal matches for mentoring relationships. Furthermore, Rhodes (2002) asserts that it is not uncommon for frequent disruptions to occur in mentor relationships designed for youth who have alternative home placements simply due to the unfortunate instability in their lives.

Although these are the most common groups of students in school settings who are involved in mentoring relationships, students from all walks of life benefit from the strong relationships developed in mentoring programs. Mentoring programs are not always designed for students potentially exposed to risky behaviors. They can be developed for students entering college, considering a particular career, needing a specific type of role model, etc. The possibilities for mentoring relationships are endless; if there is a need in a student population, a mentoring program can be developed to address that need.

### **Benefits of Mentoring Relationships**

Barton-Arwood et al. (2000) assert that the mentoring relationship provides benefits for both mentors and mentees. Specifically, mentees benefit from learning and practicing new skills with a trusted individual, experiencing a variety of models regarding appropriate behavior, interacting with a variety of individuals of different backgrounds, and learning and practicing the expected norms of the environment. Barton-Arwood et al. (2000) further explain that mentors benefit from improved self-esteem through modeling to another peer, increased opportunities to interact with peers other than themselves, and mastered social competence.

Dappen & Isernhagen (2005) discuss the multitude of research studies conducted regarding the benefits of mentoring for both mentors and mentees. Tierney & Grossman (1995) found that mentoring relationships improve student grades, relationships with others, and reduce drug and alcohol use. Mecca (2001) asserts that mentoring programs improve school attendance, deter teen pregnancy, and decrease the likelihood that students will participate in gangs. Dappen & Isernhagen (2005) further

highlight studies conducted by Curtis & Hansen-Schwoebel (1999) indicating that mentoring relationships result in increasing levels of trust and self-confidence, improving attitudes toward school, maintaining better school attendance, increasing academic achievement, and improving relationships with adults and peers.

In a study conducted by Morrison et al. (2000) related to elementary school mentoring programs, results indicated that older student mentors had positive feelings about themselves because they helped younger students succeed. Furthermore, teachers involved in the mentoring program reported that older and younger children played more with each other on the playground as a direct result of experiences in the program and the formation of strong relationships. Morrison et al. (2000) further explain that the program helped to break down stereotypical gender barriers, increased students' sense of trust and increased the potential for learning. Quince & Layman (2006) conducted a study specifically related to a middle school mentoring program and corroborated the results indicated by Morrison et al. (2000). They found that all participants reported a boost in self-esteem, improved organization and communication skills, and an increasing sense of motivation, maturity and responsibility.

### **Connections**

Britner et al. (2006) highlight the fact that mentoring relationships improve student connections between peers, family, school and community. Students build strong, positive relationships and increase levels of trust. Furthermore, mentoring encourages youth to accept additional formal and informal services from friends, family members, school personnel and community organizations. Once students experience the benefits of a mentoring relationship, they are more likely to become involved with and connected to other support programs. Enhanced connections are one of the most beneficial outcomes of mentoring relationships. When students feel connected to a positive wider community, they are far more likely to make good life decisions.

### **Self Esteem**

As noted, a preponderance of evidence exists indicating that mentoring relationships improve self-esteem and self-confidence. Both mentors and mentees experience enhanced self-esteem because of the sense of responsibility and autonomy that both gain as a direct result of the relationship. High levels of self-esteem and self-confidence are related to positive decisions and healthy behavior.

### **Better School Attendance & Increased Academic Achievement**

Bernstein (2007) indicates that mentored students attend school more regularly and exhibit more improved academic performance when compared to students without mentors. Barton-Arwood et al. (2000) further support the claim that mentored students demonstrate increased academic achievement as a result of positive social interactions. When students feel supported by peers or adults their self-esteem and school attendance increase, directly

translating, for some students, into improved academic achievement and success.

### **Examples of Mentoring Programs**

Big Brothers Big Sisters is likely the best-known mentoring program in the United States. Part of the mission of the program is to help children reach their potential through professionally supported, one-to-one relationships with mentors (Big Brothers Big Sisters, 2007). Program mentors work with children ages 6 through 18 to provide opportunities ranging from community based and school based mentoring partnerships to programs designed specifically for African American and Hispanic students as well as children of incarcerated adults (Big Brothers Big Sisters, 2007). Mentors and mentees participate in a variety of activities ranging from playing sports together, working on homework and playing board games to reading a book, taking a walk, or just simply talking (Big Brothers Big Sisters, 2007).

King et al. (2002) discusses the Healthy Kids Mentoring Program offered to elementary students in one Midwestern suburban public school. Mentors met with students twice a week for 90 minutes and focused on four components including relationship building, self-esteem enhancement, goal setting, and academic assistance (King et al., 2002). Results indicated significant contributions to academic achievement, self-esteem and connections between peers, families, the school and the community.

Some programs offer group mentoring. Bernstein (2007) discusses one such program, the Architect, Construction Management, and Engineering (ACE) Mentor Program. ACE operates in urban areas all over the United States and fosters relationships as students collaborate on a project in an architect's office. Mentors help the students write proposals, plan, design, and construct a final project. At the end of the year, groups build and present their final project.

Barton-Arwood et al. (2000) further highlight alternative Peer-based interventions similar to mentoring programs that have a specific academic focus such as peer-tutoring and peer-assisted learning. Both involve student partnerships designed to raise levels of academic achievement and to boost self-confidence. Additionally, they provide information regarding programs with more of a social focus such as peer mediation and peer modeling, both designed to enhance positive social relationships.

### **Applications**

Researchers, King et al. (2002), Dappen & Isernhagen (2005) and Reese (2006) all provide practical suggestions for starting a mentoring program, maintaining the program, and evaluating success. There is no doubt that initiating a mentoring program can be a difficult task. However, with the right types of support, programs can start and benefits can be provided for those students in need.

King et al. (2002) and Dappen & Isernhagen (2005) stress the critical importance of obtaining administrative support from the board of education, superintendent, and building administrators before setting out to develop and implement a mentoring program. Administrative support is crucial as administrators hold the key to funding, schedules, and personnel who can assist with implementation. Also, building administrators (i.e. principals, assistant principals) serve as invaluable resources when it comes to recommending students in need of mentoring and conveying the critical importance of such relationships to parents who may need guidance and coaching to understand the benefits of mentoring.

Dappen & Isernhagen (2005) discuss the need to identify the general program parameters including goals, student population, qualifications to participate, and resources needed. King et al. (2002) emphasize the goal to create a multidimensional program that includes opportunities for relationship building, self esteem enhancement, goal setting and academic support. Strong mentoring programs need a clearly articulated plan outlining the specific population served, individuals responsible for management, structure and type of mentoring partnerships, overarching goals and performance outcomes. Whenever presenting the idea of such a program to administrators, it is imperative that developers have a clearly outlined and articulated plan that can lead directly into implementation if approved.

Once a plan is devised and approved, initiators need to locate individuals willing to serve as mentors as well as develop criteria for student participation in the program. King et al. (2002) suggest searching for mentors within the community and the school. Dappen & Isernhagen (2005) further suggest recruiting mentors from businesses, retired workers and service organizations. Reese (2006) even recommends finding mentors in senior citizens and college students. Wherever program developers choose to search for mentors, they must ensure that the individuals chosen believe in the mission of the mentoring program, support the goals, and are devoted to ensuring success for all mentees. Similarly, mentees must be chosen who will directly benefit from the services provided and who demonstrate a genuine need for mentorship and guidance.

Chosen mentors must also be provided with ongoing training and support to ensure they employ best practices and feel they have individuals they can turn to when they need advice or guidance regarding particular situations. All three research teams (King et al., 2002, Dappen & Isernhagen, 2005, Reese, 2006) agree that continuous training and support for mentors is necessary to ensure the success of any mentoring program. Mentors must be provided with a "toolkit" of strategies to use to "reach" students in need, help them increase autonomy, and influence the types of decisions students make. Although on the surface mentoring relationships may seem easy to establish, maintaining successful relationships require work and dedication on behalf of both partners.

Careful consideration must be given to mentor and mentee pairings to ensure that partnerships are created reflective of interest, common traits or characteristics, and personalities. Dappen & Isernhagen (2005) suggest developing criteria for matching mentors and mentees that relate specifically to program goals. They encourage a clearly defined rationale for how students are matched with mentors and why certain partnerships are created as opposed to others. Matching mentoring partners is perhaps the most important component of developing a mentoring program because the relationship is the core of what makes each partnership unique and successful.

Finally, program developers must ensure that evaluation criteria are in place to meaningfully assess the success of the program and determine if changes are necessary to promote further success and growth. Researchers (King et al., 2002, Dappen & Isernhagen, 2005, Reese, 2006) all agree that evaluation indicators are necessary for sustaining a high quality program. Feedback and input from mentors and mentees must be sought, and suggestions for improvement should be implemented to enhance opportunities afforded by the program.

## Viewpoints

One issue highlighted in some of the literature concerns the fact that most mentoring programs start in middle and high school with little opportunities for intervention early on during the elementary years. Although there are some great examples of elementary school-based mentor programs as noted above, very few evaluative studies have been conducted regarding implementation of such programs at the elementary level (King et al., 2002). For the most part, studies related to program effectiveness during the elementary years point to anecdotal evidence or findings from studies conducted at one school. Few studies provide a comprehensive overview of the benefits of mentoring programs across wide populations of elementary school aged children. King et al. (2002) highlight findings of O'Donnell et al. (1995) that early interventions may prove more effective in preventing current and future health problems. Despite findings such as these indicating that early interventions are critical, a majority of mentoring programs still exist at the middle and high school levels.

## Terms & Concepts

**At-risk Youth:** Elementary and secondary students who are potentially likely to participate in negative, unhealthy behaviors which put them at risk for academic failure.

**Architect, Construction Management, and Engineering (ACE)**

**Mentor Program:** ACE operates in urban areas all over the United States and fosters relationships as students collaborate on

a project in an architect's office. Mentors help the students write proposals, plan, design, and construct a final project.

**Big Brothers Big Sisters:** Big Brothers Big Sisters is likely the most well known mentoring program across the United States. Part of the mission of the program is to help children reach their potential through professionally supported, one-to-one relationships with mentors (Big Brothers Big Sisters, 2007). Program mentors work with children ages 6 through 18.

**Healthy Kids Mentoring Program:** A program offered to elementary students in one Midwestern suburban public school. Mentors meet with students twice a week for 90 minutes and focus on four components including relationship building, self-esteem enhancement, goal setting, and academic assistance (King et al., 2002).

**Mentee:** An individual in need of a strong relationship, support and guidance to help him or her make positive decisions about life and exhibit healthy behavior.

**Mentor:** A mentor is someone who serves in the role of a teacher, counselor, guide, protector or friend to a mentee. A mentor and mentee are paired according to interests, personalities, common characteristics, and needs.

**Peer-Tutoring:** Often, mentoring partnerships can take the form of peer-tutoring or peer-assistance dyads in which both partners work together toward a common goal or completion of a shared task or assignment.

**Reciprocal Relationships:** The mentoring partnership is an example of a reciprocal relationship. Both Mentor and Mentee benefit from the experience through improved self-esteem, self-confidence, academic achievement, etc.

**School-Based Mentoring:** In some programs, community leaders connect with students through school-based mentoring (SBM) programs, e.g., adults who mentor at-risk students. (Frels et al., 2013)

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### **Essay by John W. Loeser, Ed.M.**

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# Team Teaching

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include special education/regular education teacher partnerships, middle school teacher teams, and interdisciplinary teams in the high school setting. All models positively influence both professional growth for teachers and learning outcomes for students. Conditions necessary for successful partnerships are explored including common planning time, communication, definition of roles, accommodating schedules, symbiotic relationships, and teacher willingness.

### Overview

Dieker & Murawski (2003) define team-teaching as two or more teachers of equal status in the classroom providing instruction to one group of students at the same time. A variety of team-teaching models exist, each with a different purpose. However, the overarching benefits of each model are the same. Team-teaching provides opportunities for teachers to break free from isolation, collaborate on meaningful curriculum development projects, share teaching philosophies, better assess student learning outcomes, and grow professionally. Furthermore, successful team-teaching provides a model for students with regard to cooperation, teamwork, positive interaction, and the results of collaborative efforts.

One team-teaching model involves partnerships between special education teachers and regular education teachers. This model has gained popularity in the past decade mostly due to an emphasis on inclusive education strategies as mandated by laws such as the 1997 Individuals with Disabilities Education Act (IDEA). This practice places a burden on the general educator who is often inadequately trained to meet the needs of such a diverse classroom. Co-teaching has been one of the support strategies used to address the challenges and capitalize on the opportunities for learners with special needs in the general education classroom (Nierengarten, 2013). In fact, the majority of co-teaching scenarios involve specialist teachers partnered with regular education teachers.

By the year 2000, approximately 80% of the nation's middle schools reported using teacher teams as a mode of instruction (Hackmann, Petzko, Valentine, Clark, Nori & Lucas, 2002). Middle schools use the method extensively primarily because of the social and emotional needs of adolescent students. Teams

### Abstract

This article explores various team-teaching models, benefits for both teaching and learning, and the conditions necessary for successful teacher partnerships. Team-teaching is the practice of including two or more teachers of equal status in a classroom to provide instruction to one group of students. Models discussed

generally consist of two teachers, each teaching separate disciplines (i.e. math and science together and language arts and social studies together). Teaching-teams are responsible for one team of students and meet regularly to discuss teaching philosophies, management systems, assessment, etc.

Interdisciplinary teams, primarily at the high school level, are yet another form of team-teaching that encourages connections across disciplines and creates opportunities for increased applications to real-world settings (Murata, 2002). Interdisciplinary teams involve two or more teachers from different disciplines partnering to develop a course that combines different areas of expertise and bridges the gap between otherwise seemingly unrelated fields of study.

### **Co-Teaching: Special Education & Regular Education Teachers**

Warwick (1971) was the first to propose co-teaching as a way to reach all students with learning disabilities. During the 1980's the movement gained momentum and became more commonplace compared to the traditional pull-out programs where students with learning disabilities were removed from the regular education class to receive one-on-one instruction. At the time, the central motivating factor behind co-teaching scenarios was the fact that partnerships within the classroom dramatically reduced the student-teacher ratio, thus benefiting students who needed extra support and individualized instruction (Friend, 2007). The co-teaching model differs from teacher partnerships where two regular education teachers combine, for example, two classes of twenty students for instructional purposes. Rather than two teachers for forty students, the co-teaching model creates student-teacher ratios of two teachers for twenty students.

Friend (2007) asserts that one strong benefit of the co-teaching model is that both teachers bring unique qualities and characteristics to the classroom. Regular education teachers often focus on the content and curriculum while special education teachers focus on the actual learning process and assisting students with demonstration of skills and understandings. This type of partnership, if developed with careful consideration and nurtured throughout, can have an impact on student performance and achievement outcomes. Friend (2007) does make explicit, however, that co-teachers need extensive professional development to understand the philosophy behind co-teaching, expectations for performance, ways to develop a positive working relationship and strategies to maximize contributions to teaching and learning.

Cook & Friend (2000) describe five models of co-teaching that are used primarily in situations where special education teachers are partnered with regular education teachers in the homeroom setting. The first model includes one teacher and one assistant. In this model, one teacher is primarily responsible for delivering instruction. The station-teaching model integrates both teachers into the delivery of instruction. However, both teachers work with different stations of students on activities and assignments.

Parallel teaching scenarios are created when both teachers plan together, but deliver instruction separately to different groups and alternative teaching scenarios involve one teacher working with small groups to pre-teach, re-teach, or supplement regular instruction. Cook and Friend (1995) suggest that the most effective co-teaching model involves team-teaching where two or more teachers share responsibility for instruction for the entire class at the same time.

### **Teacher Teams in Middle Schools**

According to Hackmann et al. (2002), teacher teams are a common middle school organizational structure. As noted, approximately 80% of middle schools in the nation report using teaching teams. Middle school teams usually include two teachers responsible for separate areas of the curriculum, but highly integrated in terms of teaching philosophy, assessment, management policies, etc. These teams often provide students with a greater sense of security and stability. As Picucci et al. (2002) indicate, teacher teams in middle school provide the structure necessary to maintain closer social and emotional connections between teachers and students. Although middle school teacher teams may not frequently include opportunities for two teachers to work collaboratively in the same classroom at the same time, other models of team-teaching such as co-teaching, as described above, can be integrated with teacher teams to influence student achievement outcomes.

### **Interdisciplinary Team Teaching**

Interdisciplinary team-teaching occurs mostly in high schools as teachers with different areas of expertise collaborate to develop courses that integrate curriculum and fields of study. According to Murata (2002), in 1997 the National Association of Secondary School Principals called for greater personalization, integrated and engaging curriculum, and opportunities for connections to the real world. Murata (2002) asserts that effective team-teaching is a practice with broad appeal and potential for improving teaching. She believes these calls by secondary school principals can be answered to a great degree by creating more opportunities for interdisciplinary team-teaching.

Davis (1995) indicates that in order for interdisciplinary team-teaching to be successful, teachers need to collaborate on planning, content integration, teaching and evaluation. Wenger and Hornyak (1999) further highlight that teachers need to develop lesson objectives together, discuss "turn taking" within the teaching partnership, and create time to discuss the overall quality of an effective lesson.

Murata (2002) sheds light on a possible reason interdisciplinary team-teaching is not as common as it could be in many high schools. Although team-teaching is often seen as innovative and empowering for teachers, the philosophy itself is contrary to many schools' already established cultures. Often team-teaching is considered a direct challenge to the status quo and change is not easy for many individuals (Murata, 2002).

## **Benefits of Team Teaching**

Many documented benefits exist with regard to team-teaching. First and foremost, team-teaching provides an opportunity for teachers to model positive interactions, collaboration and lifelong learning for students (Sandholtz, 2000). When teachers interact with each other in the classroom, students see firsthand what it is like to collaborate well with another individual and how teamwork can lead to better results. Furthermore, Fullan (1991) asserts that successful team teaching leads to mutual support for growth. In turn, this leads to increased effectiveness and innovation in teaching. When teachers have an opportunity to work out of isolation, generate ideas with another teacher and spark engaging curriculum development, they are motivated to become better teachers and to improve instructional practice. The right partnership can lead to the conditions necessary to rejuvenate veteran teachers and provide a forum for the exchange of fresh perspectives of novice teachers.

Moreover, Sandholtz (2000) indicates that team-teaching often serves as the means to motivate teachers' professional development. Murata (2002) claims that team-teaching provides a dynamic way for teachers to learn from each other and grow. Through team-teaching scenarios, teachers have many opportunities to share instructional methodologies, ideas for curriculum development, and best practices that reach all learners.

Brenan & Witte (2003) state that more accurate and concise diagnostic observations can be made when two teachers work collaboratively in one classroom. As opposed to one teacher collecting assessment data and documenting anecdotal observations and evidence of learning, two teachers with different perspectives collect more meaningful assessment data to help inform instruction.

## **Applications**

Whether regular education teachers are paired with other regular education teachers or with special education teachers, research consistently demonstrates that a variety of factors must be considered in order to create ideal conditions for successful partnerships (Bouck, 2007, Friend, 2007, Kohler-Evans, 2006, Murata, 2002, Shibley, 2006). Without careful consideration of these factors, teaching-teams may fail and even worse, present negative images to students regarding cooperation, teamwork and collegiality.

The conditions necessary include common planning time, clear expectations and roles, symbiotic relationships, consistent communication, accommodating schedules and a genuine willingness to work collaboratively with a partner.

### **Common Planning Time**

In a majority of studies exploring the team-teaching experience, researchers have uncovered that common planning time is the number one determining factor for success (Arguelles, Hughes,

& Schumm, 2000, Bouck, 2007, Friend, 2007). Teachers need time to discuss curriculum objectives, student work, discipline, assessment results, student concerns and a myriad of other topics related to the everyday classroom experience. Murata (2002) further asserts that many teachers go so far as to voice strong opinions for common planning time as opposed to actual co-teaching time in the classroom. One of the main issues teachers face when attempting to implement a team-teaching model is the lack of time in a traditional school schedule for such meetings to occur. The effectiveness of the team model hinges on school administrators' abilities to create the time necessary for communication.

### **Communication**

Brenan & Witte (2003) assert that consistent communication is another extremely important condition for successful team-teaching. Teachers need to communicate honestly about everything ranging from teaching philosophies and classroom management policies to assessment methodologies and physical classroom organization systems. In separate, unrelated studies, Arguelles, Hughes, & Schumm (2000) uncovered the critical importance of flexibility and compatibility with regard to teaching philosophies and styles, Shibley (2006) noted the compelling need for unified assessment philosophies, and Bouck (2007) articulated the need for both teachers to be clear on behavior management policies and how physical space is divided in the classroom to maximize instructional opportunities. Both partners must discuss virtually every aspect of teaching and learning and fully disclose individual beliefs and practices to ensure a successful team. Kohler-Evans (2006) further asserts that communication must be consistent and frequent.

### **Definition of Roles**

Bouck (2007) concluded that in order for team-teaching situations to be successful, teachers need to be clear with regard to their role in the classroom. Partners should outline expectations for curriculum development and instruction and be willing to redefine roles as necessary. Murata (2002) asserts the incredible importance of sharing core beliefs about teachers' roles and attitudes as the foundation for strong working relationships. When considering the partnership between regular education and special education teachers, Bouck (2007) claims that teachers should not resort to the comfortable roles of regular education teachers leading large groups discussions while special education teachers work with individual students or small groups in need of extra support. Rather, in a true team-teaching model, both teachers should assume responsibility for all types of instructional delivery within clearly defined roles mutually agreed upon throughout the experience.

### **Scheduling**

From a systems perspective, schedules are often the one obstacle impeding the implementation of team-teaching models. Successful partnerships hinge on available times in the schedule for teachers to meet to collaborate, engage in discussion and grapple with questions related to teaching and learning. With a myriad of

competing interests, scheduling large blocks of time for teachers to engage in these critical conversations is often nearly impossible for some school administrators. Murata (2002) discusses the impact scheduling can have, specifically in high schools, on a teacher's willingness to participate in a team-teaching model, indicating that restrictions of most high school schedules often discourage teachers who might otherwise be interested in collaborative work. If a school is serious about the implementation of a team-teaching model, administrators need to manipulate the scheduling puzzle to ensure that times are available and students who would most benefit from a team-teaching experience have the opportunity to participate (Friend, 2007).

### **Willingness to Team Teach**

Shibley (2006) indicates that potential collaborators should be chosen according to their willingness to invest the time necessary for success. No teacher should ever be forced into a team-teaching situation. Murata (2002) discusses the critical importance of allowing teachers, at the high school level, to choose their partners and their curriculum. Encouraging a willingness among high school teachers to participate in a team-teaching experience can be quite difficult as they need to be willing to diverge from the common high school norms of subject and teacher autonomy (Murata, 2002). No matter what educational level, teachers who engage in team-teaching need to be willing, open to change, and motivated by the possibilities for improved instructional practice and student achievement.

### **Symbiotic Relationships**

The team-teaching relationship often joins two individuals with different perspectives on teaching and varied strengths and weaknesses. The partnership creates ample opportunities for teachers to grow professionally but only if they are willing to embrace the symbiotic nature of the relationship. Bouck (2007) asserts that teachers need to take advantage of the benefits of the partnership, but also need to be aware of the constraints. Team-teaching offers an opportunity for new roles in a classroom and more freedom in terms of instructional methodologies and curriculum development. At the same time, however, team-teaching can limit autonomy, constrain pre-existing roles and even possibly devalue one partner's contributions at certain times (Bouck, 2007). Murata (2002) found that the most positive partnerships demonstrate respect for each other's differences and support diverse philosophies and approaches to education. When one partner views the other's strengths as enhancements to his/her weaknesses, the opportunity for professional growth dramatically increases.

### **Initial Strategies for Implementing Team-Teaching Models**

Kohler-Evans (2006) recommends that schools planning on implementing team-teaching models start small and ask for volunteers that want to team-teach. Teachers should never be forced into teaching partnerships if they are not comfortable with or don't understand the philosophy behind team-teaching. Administrators should look for teachers who are motivated to try

new approaches and who are willing to spend the time, energy, and effort necessary to achieve success. Walther-Thomas et al. (1996) further recommend that teachers and administrators work to create balanced heterogeneous classes to ensure a mix of students with different abilities, learning styles and interests. Kohler-Evans (2006) emphasizes that school administrators need to set the foundation for success by ensuring that time is set aside for teachers to communicate clearly and often by sharing perspectives on everything related to teaching and learning. Most importantly, special care must be given to ensure that teaching partners are of equal status and can never rely on seniority to devalue a partner's contributions. Team-teaching involves many intricacies and nuances of human behavior and interaction. Careful consideration must be given to many different factors to create successful partnerships that flourish and provide role models for young students.

### **Alternative Perspectives**

One of the worst-case scenarios that can occur when implementing a team-teaching model is when two teachers are paired arbitrarily without consideration of the factors discussed above and provided little or no support for successful growth of the partnership. Team-teaching can be a daunting process for many educators as it directly challenges the norm of teaching as an isolating profession. In order for team-teaching to be successful, teachers need to trust each other and be honest throughout the partnership. If teachers are arbitrarily placed together, more often than not the relationship fails and sometimes can even create negative learning environments for students.

Some educators claim that certain team-teaching relationships, such as the special and regular education teacher combination, are developed not for sound educational reasons, but rather to address the law, specifically the Individuals with Disabilities Education Act (IDEA) and the No Child Left Behind Act of 2001 (NCLB) (Kohler-Evans, 2006). Under constant pressure to ensure that the needs of all students are met through inclusive strategies, school administrators may create team-teaching situations with the expectation that two teachers and a smaller student-teacher ratio will address student needs. According to some teachers, administrators sometimes fail to recognize the many factors that must be considered when developing partnerships in order for team-teaching situations to have a positive impact on student achievement. In Kamens, Susko & Elliott's study of administrator knowledge and practices related to the supervision and evaluation of co-teachers in inclusive classroom settings, themes that emerged were related to professional preparation and training; expectations and perspectives of co-teaching and inclusive practice; and supporting, supervising, and evaluating co-teachers. The data indicated that there is considerable inconsistency in administrator knowledge and practices and that professional development for administrators is warranted (Kamens, Susko & Elliott, 2013).

Kohler-Evans (2006) emphasizes possible issues that arise when special and regular education teachers are paired in co-

teaching situations without careful consideration of the match between teaching philosophies, personalities, etc. Regular education teachers sometimes do not understand the need for an additional teacher in the classroom and therefore are not invested in creating the conditions necessary for a successful partnership. Regular education teachers might feel they are capable of meeting the needs of their students without assistance and may even be insulted by the notion that an additional teacher is necessary. Kohler-Evans (2006) claims an undesired outcome of such partnerships is a relationship that breaks down in front of students due to a lack of understanding, nurturing, and mutual investment.

Although on the surface, team teaching seems as simple as placing two equally qualified teachers in a classroom with one group of students, the model is quite complex and involves many different factors that must be considered before actively pursuing implementation. Brenan & Witte (2003) indicate that simply placing two teachers into a team-teaching situation runs the risk of combining incompatible teaching styles, personalities, and priorities. They illuminate the particularly acute problem that occurs when a novice teacher is paired with a veteran teacher in a team teaching situation without careful consideration. Similar to Kohler-Evans (2006), Brenan & Witte (2003) assert that such team situations can create unhealthy and unproductive teaching and learning environments.

## Terms & Concepts

**Alternative Teaching:** Alternative teaching scenarios involve one teacher working with small groups to pre-teach, re-teach, or supplement regular instruction.

**Co-Teaching:** A team teaching method used primarily in situations where special education teachers are partnered with regular education teachers in the homeroom setting, reducing the student-teacher ratio.

**Individuals with Disabilities: Education Act (IDEA)** A federal law that provides for special education and related services for children aged 3-21. It was reauthorized in 1997 and 2004 and ensures free and appropriate access to public education for children with disabilities.

**Interdisciplinary Teams:** Interdisciplinary teams involve two or more teachers from different disciplines partnering to develop a course that combines different areas of expertise and bridges the gap between otherwise seemingly unrelated fields of study.

**No Child Left Behind Act of 2001 (NCLB):** A broad bi-partisan education reform that addresses the issue of performance in American elementary and secondary schools. The act focuses on accountability for schools and districts, choice for parents regarding low performing schools, and requirements for use of federal education dollars. In 2012, the administration of

President Barack Obama distributed waivers to the act, which exempted states from certain aspects of the educational standards (Klein, 2013).

**Parallel Teaching:** Parallel teaching scenarios are created when both teachers plan together, but deliver instruction separately to different groups.

**Station-Teaching:** The station-teaching model integrates both teachers into the delivery of instruction. However, both teachers work with different stations of students on activities and assignments.

**Team-Teaching:** Team-teaching involves two or more teachers of equal status in the classroom providing instruction to one group of students at the same time. A variety of team-teaching models exist, each with a different purpose.

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### Essay by John Loeser, M.Ed.

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# Reciprocal Teaching

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## Abstract

Reciprocal teaching is an instructional model applied to written text in which students, working together in small groups, are empowered to take control of their own education processes by interrogating not only the text under investigation but also the larger process of learning itself. By breaking down the work of comprehension into stages, students can theoretically secure a better understanding of how learning actually happens. Initially advocated in the 1980s as a way to improve reading skills and learning confidence among students in the primary grades, the process has since been extended to the secondary school level and even to college.

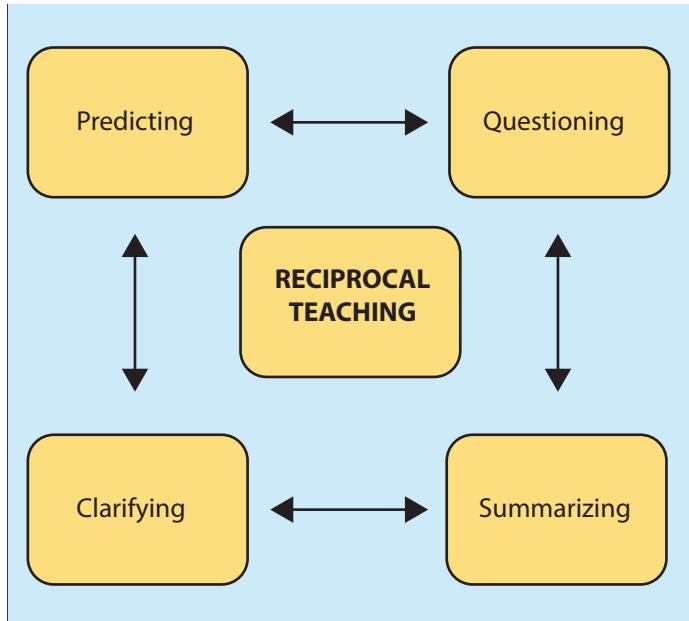
## Overview

The premise behind reciprocal teaching was (and still is) revolutionary. For generations, teachers in any discipline assigned blocks of reading material with the assumption that students could accomplish that reading task on their own initiative at home, that reading skills were largely equal within the classroom given that each student was in the same grade level. Reading, after all, was reading. Before the advent of television and the subsequent sharp deterioration of reading skills as successive generations of schoolchildren spent increasingly less time work-

ing on building reading competencies, teachers in the primary grades could no longer assume the long-established principal stages of reading—locating a text’s main points; understanding the implications of those main points; analyzing the implications of those points; and then applying those principal points to other, broader situations—were intuitive, simply part of how any student approached any piece of writing under study from basic texts of the creative imagination (stories, novels, poems, plays) to textbooks in any discipline, and word problems in mathematics. These stages did not need to be introduced or interrogated for their efficiency—they were simply what anyone did when they interacted with a written text. Whatever the curriculum from the sciences to history, reading was essential. Except for those students diagnosed with reading comprehension difficulties and/or learning disabilities, teachers simply assumed reading itself was a universal skill.

By the early 1980s, however, accumulating data began to suggest a far different picture—student reading skills were significantly impaired. Students simply could not understand written texts with any accuracy or consistency. Termed “cognitive failure,” this dead-end moment revealed to the student (and the teacher) that education at that point was simply not possible; not grasping the meaning of a written text could not be ignored, could not be minimized, could not be addressed with tutors, could not be repaired by parental assistance. Being able to read, that is mastering the recognition of symbols as letters and groups of letters as words, no longer implied being able to understand what those words and sentences were actually saying. Although students understood the constructs of squiggles and lines that made up the alphabet and recognized the general operational architecture of a sentence, they struggled to distill from those language constructs their meaning, much less their purpose. Educators faced a systemic dilemma—the problem, although it tended to spike in underfunded and overcrowded school districts, generally cut across all traditional markers.

School children, without qualifying adjectives, were finding the ability to engage a text responsibly more and more a specialized skill. Teachers at all levels of instruction from the primary grades to high school faced the daunting challenge of using class time to tell students what texts were saying as the only way to move that information; of course, in the long term, that dynamic in turn would only create students who were essentially passive recipients of blocks of information whose reading skills would

**Figure 1: Reciprocal Teaching**

never necessarily improve. In turn, teachers grew increasingly frustrated by the progress of classroom instruction; morale in the profession dropped; supporting staff necessary to help students with low reading skills drained budgets; and in the process standardized test scores, long viewed as the most accurate way to assess a school's success and a student's comprehension, began what would turn into a nearly twenty-year downward spiral.

Perhaps the problem centered on conventional perceptions of the classroom as an instructor-centered construct where students had long been necessarily viewed as subordinate to the process of mastering material. In the early decades of the twentieth century, Lev Semyonovich Vygotsky, a Russian psychologist, first posited that instruction itself is best managed as a dynamic between teacher and student and, more important, among students themselves. Learning is best conceived as a dialogue, a social interaction that encourages discussion, contribution, feedback, and mutual support. It was at the time a revolutionary premise. "Knowledge and meaning are the result of creative socializations arranged through negotiation and discourse among teachers and students, or students and students" (Choo, Eng & Ahman, 2011).

Within the progressively more authoritarian political environment of Russia, a theory that advocated dialogue, encouraged students to strengthen their understanding with the help of other students, and encouraged participation as key to educational evolution was widely discredited, and Vygotsky died from tuberculosis at the age of thirty-seven, largely unknown in the West. His theories were essentially rediscovered during the heyday of the counterculture in America in the late 1960s and 1970s. Here was an education template that appealed to that generation of free thinkers, a system that welcomed students to participate in their own education and that viewed cognition, that is learning, as a result of a cooperative interaction and redesigned the

instructor into a facilitator, a support system rather than the autocratic center of the classroom. That theory, which became known as constructionism, that is building the understanding of material together and centering that process as the key to effective classroom management, was by definition controversial as it positioned students at the center of their own education process and necessarily challenged, even upended, generations of assumptions about the primacy of the teacher in a classroom.

## Applications

As with so many groundbreaking theories, the premise underpinning reciprocal teaching is on its face simple: Take the steps readers traditionally performed when engaging a written text (understanding; analysis; clarification; and prediction) and assign one student in a small group to perform one of those tasks in the classroom itself as part of a collaborative effort to master an assigned reading. For students to take control of their own education, to become in essence authors of their own education, required teachers themselves to radically alter the perception of their role in a classroom. "Constructing educational practice around these processes...requires educators to think differently about education, authority, and learning" (Baxter, 2012). Reciprocal teaching externalizes the internal stages of reading. The students come to see how the act of reading actually works, what exactly it means to interact with a written text. This sort of educational approach, called metacognition, asserts that students should be made aware of what they are actually doing when they learn, to be aware of the process of thought and comprehension as a real-time function that the brain performs.

Within this template, the teacher, after carefully explaining the four-part concept and even demonstrating the cooperative nature of this sort of instruction, acts initially as a kind of facilitator, ensuring that each small group of students follows the protocol and stays on task. After the classroom adapts this process, educators point out, the teacher becomes less and less of a hovering presence and the students build their confidence, see exactly how the process of interacting with a text works, and within a relatively short period of time (research has suggested as little ten weeks of application) come to own their own education process and in turn approach texts on their own with for more competency and efficiency. "Learners learn to give and receive feedback with a peer, which results in an expansion of learner socialization skill; and.... learners learn to perform and analyze movements by observing the performance of the doer, comparing the performance against criteria, and drawing conclusions about the accuracy of the performance" (Chatoupis, 2015).

Consider how the theory might be applied in an actual classroom exercise. Take, for example, a fifth grade social studies/history class composed of twenty-five students whose competencies and skill sets are fairly distributed from A's to D's. The class is to review a three page reading assignment that covers Benjamin Franklin's scientific achievements, most notably his work

with the lightning rod. Within traditional classroom dynamics, the instructor expects to review the reading assignment, perhaps even give a pop quiz, to weed out the weaker readers because across-the-board reading competencies cannot be assumed. Then, perhaps supplemented with some application of technology (a video or a YouTube short), the instructor goes over the written material and hopes to maintain the students' attention (and attention spans in students under the age of 12 have dwindled to on average just under eight minutes) sufficiently to make sure they get the main points. The actual reading of the passage itself becomes largely irrelevant.

If that classroom dynamic assumes a centering instructor and passive students, reciprocal teaching upends that construct. Education works better when it is dialogic, that is when material is tested, analyzed, questioned in a call and response template that can be done live in class. Students and teacher essentially alternate dominant position, share the control of the classroom itself. Early in the grading period, the teacher has reviewed the concept of reciprocal teaching as a way to commit the class to its protocol—thus the class is ready to execute the process. The instructor first breaks the classroom randomly into operating groups, four in each would be the optimum number. Instead of lecturing about the material, the instructor assigns a role to each member of the group: one will serve as the summarizer, responsible for highlighting the passage's main points (what did Franklin actually do, when did he do it and under what conditions, how successful was he); a second will serve as the group's interrogator, returning to the text, raising questions about passages that are murky or ideas that puzzle because “[q]uestioning promotes students' comprehension, because students must understand what they have read to ask their peers knowledgeable questions” (Stricklin, 2011) (what exactly was the point of the key tied to a kite; what did Franklin think might happen? could he have been killed? why would a prominent politician be experimenting with science in the first place?); a third will serve as analyzer, providing some level of response to those questions to clarify the text's more difficult passages; and the fourth will serve as the predictor, taking the group into the next level of analysis by posing questions about future actions and the implications of that text to a wider and broader context (what was the importance of this discovery, what are some of the applications, and what might Franklin have done next to continue his investigation).

Summarize, question, analyze, and predict: Without the usual stress of participating in a wider classroom dynamic or simply trying to pay attention to a teacher, this small group exercise encourages mutual support and discussion. The group will actually play out the internal processes of reading and will, collaboratively, construct a viable reading of the text. Unlike the intimidating expectations of working with an entire class, students respond to small group activity, they feel comfortable. With the direction of the instructor, the class will work toward a better understanding of reading itself until it can execute the process virtually independent of instructor direction, a process known as scaffolding. The students will have moved toward

reading comprehensiveness. “As students gain proficiency with a strategy and move toward becoming independent comprehension strategy users, they assume more of the responsibility for applying the strategy while the teacher gradually releases his or her responsibility over the strategy's application” (Pilonieta & Medina, 2009).

The mystery of reading will be clarified. Mastering the text will be efficient and cooperative—and the students, along the way, will develop respect for each other, will evolve their own socializing skills, and may even have fun. Subsequently, group roles will be redistributed and, eventually, the groups themselves can be reshuffled. Since the advent of the Internet and the resource storage capability of YouTube, a significant archive of actual classroom activities using reciprocal teaching has been made available to teachers to model their own classroom work. Allowing the students to grow and contribute to the work of the classroom has made reciprocal teaching an attractive model for underfunded schools with limited support staff—the teacher can in essence deputize the students themselves to help in the dynamic of instruction.

Virtually any kind of reading assignment can be worked using reciprocal teaching: essays, short stories and novels, poetry, textbooks, newspaper and magazine pieces; accumulating data indicates that this sort of engaged reading act even transfers to those materials the students elect to read outside the class for their own recreation. Indeed, reciprocal teaching has been applied in general math classes to address the difficulty students faced in approaching word problems. “The language of mathematics can often be a formidable barrier to understanding mathematical concepts, comprehension and problem-solving” (Meyer, 2014).

In fact, reciprocal teaching has even been applied to physical education by suggesting students who pair-off in gym class perform better (Chatoupis, 2015). It is at once an endorsement of this approach and a harsh critique of the steadily declining reading skills that this approach to helping students build their reading skills confidence has been adapted by college instructors who have also come to appreciate the depth of the challenge posed by a generation of students who have all but abandoned the commitment to reading as a life skill. “College students must be taught the skills to locate and analyze complicated information, to solve problems they encounter while reading, and to connect ideas and concepts” (Gruenbaum, 2012). Because success in college (and in a career for that matter) is tied strongly to reading skills, reciprocal teaching at that level seeks to moderate the growing attrition of incoming freshman—more than half of students who begin college work will not finish.

## Viewpoints

Despite the accumulation of data that establishes the viability of reciprocal teaching, there are drawbacks. For the system to work effectively, the instructor must have considerable patience

as the students work toward understanding the responsibility of group work. Students are not uniformly skilled—in small group work, those individuals with lower competency levels can feel embarrassed, left out, vulnerable to criticism. The system requires a long-term commitment to improvement on the part of the students themselves to resist turning the small group instructional units into improvised playtime. More disturbing, students assigned reading tasks can go online and retrieve much of the information on the assignment secondhand without committing to the responsibilities of in-class learning.

Advocates of constructivist teaching cite these concerns as trivial compared with the benefits: students discovering their own competencies in reading, understanding the actual process of interacting with a written text, and learning the value of cooperation. More promising, data has indicated that reciprocal teaching can assist those with disabilities by extending to them “social inclusion” into the larger classroom dynamic; reciprocal teaching can design strategies for students with intellectual and learning disabilities to join the mainstream classroom experience (Reichenberg, 2014). Educators have embraced the promise of reciprocal teaching in an era of declining reading skills. It is now an accepted theoretical element of university education programs that train future teachers, and its theoretical premise has engendered a generation of education textbooks, cutting-edge reading programs, and a plethora of online instruction tools.

## Terms & Concepts

**Cognitive Failure:** The fail point in a student’s ongoing education in which the student no longer assimilates new material and can no longer process the expected evolution toward understanding.

**Constructivism:** In education, a theory that holds that learning is necessarily social, that understanding itself is best achieved through the collaborative efforts of teachers and students who collectively build, or construct, a viable understanding of material, that meaning itself can only be arrived at through the interaction of like-minded, if not like-talented people.

**Dialogic Education:** The theory that learning, whether analysis or problem solving, is best enhanced through the genuine question and answer process conducted between teacher and students and among students in which control of the classroom dynamic is permitted, even expected, to change.

**Metacognition:** In psychology, a method of thinking in which one is made aware of the process of analysis and discovery; in education, the deliberate introduction of the awareness of the process of learning into the classroom operation.

**Scaffolding:** In education, a system in which the instructor initially plays out or demonstrates an intended educational exercise

and then, using that model, the students execute the same exercise with the teacher acting as facilitator.

**Toolbox:** In education, a term that refers to the specific competencies and skills of individual students that empowers the student to control their own education evolution.

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## Essay by Joseph Dewey

# Game-Based Learning

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however, games (particularly video games) have struggled to penetrate the formal education marketplace. Furthermore, some scholars have suggested that the application of game mechanics towards non-game environments is a manipulative and exploitative practice. Nonetheless, games are an increasingly important medium where school-aged children spend much of their time. As such, it is important for educators and educational researchers to understand games in the context of this greater media landscape, and what it means for the future of learning.

Game-based learning is sometimes mistakenly referred to as “game theory,” however, the term game theory refers to the use of mathematical models to study decision making, and is not related to game-based learning. The relationship between games and learning and the use of games as a vehicle for learning has long been of interest to educators. Interest in game-based learning among scholars, funding agencies, educational technology start-ups, large educational publishing companies, and the White House (DeLoura 2013) has increased since the beginning of the twenty-first century. Leading theorists in the field are exploring the intersection of games and learning, and what games can teach us about learning.

## Applications

Learning is a life-long endeavor for humans and can occur via a designed experience (such as at a workshop, in a classroom, via a museum exhibit, or by watching a documentary) or via un-designed experiences such as free play or personal reflection. Game-based learning is typically discussed in the context of designed learning experiences both in terms of what learning designers can glean from game design and in terms of how to utilize games as part of a designed learning experience.

### Sociocultural Learning Theories

There are numerous theories about learning, and in understanding game-based learning the family of theories that are of greatest use are the sociocultural learning theories. These theories of learning emphasize the roles that communities and tools play in how humans learn. Scholars from education, psychology, anthropology, and sociology have contributed and built upon this body of knowledge, which has its origin in the work done by Vygotsky in the early part of the twentieth century. Vygotsky’s emphasis

## Abstract

While cognitive theories and intuition point to game-based learning as holding a great deal of promise, games are not fitting into the educational landscape with the ease anticipated by champions of game-based learning. A number of technical, cultural, and ethical factors demand attention as the role of game-based learning in formal education evolves.

## Overview

Games of all stripes have long been of interest by educators as a way to engage and motivate students to learn new concepts and apply their knowledge in a meaningful context. Learning theories from the sociocultural cognition family of learning theories points to the potential games have to motivate, engage, and provide authentic learning experiences. Despite this promise,

on the role adults and peers play in learning, along with how cultural context affects learning and the importance of play in cognitive development have been fruitful in generating learning theories that suggest game-based learning to be worthy of deeper investigation. One of Vygotsky's most enduring ideas was that of the zone of proximal development (ZDP). Cognitive tasks that a learner cannot perform on his own but can perform with outside assistance are said to lie within the ZDP. Understanding where a learner's ZDP is for particular learning objectives is critical for scaffolding learners through mastery in that learning objective. As research into learning moved toward more constructivist models, the role of mentors, peers, society, and culture could not be ignored. To be sure, the basic idea behind ZDP emerges frequently in sociocultural learning research, sometimes under other names such as cognitive apprenticeships or legitimate peripheral participation.

To accept that learning and cognition are social phenomenon is also to accept that cognition is distributed. That is to say that an individual's knowledge is distributed among an individual's social network and the tools in the environment. People often use tools that make them work more efficiently or boost their knowledge base. Distributed cognition and sociocultural learning theories are critical for understanding the arguments behind game-based learning.

### **Games and Learning Experiences**

Fullerton (2008) compares two very different experiences that are recognized as games (as opposed to toys, puzzles, or dramatic play): The card game Go Fish and the video game Quake. Through this comparison, Fullerton draws out what she identifies as the essential components of a game:

- Players: A game is designed for players. Unlike other forms of entertainment, games demand active participation.
- Objectives: Games lay out specific goals for players. Whether it is collecting the most cards or shooting the most enemies or getting a basket in a net, games provide players with goals.
- Rules: All games explain what players can or cannot do in pursuit of the goals.
- Resources: Games provide players with resources to draw upon to achieve the goals. For example, a puck, a scrabble tile, or a chance card.
- Conflict: In a game, the player has to work against something or someone to obtain the goals. Other players might pose conflict. Hazards in a video game are another example of conflict.
- Boundaries: These can be physical boundaries such as the lines on the floor of a basketball court, or they can be conceptual boundaries via the social agreement of a game. For instance, players agree that only in the Go Fish game are they discussing and bargaining over the cards involved.

- Outcomes: Games involve uncertain and unequal outcomes. Players will lose or win, but that is not certain from the outset of the game. That uncertainty is important as it drives the players through the game.

In examining these components outlined by Fullerton, the overlaps between games and well-designed learning experiences become apparent. Learning experiences are designed with learners in mind. There is an objective that learners are working toward in the interest of specific outcomes. Well-designed learning experiences will likely provide learners with resources, such as videos, pencils, workbooks, Erlenmeyer flasks, or audiotapes to support the learner.

The degree to which learning and games overlap on those elements is arguable and there are certainly less apparent overlaps such as boundaries and conflict. One can find a detailed exploration of these arguments in Gee's *What Video Games Have to Teach Us About Learning and Literacy* (2007). Gee unpacks thirty-six learning principles that are manifest in both "good" games and effective learning experiences. By examining social learning and linguistic theories around situated cognition, distributed cognition, cultural models, multimodal principles, identity, self-knowledge, and others, Gee is able to weave all of Fullerton's elements into a schema for effective learning design.

### **Educational Video Games**

Gee's work speaks to what makes any designed learning experience an effective one, it is not an explicit advocacy of the use of games in general or video games in particular as learning tools. Rather, Gee's argument centers on the fact that modern video games are challenging and cognitively demanding. Players are often frustrated at many junctures in trying to reach the video games objectives. Yet, through the forces of a competitive market place, game designers need to figure out how to make their games just challenging enough to be compelling while providing rewards, help, hints, and reinforcement to keep players from quitting or giving up in frustration. These competing pressures yield the most popular video games on the shelves as the product would otherwise not thrive, people would not purchase those products. Gee poses a similar challenge to educators, schools, and curriculum designers: Design learning experiences that are challenging yet pleasurable.

Gee's contribution revived an interest in educational video games, but interest in games for learning began in the 1970s, with the earliest personal computers. In a white paper from the Joan Ganz Cooney Center, Richards, Stebbins, and Moellering (2013) note that older titles such as *Math Blaster*, *Oregon Trail*, *Where in the World Is Carmen Sandiego*, and *Sim City* enjoyed tremendous success in both the K-12 institutional market as well as the commercial markets. A new generation of educational games has had a harder time achieving similar. Companies such as BrainPop and Discovery Education have begun to aggregate and deliver games to fill curricular niches across all the grade and subject areas. The challenge these companies have faced in finding prof-

itable models for educational games underscores a fundamental disconnect. The stigma of using games as tools for learning has all but fallen away, but schools are not yet buying learning games in a commercially viable way. With all the enthusiasm around game-based learning and the mutual vision educators seem to share for their potential, why has market success been such a challenge? Richards et al identify several potential issues, including uneven technological capabilities among schools, supplementary curricular budgets that are in flux, and the wide, confusing range of game products of varying quality.

### **Games and Behavior Modification**

As formal learning scholars grappled with the ideas presented by Gee and others researching and developing games for use in the classroom, many in the private and commercial sector began to consider how game mechanics can be used for motivation and behavior modification. This application of game mechanics to areas where behavior modification are desirable such as in marketing, training, and education, have come to be known as “gamification.” Gamification leverages individuals’ desire for such things as self-expression, mastery, competition, status, and achievement in pursuit of a desired objective.

Game designer McGonigal (2012) championed the role games can play in addressing global and society problems such as poverty and climate change. Games and gamified experiences hold potential for solving cognitively complex problems. For example, the game Foldit is an online game about protein folding. The game received special attention and acclaim when it was noted that human players were able to outperform the computationally demanding, algorithmically generated solutions to questions in protein folding.

Gamification has been utilized across a variety of efforts, including employee recruitment and retention, physical fitness, social network participation, ideation, and customer loyalty. Concerns emerged, however, that gamification techniques began to encourage unintended behaviors, as people would try to, for lack of a better term, “game the system.” That is, maximize desired quantitative outputs for the outputs themselves, or, to revisit Fullerton’s framework, to obtain the desired outcomes without pursuing the intended objective. Critics such as Bogost (2011) have been adamant and vocal in their warnings that gamification is exploitative and manipulative, particularly when employed as a marketing strategy in for-profit commercial endeavors. Bogost described efforts as a type of “exploitationware.”

### **Transmedia in the Learning Landscape**

While the use of game mechanics to sculpt human behavior continues to garner critics and champions, other scholars are pointing out the ubiquitous role video games play in the American childhood media landscape. To be sure, where some critics of gamification criticized the movement’s emphasis on mechanics over narrative, other scholars turned their attention to the value of narrative in games. Video games are a critical part of the transmedia experience common to children in many parts of the Western world (Jenkins, 2010). Transmedia defines the play,

storytelling, and learning of most American children ages 6–11. As is implied by the name, transmedia describes phenomena that cross media platforms: books, televisions, movies, live action, and games. Because of their interactive nature, video games play a key role in the transmedia landscape. As such, Jenkins has distilled what it is about transmedia that is of particular import to educators and in doing so has challenged educators to consider the role games (and particularly video games) can play in the transmedia learning landscape:

- **Spreadability vs. drillability:** Spreadability refers to the ability to scan a media landscape for bits of interesting information or data. This is the way traditional survey or introductory courses have typically approached information. Drillability refers to the ability and opportunity to dig deeper into content and asks educators to think carefully about motivation, what motivates students to try and learn more about a subject?
- **Continuity vs. multiplicity:** Continuity refers to the coherent story told by a media landscape. In education, this commonly manifests itself as a cannon. Multiplicity, on the other hand, asks learners to think about perspectives other than that of the established cannon. As an example, educational technology scholar Squire used the computer game *Civilization* to invite players to think about alternate histories: What if North America had colonized Europe, for example? How might the world be different today?
- **Immersion vs. extraction:** Immersion refers to the ability of media (theme parks, simulations, online worlds, video games) to immerse students in a different world. Extraction refers to the students’ ability to take those lessons and experiences back with them to their own everyday world.
- **World building:** Since transmedia experiences are often outside of the core narrative, they can provide richer environments in which these peripheral narratives play out. In a school setting, for instance, this might mean that students read historical fiction to accompany a history lesson thus moving away from stories of presidents or generals to understanding or imagining the everyday life of citizens of those eras.
- **Seriality:** With the seriality principle, Jenkins (2010) asserts that educators can learn from good, serial storytellers. In a serial, chapters are satisfying as units in their own right but entice the reader to continue onto the next chapter with a cliffhanger. Classrooms should offer an equivalent of cliffhangers to motivate learners.
- **Subjectivity:** Transmedia experiences allow audiences to explore a central narrative through new eyes. A good example of this is the book *Wicked*, which tells a story from the perspective of the antagonist from *Wizard of Oz*. As such, they offer new perspectives. Using the example of a history class, this means students get to examine a battle from the perspective of the Greeks and the Persians, for example.

- Performance: Transmedia experiences lead audiences into wanting to participate and develop their own performance of the material. Jenkins uses much of his scholarship on fandom and fan experiences for this principle. Jenkins points to communities such as *Star Trek* fans (but more recent examples include multiple Harry Potter or Buffy fans) wherein the media becomes so meaningful to fans that the narrative of the media lives on with fans long after the media property has been retired. Performance is a point of interest as it points to issues of motivation and involvement that are of interest to the formal education community. To extend on the historical example used above, this could include asking students to dress up in period costumes and reenact important or even quotidian moments in history.

## Viewpoints

Where Fullerton discusses the role of the game designer to establish rules, boundaries, and goals, Jenkins paints a media ecosystem in which learners become the rule makers and the rule breakers, where learners test boundaries and push past them. As such, Jenkins points the way to a post-games way of looking at games-based learning, one in which games are one piece of a media puzzle that must be mastered by children of the so-called information economy.

Games, particularly video games, will continue to be part of the rich media ecosystem inhabited by the distributed, situated minds of school-aged children. While anyone who has played an immersive game can intuit the power games have to shape knowledge, ideas, and values, the role of games in formal education settings remains to be seen.

## Terms & Concepts

**Cognition:** The processing of information. Cognition can refer to broadly to processes involving things like judgment, reasoning, problem solving, new knowledge acquisition, comprehension, decision-making, memory, and attention.

**Distributed cognition:** A sociocultural learning theory that argues that knowledge of a subject lies not only within an individual, but also with that individual's physical and social environment.

**Game:** A form of play that is bounded by rules, often competitive, and relies on some sort of skill.

**Gamification:** The use of game structures or game mechanics to incentivize a desired behavior or directly cause a behavior change.

**Game mechanics:** The rule-based systems that are designed to govern actions bounded within a game.

**Learning:** The act of acquiring new (or building upon and refining existing) knowledge, behaviors, skills or values.

**Situated cognition:** A sociocultural learning theory that posits that knowing cannot be separated from doing and that knowledge is dependent upon the external contexts. Situated cognition challenges the assumption that knowledge can be transferred from one context to an entirely novel one.

**Sociocultural learning:** A family of learning theories that rejects the notion that human development can be understood only from the point of view of the individual. Social learning theories argue that social interaction and the external world are interwoven and inextricable from the individual.

**Transmedia:** Telling a single story across a variety of different media such as film, books, and video games.

**Video game:** A game that relies on the electronic manipulation of images.

**Zone of proximal development:** The delta between what a learner can do unaided, and what she can do with assistance when working towards a particular learning objective.

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## Essay by Marjee Chmiel, PhD

# Direct Instruction

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mann in the 1960's and has recently resurfaced as a viable form of instructing those identified students who could benefit from the highly intensive, sequential instructions. Direct Instruction has certain characteristics: an academic focus; a teacher-directed curriculum; clarity to goals; review of past learning; presentation of new material in small steps; the monitoring of student progress through questioning; provision for feedback with corrections; provision for independent exercise; and, the revision of the lesson's goals based on review. Elements of Direct Instruction are also incorporated within software that is used to enhance the learning of at-risk students.

## Overview

Direct Instruction is a system of teaching that was developed by Siegfried Engelmann in the 1960's, as a way to address the learning needs of underprivileged at-risk students. Studies have shown that the programs work best in Kindergarten and Grade 1; however, the programs also have been proven to work effectively in Pre-K through 6th grades, in secondary programs, in adult special education, and for remedial students.

This teacher-directed program begins with a highly developed classroom script that breaks down complex skills into specific sequential components. Students are taught each component. The teacher models the desired behavior, provides practice and feedback at each step, and tests students to determine mastery. If 100% mastery is not achieved, then the teacher takes steps to re-teach skills until all students have acquired mastery (Engelmann & Osborn, 1999). The highly directive program focuses on topics such as: reading, mathematics, language, science, social science, fact learning (or cultural literacy), and handwriting. The program requires ongoing intensive technical support for teachers.

Described as a highly structured, intensive teaching program, Direct Instruction is geared to address the needs of underprivileged children as a way to accelerate learning for at-risk students. The oldest version of Direct Instruction was called DISTAR and originated in the Carl Bereiter-Siegfried Engelmann Preschool at the University of Illinois, Champaign-Urbana in the 1960's. Engelmann, an education specialist and professor at the university, asserted that if a student failed, the reason behind this failure was the instructional sequencing rather than the fault of the stu-

### Abstract

This article presents an overview of Direct Instruction, a teacher-directed curriculum specifically designed to address the learning needs of underprivileged students who are at-risk of failing. This system of teaching was developed by Siegfried Engel-

dent. He further stated that just because a teacher covered certain material didn't mean that the student learned the material. Hence, he developed a program that had certain characteristics: an academic focus; a teacher-directed curriculum; clarity to goals; review of past learning; presentation of new material in small steps; the monitoring of student progress through questioning; provision for feedback with corrections; provision for independent exercise; and, the revision of the lesson's goals based on review.

Direct Instruction gained recognition when the federal government's *Follow Through Project* in 1967 confirmed the effectiveness of Direct Instruction. The goal of the *Follow Through Project*, a \$500 million dollar endeavor, was to raise performance in poverty-stricken districts. Agencies across the United States were invited to implement their programs in order to discover programs that would meet the 50% rise in performance that the project anticipated. Of the over 20 programs that were involved, only Direct Instruction came close to the mark of 50%. The *Follow Through Project* was cancelled in 1995 due to budget cuts (Ryder, Burton, & Silberg, 2006). However, Engelmann's work continued and was expanded into several instructional packages that focused on reading, math and language, and included the addition of general comprehension and analytic skills to the early mastery of skills agenda that was promoted in the earliest DISTAR model.

A hallmark of Direct Instruction is its fully scripted program of instruction. Lessons are heavily researched and designed to teach concepts, with each sequential lesson built on previously mastered skills and understandings. Classroom scripts are written, tested, rewritten, retested, and piloted until developers are assured that 90% of students can acquire the specified knowledge the first time around (Engelmann & Osborn, 1999).

Teachers need orientation and adequate professional development to be successful in implementing Direct Instruction. The program requires teachers to ask up to 300 questions in at least six small group sessions each day. Teachers perform reading checks every five to ten lessons until the class has reached 100% mastery (Engelmann & Osborn, 1999). Even the novice teacher can follow the procedures of Direct Instruction and foster success. In-class coaches are commonly offered for support when the commercially produced Direct Instruction program is first introduced to a school system. Coaches monitor each individual teacher and offer support when problems evolve. In-class coaches can be employers of the contractors who promote the program or teachers who have been trained in Direct Instruction.

Direct Instruction has evolved further to include best practices in literacy development. The program is used in small groups, as a way of developing communities of learners where students meet group and community goals. Teachers give brief placement tests to ensure that each student begins where he or she belongs; the organized short lessons are implemented sequentially.

Although once linked to instruction in many content areas, the more recent approaches to Direct Instruction have been coupled with systematic and explicit phonics instruction. In recent years, there has been a renewed interest in Engelmann's original program, due to the Department of Education's "Reading First" initiative, with its focus on more defined reading instruction across schools. Within the "15 Elements of Effective Adolescent Literacy Programs" presented by the *Alliance for Excellent Education* (2004) is described the need for direct, explicit comprehension instruction "in the strategies and processes that proficient readers use" (p. 4). The "Reading Next" program, an expansion of the "Reading First" program, emphasizes this point in the instruction of older children.

In May 2006, the National Council on Teacher Quality published its findings of the state of reading instruction. It asserted that "the current reading failure rate of 20 to 30 percent could be reduced to the range of 2 to 10 percent" if elementary teachers incorporated certain research based practices in their classrooms (p. 1). These practices include characteristics of Direct Instruction: explicit instruction in letter sounds, syllables and words; teaching phonics in a sequence; practicing skills to a point of automaticity; and, frequent assessment and instructional adjustments to determine student progress. Direct Instruction has evidenced itself to be a program that has the ability to increase the literacy skills in at-risk students. One area of significant under-performance by the at-risk student was that of writing skills. Study participants' metacognitive skills positively transferred to their writing performance. Accordingly, at-risk students need an extended hands-on practice with writing strategies throughout a writing process (Eunjyu, 2013). Direct Instruction in mastery of phonics is also more effective than other teaching approaches in helping students become skilled, independent readers (Raynor et al., 2001). Physical education programs have also incorporated Direct Instruction in their curriculum, as a way to implement and assess basic skills. Demonstration is a major part of the modeling in physical education programs.

Teachers in science programs also support the implementation of Direct Instruction in their curriculum. David Klahr (2006), professor of psychology at the Carnegie Mellon University, has reviewed a spectrum of teaching methods in science instruction and has asserted that Direct Instruction has its place in the science classroom. Direct Instruction becomes an effective model when teaching a process. Specifically, the design of experiments is an activity that is easily retained when Direct Instruction is used to promote this skill. The Direct Instruction curriculum itself is a highly tuned curriculum supported by such organizations as the National Institute for Direct Instruction and the Association for Direct Instruction.

While the Direct Instruction program has a highly specific curriculum and strategies for implementation, the term direct instruction has evolved to include any teacher-directed approach to instruction that involves the components of explicit step-by-step instruction and student mastery at each step. Teachers have

developed their own scripts, preparing lesson plans that include fast-paced directed instruction, with regular checks for understanding and feedback. Recently, educational technology has included hybrid direct instruction opportunities for students, motivating students to work on their own to improve their skills.

## Application

### Development of Curriculum

Developers of Direct Instruction curriculum follow a specific protocol before a program is implemented in classrooms across the country. Developers review all state and national standards and then analyze current curricula. They develop a program and pilot it with anywhere from 12 to 30 students. As students work through this material, teachers review the process and change areas that are not appropriate for implementation. There can be up to four or so revisions to any particular program before a curriculum is determined to be appropriate for distribution.

### Typical Application

Kozloff (2003) outlines a typical application of Direct Instruction. First, teachers *frame* the task that the students will learn. The teacher *models* information verbally or through demonstration. The teacher may repeat the model to ensure that all students have observed the model. Teachers *lead* the students to repeat information and then perform a routine together, repeating the routine until all students have expressed understanding. Students then perform the task independently and are *tested* to see if they have acquired the material. The teacher then *verifies* what the students have learned, and praises their efforts. Skills are taught until student responses have reached *automaticity* and students are able to generalize their learning into new and untaught situations.

### Higher Order Thinking

Teachers of Direct Instruction explicitly and systematically teach students higher order thinking skills. They assume that students do not know how to make inductive and deductive generalizations on their own, so they teach each part directly, step-by-step. Teachers introduce *do-objectives*, informing students what they will be able to do when they are done with the tasks. Specifically, teachers facilitate the performing of certain logical operations such as *induction* and *deduction*. To promote inductive thinking, the teacher models the review of specific elements and students note them by comparing and contrasting elements across examples. Students then induce generalizations of concepts from their review of examples. To promote deductive thinking, students review general concepts and examine new examples.

### Use of Achievement Groups

Prior to skill development, students are tested and assigned to achievement groups. Training provided usually revolves around small modules where teacher directs the instructional process depending on the skills acquired, providing a set of procedures that fit with instructional targets and arrange the environment

accordingly. The main goal of this strategy is to reach with students the mastery level before learning a new skill (Al-Makahleh, 2011). Students who progress more quickly in certain areas are periodically assigned to faster groups. They may return to their original group when they have acquired certain skills.

### Assessments

Testing is a frequent part of Direct Instruction. Teachers assure mastery throughout the learning process, determining who is moving ahead or falling behind. Students are moved from one achievement group to the other, to assure that all students are progressing. Direct Instruction requires 100% mastery before the teacher goes on to the next subset of skills or activities (Engelmann & Osborn, 1999).

### Improving Reading Instruction

Direct instruction is used to teach basic skills in reading. Teachers explain a reading skill, step-by-step, and supervise practice. Instruction begins with phonemic awareness activities that includes the direct teaching of a set of letter-sound relationships in a clearly defined sequence, and then moves to include complex phonics and decoding lessons, and progresses to a focus on comprehension and analysis of content. Study skills are also covered in reading instruction, including use of reference materials, graphs, tables and maps.

Scientific research informs us that Direct Instruction has a greater contribution to growth in reading than instruction that provides non-sequential or no phonics instruction. Other benefits of using Direct Instruction in teaching reading include the improvement of word recognition, spelling, reading comprehension and fluency.

### Improving Reading Comprehension

For those teachers involved in literature-based learning, Direct Instruction is appropriate for enhancing the reading comprehension of students. As discussed by John Savage (1994), Direct Instruction is particularly effective with students whose intellectual abilities are below those of others of the same chronological age. Direct Instruction appears to be most appropriate for teaching specific comprehension strategies such as: showing causal relationships in texts; using graphic and semantic organizers; using questioning to guide and monitor student learning; teaching students to ask questions about their reading; recognizing story structure; and for summarization. Steps to providing clear direct instruction include: direct explanation, modeling, guided practice and application.

### Vocabulary Instruction

The Center for Improvement of Early Reading Achievement (2003) states that Direct Instruction is an effective way to teach vocabulary, particularly when the words represent complex concepts that are not readily used in day-to-day experiences. This method of teaching vocabulary - providing students with specific word instruction and teaching word-learning strategies - leads to improved reading comprehension.

There are specific Direct Instruction strategies that aid in deepening students' knowledge of word meanings. Teaching to specific words before reading helps students learn new words, as well as comprehend the text. Using new words in different contexts improves word learning. Teachers should also provide extended exposure to new words. Direct Instruction in the learning of new words and understanding word meanings include the use of dictionaries and other reference material, and promote the study of word parts and use of context clues while reading rich texts. Instruction should include words that are important to understanding a concept, words that are used over and over again, and difficult words that are particularly challenging for students to understand.

### **Computer - Mediated Instruction & Direct Instruction**

Direct Instruction curriculum is applied to the use of drill-and-practice and tutorial software to enhance the learning of various student populations. Drill-and-practice software aids at-risk students in need of individual instruction and practice. The software can be less threatening to this student population and can remedy specific weaknesses in reading and in understanding of materials in high-stakes testing situations. The software is self-paced and usually develops practice in math, vocabulary and spelling, specifically addressing lower level skills. Students work on example items one at a time, and receive immediate and detailed feedback.

Tutorial software also incorporates Direct Instruction curriculum within its instructional sequence. Students can learn a topic without any help from a teacher or from other materials. The software includes an instructional sequence of explanation, practice, and feedback. Often, this form of computer-mediated instruction is used for review of materials or when students desire self-paced learning.

## **Viewpoints**

### **Criticisms of Direct Instruction**

There are many criticisms that surround Direct Instruction. Leontovich (1999) describes Direct Instruction as being a racist program that emphasizes rote learning and assumes that minority children cannot assimilate higher order thinking skills. Other critics of Direct Instruction criticize it for being too rigid and concentrating too heavily on basic skills. Direct Instruction also has a history of problematic implementation, as some administrators have thought that the teacher guides would give teachers all the support they needed to implement programs. This can result in dissatisfied teachers and lower-than-expected achievement levels.

### **Countering Criticisms Through Use of Perceived Best Practices**

In contrast to the criticisms that have arisen from Direct Instruction programs, Kozloff and Bessellieu (2000) state that, in

actuality, Direct Instruction incorporates many of the best practices that are common in today's classrooms. For instance, Direct Instruction promotes the discourse of social activity and learning, such as paying attention, waiting turns, addressing audience, and learning how to learn. This convergence of important factors includes the right kind of comprehensible input, a supportive context, large amounts of time and conducive psychological characteristics (e.g., patience, tolerance of ambiguity, and integrative motivation) (Morrow, 2013). The program also includes a wide variety of literary genres that are developmentally appropriate and interesting to students. Direct Instruction also enhances higher order thinking, as it is taught explicitly. There is minimum rote learning promoted.

Practice is also incorporated in Direct Instruction, as students repeat readings so that they can review different objectives with each reading. This type of practice is necessary in promoting fluency, internalizing knowledge, and enhancing independence.

### **Effective Methods in Teaching**

As more and more school systems are holding their teachers accountable for student learning, controversy arises as to what is the most effective method for presenting knowledge. Three methods that are often used in the classroom are inquiry-based learning, discovery learning, and Direct Instruction. Inquiry helps students learn by engaging them in a range of different types of investigations, from descriptive to experimental. Discovery learning actively engages students in the discovery of their own procedures, promoting productivity and creativity. Direct Instruction promotes the coordination of information and skills into teacher-directed instruction. There is evidence that students can benefit from many different teaching methods. David Klair (2006) states that whatever teaching methodology is most popular at the time, an effective teacher uses the more productive strategy for any given situation.

## **Terms & Concepts**

**Automaticity:** Skills are taught until students have fully internalized them and reproduction of the skill is automatic. Students can then generalize their learning in new, untaught situations. Skills cognitively move from short to long-term memory. In reading instruction, automaticity refers to automatic word recognition.

**Classroom Scripts:** Classroom scripts are the step-by-step instructions for the implementation of skills in the Direct Instruction classroom.

**Discovery Learning:** Students are actively engaged in the discovery of their own procedures, promoting productivity and creativity.

**Do -Objectives:** Teachers inform students of the objectives they will be able to perform when their learning is complete.

**Inquiry-Based Learning:** Students learn by engaging in a range of different types of investigations, from descriptive to experiential.

**Mastery:** Mastery is the acquisition of a skill or knowledge.

**Phonemic Awareness:** Phonemic awareness is the understanding that the sounds of a spoken language work together to make words.

**Phonics Instruction:** Phonics instruction is the teaching of the relationship between letters of a written language and the individual sounds of a spoken language.

**Sequential Learning:** Sequential learning is the understanding of new information in linear steps where each step follows logically from the previous ones.

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## Essay by Tricia Smith, Ed.D.

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# Instructional Modeling

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## Overview

Haston (2007) indicates that modeling occurs whenever a teacher demonstrates a concept for a student. In its most basic form, a teacher models for students by working through a sample problem, demonstrating how to perform a particular task, dictating his or her thought process out loud when reading or solving a difficult problem, etc. Modeling occurs frequently in classrooms as students often need an example to follow before attempting to fully apply a particular skill on their own. Teacher modeling is often the first step in the learning process, followed by guided practice and eventually individual application without assistance. The overall goal of modeling, as an instructional methodology, is to provide an example for students to follow in order to be able to integrate a particular behavior, successfully perform a task, or acquire a specific skill on their own. Teacher modeling is also used in co-teaching contexts where the experienced teacher can provide effective modeling for a teacher candidate, who would be able to use it in his or her own future classroom Patel & Kramer, 2013).

Modeling is not only an effective instructional methodology; it is also a process that occurs naturally outside of the academic context. Haston (2007) extends the definition of modeling as a process through which individuals learn behaviors, attitudes, values, and beliefs through observations. Not only do teachers model for academic purposes, they also model through their everyday actions and communication with students about beliefs, values, and attitudes. Many teachers serve as role models for youth, thereby modeling appropriate behavior and attitude. Chiou & Yang (2006) suggest that when students recognize teachers as role models, teachers have a direct impact on what students learn. Higgs & McMillan (2006) support the notion that teachers act as models for students. They claim most students generally view teachers as competent individuals and therefore internalize the behaviors and attitudes observed and experienced in the classroom setting. Methe & Hintze (2003) further support the assertion that school leaders, teachers, and classroom assistants influence student behavior through demonstrating and modeling desired behavior. Ideally, acquisition of desired behaviors during instructional sessions is followed by generalization of these behaviors to contexts similar to classroom activities for all participants (Ledford & Wolery, 2013).

## Abstract

This article explores modeling as an instructional methodology in a variety of educational contexts. Modeling occurs whenever a teacher demonstrates a concept or skill for a student. Additionally, modeling occurs whenever individuals learn behaviors, attitudes, values, and beliefs through observation. Discussion focuses on the various definitions and benefits of modeling. A wide range of applicable educational situations are highlighted including modeling for reading comprehension and music instruction, modeling for demonstration of life skills for visually impaired students, and modeling sustainability and environmentally sound practices in school settings. Issues and alternative viewpoints are also discussed with regard to the negative effects of excessive modeling and the complexity and difficulty faced when attempting to model for instructional purposes.

Social learning theory as discussed by Bandura (1977, 1986; cited in Methe & Hintze, 2003) further illuminates the modeling process as observational in nature. Learning often takes place in the absence of direct reinforcement as people learn naturally through imitation of models (Haston, 2007). Just as a young child mimics words heard in a conversation, people, in general, aim to emulate behaviors observed. Bandura (1977) claims that highly valued individuals can have positive effects on other individuals and can thereby encourage desirable behavior through ongoing visual feedback. Methe & Hintze (2003) suggest that teachers act as facilitators of desirable behavior and thus are often in the position of highly valued individuals with much influence over student behavior and attitude.

Higgs & McMillan (2006) highlight that research strongly indicates modeling is an effective way to teach knowledge, skills and behaviors. They also assert that effective modeling motivates students to learn and helps them to develop core values. When students are exposed to multiple models whether academic or value based, behaviors and skills are often learned quickly and efficiently as students internalize observed models and integrate observed behaviors and values with their own.

### **Benefits of Modeling**

Riva & Korinek (2004) indicate modeling has been demonstrated to be an effective instructional methodology in a variety of contexts. They specifically highlight modeling as an effective process for teaching and learning complex problem solving, evaluation, writing tasks, leadership, and communication among others. In an academic setting, students benefit greatly from exposure to instructional models because they are able to develop clear understandings of expectations for both process and product. Once students observe a teacher model exactly how to follow a specific process or how to perform a particular task, they are much more likely to be successful when it comes to applying the skills learned.

Additionally, teachers are not always the only individuals modeling in classroom settings. Peers often model for instructional purposes by guiding each other through acquisition of specific skills or through processes necessary for successful completion of tasks, etc. When peers model for each other, both individuals benefit tremendously from the teaching and learning relationship. When a student is able to effectively model or teach a particular concept or skill to another individual, he or she takes on the role of a teacher and thereby demonstrates a complete understanding of the concept or skill taught. Furthermore, peer modeling encourages strong peer relationships and increased self-esteem and self-confidence.

Riva & Korinek (2004) support the notion that modeling is effective when direct learning outcomes are intended, but can be equally as powerful when no teaching or learning is intended at all. Haston (2007) discusses how modeling allows students to learn naturally and intuitively. When teachers effectively model behaviors, attitudes, and values, students absorb and integrate

what they observe with little, if any, direct instruction. Therefore, teachers model and students learn without actually being aware that teaching and learning is occurring. Haston (2007) further highlights that, as students improve as a direct result of modeling, they begin to become more independent and creative in their own thought processes. Once they acquire the skills necessary via modeling, students are often able to build upon learned skills to develop their own understandings.

## **Applications**

As discussed, modeling occurs in a variety of educational contexts from direct instructional methodologies to more implicit and natural situations. The following section focuses on a variety of applicable situations in which modeling plays a major role. Modeling as a direct teaching methodology is explored in the context of both reading and music instruction. Next, modeling as an instructional technique for visually impaired students is discussed. Finally, modeling of behaviors, attitudes and values is highlighted in the context of sustainability and environmentally sound practices in schools.

### **Modeling Reading Instruction**

Methe & Hintze (2003) discuss the findings of many researchers regarding the impact of teacher modeling on reading instruction. They assert that teacher modeling is a common element identified across a variety of reading programs and they highlight the strong relationship between on-task reading behavior and teacher modeling. When teachers model on-task reading behaviors and demonstrate for students why reading is important and critical to success, students are more likely to be on-task when reading (Methe & Hintze, 2003). One specific way teachers model on-task reading involves a common practice, Sustained Silent Reading (SSR). During SSR, students are required to read a book of their choice silently, on their own, without interruption for a specified period of time. Teachers that model on-task behavior by reading a book of their choice as students read, implicitly communicate to students the importance of reading.

Walker (2005) discusses the direct effects of teacher modeling on reading comprehension via the think-aloud technique. When teachers articulate their thought process for students and make strategies they use to comprehend text transparent to students, students are more likely to apply such strategies when reading on their own. Walker (2005) asserts modeling of the think-aloud technique promotes strategy use, self-efficacy, and increased engagement in the reading process and comprehension of text. She claims that struggling readers directly benefit from teachers who model their own thoughts and self-statements as they read.

When teaching reading comprehension strategies, teachers model a variety of techniques that assist with comprehension of text. Teachers may model the prediction process by articulating predictions out loud as they read a text to students. They may model thoughtful questions by pausing and asking differ-

ent questions while reading. Teachers may model connection making by detailing, out loud, specific connections they make between the text and their own lives. Through active listening and direct observation of strategies teachers use to comprehend text, students slowly, but surely, begin to integrate such strategies and techniques into their own reading.

### **Modeling in Music Education**

Whereas modeling in reading instruction is most effective when teachers think out loud and clearly articulate their thought process for students, modeling in music education works in the opposite way, and is most effective when students are exposed to minimal verbal explanation of what a teacher is thinking while playing a musical instrument (Haston, 2007). Haston (2007) asserts that the most appropriate use of modeling in a music classroom occurs when teachers teach new musical concepts or demonstrate specific performance skills without reference to printed music. He further asserts that modeling can occur via live performance or recordings, in group settings or in individual instruction, or by encouraging older students to model for younger students via peer mentoring relationships.

Haston (2007) claims that music instruction lends itself primarily to aural modeling processes because students learn implicitly by listening and aiming to match what they hear via the model. A choral director or teacher may model staccato for students by demonstrating it using the voice or an instrument and then requiring students to repeat. A string teacher may model how to hold the bow, where to place it and how to hold the fingers when playing a string instrument. Haston (2007) further asserts that all music teachers can model good and poor tone quality, style, diction, articulation and phrasing in addition to a variety of other musical concepts and understandings.

However, he illuminates that despite all of the evidence indicating the benefits of modeling in music instruction, researchers in various studies claim that modeling is employed only 10 to 25 percent of the time in music education classes (Haston, 2007). Should music educators expect students to better emulate musical performance skills and acquire deeper understandings of musical concepts, they need to employ modeling techniques more frequently in classroom settings.

### **Modeling for Visually Impaired Students**

Modeling is a strategy largely used with visually impaired students to help them acquire life skills necessary to be successful. O'Connell et al. (2006) highlight specific modeling strategies that are employed when teaching visually impaired students, such as tactile modeling, physical guidance and demonstration. As students are taught a modeled process, they are able to reproduce the actions and increase their understanding of what they need to do (O'Connell et al., 2006). O'Connell et al. (2006) further state that once students understand what they need to do to perform a specific skill, they are able to create a mental picture of the process based on the model and are therefore able to reproduce the specific action or skill.

Tactile modeling and physical guidance are two specific modeling techniques used for instructional purposes with visually impaired students. Tactile modeling involves participation via touch that can help a student learn and understand a skill by feeling and exploring the model's body in the direction of movement (O'Connell et al., 2006). Tactile modeling enables a student to take control over his or her learning as he or she is able to choose specific movements to focus on for information gathering purposes (O'Connell et al., 2006). Physical guidance differs slightly in that the student performs a particular movement with the model to better understand the feel, rhythm, and motion of the movement being instructed (O'Connell et al., 2006). The model literally places the student's body in the position necessary to perform a particular task and moves with the student to model the actions. Both forms of modeling are highly effective in helping visually impaired students understand movements behind specific skills.

O'Connell et al. (2006) highlight the research of Bandura (1997) indicating that new skills can be acquired through physical demonstration, pictorial or verbal instruction describing exactly how to perform a given task. When teachers explain verbally how to perform a specific task or demonstrate physically the process necessary, students acquire the skill quickly and efficiently. Bandura (1997) asserts the most effective way of translating information about how to perform a specific skill or action to a visually impaired student is via proficient modeling.

### **Modeling Sustainability in Schools**

Higgs & McMillan (2006) discuss multiple ways educators can model environmental sustainability in schools with the goals of helping students better understand concepts related to sustainability and incorporate sustainable practices into their daily behaviors. The researchers primarily focus on four distinct ways in which schools model sustainability: role modeling, modeling via campus facilities and operations, modeling via school governance, and modeling via school culture. Although the researchers directly discuss the effects of modeling on sustainability and environmentally sound practices, the information extrapolated from their research with regard to modeling can be applied in a variety of educational contexts for a variety of purposes, not just sustainability.

The most direct form of modeling with the most impact on student attitudes and beliefs involves observed behaviors that promote sustainability (Higgs & McMillan, 2006). When teachers model sustainable practices such as recycling empty cans, using recycled paper, driving hybrid cars, and conserving energy, students are more likely to integrate these behaviors into their daily lives. Direct observation of such behaviors in trusted adults results in changed behaviors on behalf of students primarily because students observe these behaviors daily and begin to incorporate what they learn via observation into their own daily actions.

Higgs & McMillan (2006) further discuss the role that campus facilities and operations play in teaching students about sustainability. They assert that by making "green" facilities and the

operations necessary to sustain "green" practices transparent to students, students are more likely to become directly involved in maintaining and promoting such environmentally sound practices. Higgs & McMillan (2006) claim that by involving students in the operations of the school, students gain a deeper understanding and appreciation for the waste, consumption, inequities, governance and economics of the school as these components become much more visible and tangible. The more effort schools put forth to model sustainability via environmentally sound facilities and operations, the greater the impact on student behaviors, attitudes and beliefs.

A third way in which schools model sustainability involves modeling via school governance. Higgs & McMillan (2006) highlight specific schools that promote sustainable practices via direct student involvement in the decision making process in order to model social equity and civic participation. By modeling the participatory process in school governance, schools give students and faculty power to influence decisions. Higgs & McMillan (2006) assert that schools modeling social equity and civic participation via shared decision making, whether for sustainability or not, empower students and help them to feel a sense of ownership of their own education.

Finally, Higgs & McMillan (2006) focus on the effects of modeling sustainability via school culture and tradition. The researchers highlight the fact that traditions, rituals and ceremonies play a major role in establishing school culture. Therefore, modeling values, beliefs and attitudes via school traditions and rituals directly impacts student behavior. Students are more likely to adopt behaviors if they continually and directly observe people and institutions that model and respect such values, rather than simply being told that it is important to hold certain values. Higgs & McMillan (2006) firmly believe that modeling helps students transfer abstract ideas into personal, tangible applications. They assert that direct observation of specific behaviors is essential if educators expect students to carry out such behaviors on their own. The more opportunities educators seize to model attitudes, beliefs and behaviors for students, the more likely students are to be prepared to integrate such values into their everyday lives.

## Viewpoints

Although research highlights the fact that modeling is a highly effective strategy for increasing reading comprehension, teachers often struggle with implementing modeling techniques in the classroom. Pressley (2002) indicates the think-aloud strategy is rarely used in classrooms because of the complexity involved in modeling the actual thought process for students. Walker (2005) discusses how teachers are moving away from asking rote comprehension questions with determined answers toward more critical thinking questions involving complex comprehen-

sion processes. However, teachers continue to have difficulty implementing the think-aloud strategy. Although it should be a common practice in classrooms, it is not (Walker 2005).

One of the main reasons this particular modeling strategy is difficult to implement is because teachers need to make their thinking explicit for students. Rather than just simply performing a task or comprehending text implicitly while reading, teachers need to voice, out loud, the process they use to determine meaning from text. While this may seem simple on the surface, it is actually quite difficult to implement in the classroom setting. Furthermore, thinking aloud must occur frequently for students to actually internalize the strategies and begin to use them on their own.

An additional concern raised by researchers with regard to modeling as an effective teaching methodology involves inhibition of creativity (Gardner, 1994; cited in Haston, 2007). When modeling is used too frequently and employed to an extreme, some educators believe that modeling can, in turn, stifle a child's individuality and creativity. While it is true that modeling can have tremendous benefits for students in terms of helping to construct knowledge and shaping their beliefs, attitudes and values, teachers need to be careful with regard to the extent that modeling practices are employed in the classroom as students cannot always imitate what they see and hear. Educators also need to ensure that students evolve into independent, creative thinkers. In addition, a study of teachers responding to questions about the moral work of teaching revealed that teacher participants commonly believed that modeling is a primary means by which moral education occurs (Sanger & Osguthorpe, 2013).

## Terms & Concepts

**Aural Modeling:** Aural modeling requires students to learn implicitly by listening and aiming to match what they hear via the model.

**Modeling:** Modeling occurs whenever a teacher demonstrates a concept for a student. In its most basic form, a teacher models for students by working through a sample problem, demonstrating how to perform a particular task, dictating his or her thought process out loud when reading or solving a difficult problem etc. Haston (2007) extends the definition of modeling as a process through which individuals learn behaviors, attitudes, values, and beliefs through observations.

**Social Learning Theory:** Social learning theory as discussed by Bandura (1977, 1986; cited in Haston, 2007) describes the modeling process as observational in nature. Learning often takes place in the absence of direct reinforcement as people learn naturally through imitation of models.

**Sustained Silent Reading (SSR):** During SSR, students are required to read a book of their choice silently, on their own, without interruption for a specified period of time.

**Tactile Modeling:** Tactile modeling involves inspection via touch that can help a student learn and understand a skill by feeling and exploring the model's body in the direction of movement.

**Think Aloud:** A modeling strategy used primarily in reading comprehension instruction. Teachers articulate their thought process for students and make strategies they use to comprehend text transparent to students thus encouraging students to apply such strategies when reading on their own.

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# Programmed Instruction

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then logically sequenced in a systematic manner and presented through technological devices. Ultimately, the goal of programmed instruction is to control learning through measuring observable outcomes and through devising precise methodologies of teaching that are guaranteed to work. Programmed instruction has been extinguished as a movement, but its influences form the foundation for much of modern education. Systematization of instruction through codified objectives, evaluation methods (especially through standardized testing), and techniques of teaching that emphasize a back to the basics, step-by-step approach are, for example, some of the ways in which programmed instruction influenced the educational field as it is understood in the present.

### Overview

Programmed instruction is a pedagogical approach that views curricula as a sequence of organized frames that guide a student through the learning process. Rooted firmly in the theoretical foundations of science, programmed instruction is based on the assumption that learning occurs best when material is broken up into small, logically sequenced individual units. Another assumption of programmed instruction, one rooted not specifically in science itself, but in B. F. Skinner's interpretation of it, is that learning occurs best when learners succeed frequently. Hence, in programmed instruction courses, students are "tested" after each small part of material, called a frame, is presented; their success on these assessments is virtually guaranteed by following a classical linear model of instruction (Skinner, 1958). Developed in the 1950s, programmed instruction enjoyed less than two decades of popularity before losing favor in the field of education theory, and is now largely defunct as a pedagogical method.

The move toward programmed instruction was ignited by Sidney Pressey (1888–1979), an educational psychologist who developed the first "teaching machine," which he called a "simple apparatus which gives tests, scores, and teaches" (1926, p. 549). The field was not given shape, however, until American psychologist B. F. Skinner (1904–1990) provided a theoretical foundation. Skinner proposed his model for "teaching machines" out of a concern for increasingly large student-teacher ratios and as a solution for addressing individual differences in students at

### Abstract

The programmed instruction movement was developed by American psychologist B. F. Skinner during the 1950s. Programmed instruction, modeled after the scientific method, arose as a response to teacher shortages and to increasing student populations. It automates instruction through breaking up curriculum into small, self-contained, manageable frames that are

a time when it was unclear that overworked teachers were able to do so (Pocztar, 1972). Skinner wrote that, "in any other field a demand for increased production would have led at once to the invention of labor-saving capital equipment," that education was not in step with developments in automation that had taken place since the Industrial Revolution (Skinner, 1958, p. 969). An efficient and effective pedagogy was called for: one modeled on the structure of science itself.

### How Programmed Instruction Works

Programmed instruction theoretically claims to be more efficient and effective than more traditional modes of pedagogy. Lessons are implemented through instructional frame sequences. A sample sequence of six frames is presented in Figure 1 below. This sequence was adapted from Skinner's example (1958) and if implemented, would be part of a spelling lesson consisting of several hundred frames. The student would walk through the sequence frame by frame (without having access to later frames, as in Figure 1 below). The example given here is called a linearly programmed sequence because each student proceeds from step one through step six in exact sequence, without deviations. In a branching program, the assessment on each frame is in the form of a multiple choice question, instead of in the form of a constructed response. Each multiple choice option sends the student to a different frame: if they are incorrect, they are told to either restart, to take some extra steps, or to repeat the previous frame and try again. If they are correct, they progress sequentially without deviations from the linear path.

**Figure 1: Sample Frame Sequence that Teaches How to Spell "Transmission"**

*This example is adapted from B. F. Skinner's frame sequence on how to spell manufacture (Skinner, 1958).*

Objective: learn how to spell "Transmission"—A Sequence of Six Frames

1. Transmission means to send a message. Copy the word here: \_\_\_\_\_
2. Note that part of the word is like mission. When you transmit a message, you are going on a mission to relay your message. Fill in the blanks: T r a n s \_\_\_\_\_.
3. The other part of the word is like trans. This is the same prefix as in transatlantic, or "to the other [side of the Atlantic]". When you transmit something, you send a message trans—to the other. Fill in the blanks: \_\_\_\_\_ m i s s i o n.
4. The same letter is missing all three places. Fill in the blanks: T r a n \_ m i \_ \_ i o n.
5. Unscramble the following: a i i m n n o r s s s t—Fill in the blanks here: \_\_\_\_\_.
6. Now, write the word here that means to send a message: \_\_\_\_\_.

Programmed instruction courses can be implemented using various technologies. One premise of programmed instruction is that it automates the presentation of curricula, increasing efficiency so that teachers have time to pay more attention to students' personal needs—hence the need for technology. Technology does not refer to specific machine-driven processes, but rather to a structure of organization that imposes order and control. For example, a programmed course can be implemented through the technology of a book, as Robert Mager illustrates in *Preparing Objectives for Programmed Instruction* (1962). During the 1950s and 1960s, when programmed instruction was enthusiastically supported, it was implemented primarily through a combination of books, simple automated machines that recorded answers, and teachers' input. Computers had not yet entered a public awareness that was still fascinated by the new invention of the television set—although the integrated circuit, the precursor to the modern computer, was invented in 1958, the same year Skinner published his *Teaching Machines*.

### Decrease in Popularity

Support and implementation of programmed instruction courses cooled in the late 1960s due to the method's high costs, concerns about student boredom, and an increasing awareness that research was not able to conclusively prove that programmed instruction was indeed more efficient or effective than other types of instruction (Kulik, 1982; McDonald, 2005). Today, certain premises of the field have resurfaced within computer-assisted instruction, though most of the original assumptions of programmed instruction have been modified to reflect changing attitudes and research. For example, the number of steps in a programmed course has been significantly reduced, reflecting research on the effects of overprompting (Holliday, 1983). Not all learning that occurs with the assistance of a computer, however, falls in the category of programmed instruction. Many online courses, for example, allow students to take quizzes and tests and submit assignments using a computer but do not purport to "teach" material in step-by-step lessons broken up into individual, logically sequenced parts. The field of computer-assisted instruction is thus similar to programmed instruction in that it aims to automate parts of teaching so that it can educate more learners, but differs in its core assumptions and approach.

### Contextual Dimensions

#### Philosophical & Scientific Dimensions

Scientific undertakings aim to understand processes of nature through empirical observation and through systematic analysis of experimental results. Methodologically, science proceeds through logical, self-contained, reproducible steps as it makes observations and subsequently derives laws. It seeks to break up experience into measurable parts, to organize them in a systematic manner, and ultimately, to control and predict experience through its implementations. This approach differs greatly from other ways of imagining or understanding the world. It is generally accepted, for example, that what characterized human consciousness prior to the rise of rationalism was a "mytho-

logical" or "poetic" essence (Eliade, 1998). Many educational theorists believe, for example, that breaking down fluid, complex phenomena into small, rational parts ultimately disturbs or does violence to those phenomena and does injustice to learning (Aoki, 2004).

Programmed instruction was imagined by Skinner as the full implementation of these scientific aims and premises in the realm of education. Programmed instruction was not formulated as just another teaching methodology, pedagogical philosophy, or educational implementation. Rather, it was the very embodiment of science in all aspects of the field of education. Programmed instruction breaks up the field of education into small, self-contained, manageable parts that it then logically sequences in a systematic manner. Ultimately, the goal is to control learning through measuring observable outcomes and through devising precise methodologies of teaching that are "guaranteed" to work (Skinner, 1958)—even relationships between students and teachers are codified and explained in terms of behavioral objectives and laws of communication and learning. In mechanical ways of learning, "communication [was] conceived as the transmission of information from one place (the sender) to another place (the receiver) through a medium or channel" (Vanderstraten et al., 2006, p. 165).

### **Determinism**

Programmed instruction is thus grounded in assumptions of determinism (McDonald et al., 2005)—the view that we can predict future events (or behaviors, in the case of programmed instruction) based on current knowledge of "laws" that are "true." For example, proponents of programmed instruction posited that if students followed through such a course completely, they would be "guaranteed" to show improved scores on their evaluations. This "guarantee" stems from the conviction that programmed instruction is modeled after science, which is itself backed by truth, and that therefore, an implementation of fundamental, scientific learning "laws" in curricula would be guaranteed to produce learning. According to McDonald et al. (2005), "Programmers believed that an effective instructional product was the sum of its constituent parts, and that if all the factors were presented in the correct order, students would succeed" (p. 87). Laws of learning, according to Skinner and the proponents of programmed instruction, dictated that curricula be implemented by systematically dividing material into small, logical, linearly-sequenced parts. McDonald et al. wrote that the assumption of determinism manifested in programmed instruction is in the form of less responsibility for students. Because steps were so small (in order for learning to be "guaranteed"), students often got bored, motivation became a problem, and less "genuine exploration" occurred in classrooms (McDonald et al., 2005, p. 89). Further, this assumption implies that aptitude and skills are irrelevant to success in school. The scientific method, as applied to education in the form of programmed instruction, theoretically works each and every time, with all students.

### **Materialism**

Programmed instruction is also grounded in the assumption of materialism (McDonald et al., 2005). Materialism is the view that only observable things can be manipulated by scientific methods. Thus, all aspects of programmed instruction are centered upon observable behavior and specific content that can be broken up into learning objectives. Education is seen as a process that produces terminal outcomes in students—defined in terms of "what will be accepted as evidence that the learner has achieved the [learning] objective" (Mager, 1962, p. 12). The implications of this assumption are that programmed instruction courses were often found to distort material in order to make it conform to a measurable format (McDonald et al., 2005). For example, history is taught as a list of important dates and people; English as grammar, syntax, and composition rules; and mathematics as a rigid step-by-step process (Calvin et al., 1969).

The theoretical underpinnings of science (and consequently, of programmed instruction) did not prove effective or practical as applied to education, and by the mid to late 1960s the movement had started to lose supporters. Many schools found that the rigid step-by-step process not only did not cater to student differences as claimed by theorists, but ignored them (see, for example, Edling et al., 1964). The attempt to break down student behaviors into observable behavior was initially theoretically promising and had much support from a world fascinated by new technologies and scientific developments. However, in practice, the creative, "mythopoetic" element of education, the process through which students explore their worlds in a non-linear, exploratory fashion seemed lost and contributed to the relatively quick demise of programmed instruction (Slattery, 2004).

### **Historical & Socio-Cultural Dimensions**

An interest in increasing the efficiency of education arose late in the nineteenth century within the work of educational philosophers Franklin Bobbitt (1918), W. W. Charters, and David Snedden (Drost, 1967), among others. Inspired by engineer F. W. Taylor's theories on scientific management, these pedagogues' work helped establish a scientific approach to educational theory and practice geared toward increasing efficiency of learning through training learners for their "future lives in the workplace, ... without any extra, useless education" (Goodson et al., 1998, p. 52). With the advent of technological discoveries such as Pressey's apparatus and Skinner's learning machines, the social efficiency movement took a different shape: instead of stripping content material to the barest essence needed for the workforce, it was able to claim such an efficient methodology that content did not have to be sacrificed. However, the premise of "just the basics" remained a guide for planning programmed instruction materials. "Programmers" suggested that each frame be presented in its simplest form, without extra, "distracting" material (Skinner, 1958).

### **Foundations in Psychology**

Within the sciences, programmed instruction was developed initially from within the field of psychology. Ivan Pavlov (1849–

1936), a Russian psychologist, prepared the stage with his research on conditioned reflexes. Pavlov belonged to the behaviorist school of psychology, a branch concerned with explaining behavior. He was able to program the reflexes of dogs so that they would respond not only to natural stimuli such as food, but to conditioned stimuli such as noises. Programmed instruction would take from Pavlov the idea that the behavior of students could be conditioned to elicit appropriate responses when prompted by environmental stimuli (Pocztar, 1972).

Edward Thorndike (1874–1949), an American psychologist, provided the next layer of the foundation for programmed instruction through his research on cats and his subsequent discovery of the "law of effect." The law of effect states that responses that are reinforced following appropriate stimuli are imprinted in the behavior of the subject. Reinforcement in this sense is said to have a feedback effect: the results from previous experiences "feed back" into the subject's knowledge and affect future behaviors. In programmed instruction courses, reinforcement in the form of a question/answer after each frame is thought to provide feedback to the learner and thus to ensure the imprinting of desirable behaviors.

John B. Watson (1878–1958), another American psychologist and a student of Thorndike's, rejected explanations for behavior in terms physiological functions that could be conditioned. Both Pavlov and Thorndike explained behavior in terms of internal processes of chemistry or brain function. Watson, however, proposed that only what is observable is scientifically measurable and can be manipulated. He did not reject that brain processes affect behavior, just that brain processes cannot be directly observed and thus form a "black box," a component that cannot be studied. Watson thus started a new movement within the psychological school of behaviorism known as pure, or materialistic, behaviorism. Pure behaviorism influenced programmed instruction as it came to be defined only in terms of observable behavior. Thus, students' internal, emotional, or psychological states were ignored by programmers as irrelevant to learning. Only overt behavior was measured and was considered superior to covert behaviors such as psychological responses as an indication of learning (Miller et al., 2006).

B. F. Skinner (1904–1990) was a pure behaviorist significantly influenced by Watson. His well-known pigeon experiments led to his formulation of programmed instruction as a process of shaping through the "successive approximation" of behavior (see, for example, Deterline, 1962, p. 11). Skinner observed that pigeons could be trained to distinguish between colored dots when presented with food as they pecked at the "correct" color. Skinner's pigeon experiments strengthened the position of "pure" (or materialist) behaviorists that insisted on measuring only observable behaviors without relating them to bodily chemistry, as Pavlov's school did. This observation further grounded the assumption of programmed instruction that claimed "guaranteed comprehensibility" and guaranteed learning for all students, regardless of mental capacity, ability, or skill (Scriven, 1969, p. 5). Without assuming

anything about the physiological aspects of a learner, programmed instruction guarantees the same results for all students.

Skinner's development of programmed instruction "ushered in the era of the industrialization of teaching and educational research" (Pocztar, 1954, p. 9). Initial observations of the scientific laws of learning applied in the laboratory suggested that successive approximations of behavioral patterns conditioned through reinforcement would lead to more efficient and effective learning. Systematic classification and organization could now be applied to the study of behavior in order to derive precise laws of learning that theoretically promised to work for all learners. In practice, the behavior of students proved much more complex than pigeons' responses to Skinner's experiments, however, and ultimately resisted the reductionism and systematic breaking-down of programmed instruction's methodologies (McDonald, 2005).

## Applications

### Implementations with Specific Academic Subjects

Programmed instruction has been found experimentally to be more effective in some disciplines than others. Specifically, studies have shown that students who take programmed instruction courses in the humanities or social sciences have higher scores on assessments than those in regular classrooms. However, when programmed instruction was used to teach mathematics or the physical sciences, students did not perform better on assessments than those in regular classrooms (Kulick et al., 1982). One possible reason for these results is that within the physical sciences and mathematics, curricula were already implemented in a linear sequence of progressively complex material. Mathematics and the physical sciences already defined their objectives in terms of broken-down, simple components, while material in the social sciences and humanities tended to be taught in a multi-perspective fashion, through creative exercises and explorations of material.

These results do not imply, however, that programmed instruction should be used exclusively in the teaching of humanities or social sciences. Rather, the results that showed a high correlation between student outcomes on final examinations and the use of programmed instruction are thought to be explainable by the way in which students were tested during these experiments. In regular humanities courses, for example, students were not accustomed to exercises and examinations that objectified their learning and broke down their responses in multiple choice or short answer fashion. However, programmed instruction courses in the same field were designed specifically to train students to answer the kinds of questions asked as part of the experiments (Kulick et al., 1982). Both groups of students were given the same tests based on programmed instructions' goals and objectives. So the only conclusive result of these studies was that students trained in answering multiple choice questions did so better than those trained in a regular classroom through more diverse methods.

## **Classroom & Lesson Configurations**

Programmed instruction courses are designed for individual learners. There is no cooperative aspect to programmed instruction other than teacher feedback on student responses. Therefore, the programmed instruction classroom is divided into independent units (desks, cubicles, computers/machines) at which students work alone. Each student works at her or his individual pace, while the teacher walks around the classroom attending to individual learners' questions and concerns. Programmed instruction lessons are designed with several principles to guide them. The following principles are taken from Pocztar (1972) but are present in many programmed instruction books and manuals as guides to building programmed instruction curriculum materials:

### **Step-by-Step**

The first such guideline is the "step-by step" principle that states that student learning is more effective when correct behavior is reinforced often. Therefore, programmed instruction lessons are broken up into hundreds of frames. After each frame, students are asked a question they must reply before moving on. These responses are thought to "feed back" into the students' behavioral patterns and to reinforce correct behavior.

### **Active Learning**

Another principle of programmed instruction is that students are thought to be active, not passive learners. The process of answering a question after each frame is thought to engage students in active behavior, rather than allowing them to be passive receivers of information. The underlying assumption is that overt behavior (such as answering a question) is an indicator of activity, while covert behavior is relegated to the realm of passivity. From this viewpoint, a student who reads an essay without answering questions or who listens to a lecture without engaging in discussion is a "passive" learner.

### **Success**

Students should be given a chance to succeed as often as possible. Behavior is thought to be imprinted regardless of whether the response is correct or not, so incorrect responses and "error" are considered detrimental to learning because they are thought to reinforce incorrect behavior. Questions presented after each frame are thus typically low in difficulty, assuring that most students succeed on the first try.

### **Immediate Feedback**

The immediate feedback principle is based on Pressey's discovery that immediate feedback "teaches" students. Pressey first designed his "apparatus that gives tests and scores" as a multiple choice machine: students pressed one of four buttons that represented possible answers to the question posed. Pressey discovered that his machine not only gave tests and scored, but also taught students. Because students received immediate feedback after each response, they were found more likely to remember and internalize their mistakes.

### **Sequence**

Programmed instruction is also based on the principle that learning progresses logically—and linearly. Therefore, sequence is thought to be of critical importance especially to subject materials that rely significantly on the buildup of previous knowledge versus on a specific skill set (Payne et al., 1967).

### **Individual Pace**

Finally, the principle of individual pace assures that programmed instruction is implemented in a way that accommodates all learners. Because there is no cooperative aspect to programmed instruction and because each student works independently, programmed instruction material should be designed to be accessible to all learners through its logical sequence. Each student should be able to follow the material independently and proceed at a comfortable pace.

## **Development of Programmed Instruction Material**

Mager (1962) suggests the following steps for the development of programmed instruction material:

- [identifying] terminal behavior;
- [defining] desired behavior through describing conditions necessary for it to occur; and
- [specifying] criteria for acceptable performance (p. 12).

First, the behavior that is expected must be systematically analyzed and codified in objective terms. Then, conditions necessary to the learning of the behavior are determined, and lastly, criteria for evaluation are established.

Bullock (1978) defines four steps in the creation of programmed instruction material:

- Training needs assessment,
- Task analysis,
- Target audience analysis, and
- Objective and criterion tests.

First, the practical needs of students are considered and what needs to be "conditioned" (trained) is defined. Second, task analysis breaks down the training defined into small, sequential, manageable parts. Target audience analysis provides the programmer with information about the level at which material should be presented. Finally, tests are designed to determine if the objectives initially defined were met.

### **Types of Responses**

Each frame in a programmed instruction sequence is followed by a question that prompts a response. Types of responses fall into two categories: constructed responses, used in linear programming (such as entries in charts, short answer, or fill-in-the-blank responses) and discrimination responses, used in branching

programs such as multiple choice questions, grids, ordering or ranking questions, or matching activities (Bullock, 1978). There is some debate in the programmed instruction community as to which method is more effective—a linear, constructed response implementation or a branching, multiple choice implementation (Miller et al., 2006).

### Types of Feedback

After a student provides a response to a question, feedback is provided. This can take several forms. Jaehnig et al. (2007) classify all feedback into five general types:

- **Knowledge of response:** The student receives immediate feedback on whether they responded correctly or incorrectly. However the correct result is not given and an explanation is not provided. This type of feedback has been found to have limited usefulness and is not recommended.
- **Knowledge of correct response:** Similar to knowledge of response feedback with the added benefit that students are told what the correct answer is.
- **Elaboration feedback:** Not only gives the correct answer but reinforces it through extra explanations.
- **Delayed feedback:** Refers to answers provided at the end of a course instead of throughout a sequence of frames and is not recommended by programmed instructors as it does not conform to the step-by-step principle of reinforcement.
- **Review feedback:** Students are asked to repeat an incorrect response until they perform correctly.

### Measuring Effectiveness

Kulick et al. (1982) conducted a meta-review of programmed instruction studies, which revealed four categories of programmed material evaluation (1982). Two ways in which the effectiveness and efficiency of programmed material is tested are through student performance on final exams and through performance on retention exams (given after a period of time has passed since the course). A way to test the accuracy of programmed instruction courses is through aptitude-achievement correlations (that relate how well a student does to "objective" measures of their aptitudes). Finally, attitudes of students in programmed instruction courses should be gauged for motivation and other psychological factors. Kulick et al. state that in programmed instruction this is done through scores on attitude measures—again, through a multiple choice survey (1982).

### When to Use Programmed Instruction

Programmed instruction is useful when a high level of recall is desired. Because material is repeated so often (after each frame), recall is thought to improve. Programmed instruction is also useful when "significant shaping" and practice are needed when active processing is required, when "validated instruction" is needed, and when "de-centralized instruction" is called for

(Bullock, 1978, p. 13-14). Programmed instruction is also useful when attention to detail is necessary. Because each frame holds only the minimal information necessary to answer the question presented at the end of the frame, students are required to understand all material and pay attention to all the details before being able to answer correctly and move on.

### Influences of Programmed Instruction

Programmed instruction as theoretically described by Skinner and as implemented in the 1950s and 1960s has been extinguished as a movement, but its influences form the foundation for much of modern education. Pedagogy has entered the realm of the "social sciences" and as such embodies many of the scientific assumptions and implications of programmed instruction. Systematization of instruction through codified objectives, evaluation methods (especially through standardized testing), and techniques of teaching that emphasize a back to the basics, step-by-step approach are, for example, some of the ways in which programmed instruction influenced the educational field as it is understood in the present (Slattery, 2004).

## Terms & Concepts

**Behaviorism:** A school of thought in psychology that aims to understand behavior through internal, bodily mechanism, overt responding, or a combination of both. Programmed instruction was proposed from within a behaviorist tradition.

**Conditioning:** The process of learning; in psychology, conditioning refers to the process of reinforcement through feedback and the subsequent imprinting of correct behavioral patterns.

**Constructive Responding:** After each frame in a programmed instruction sequence is presented, a response is elicited from the student in order to reinforce learning. Constructive responding refers to answers that are provided by the student, for example, short answer or fill-in-the-blank.

**Discrimination Responding:** Discrimination responding occurs when students are presented with possible answer choices and have to choose the correct answer, as in multiple choice questions.

**Feedback:** Feedback is the process through which responses are reinforced based on the previous experiences of students.

**Frame Sequence:** Programmed instruction material is presented through a frame sequence, logically (sequentially) organized. Reinforcement through soliciting of responses and subsequent feedback occurs after every frame.

**Instructional Frame:** An instructional unit that is self-contained, small, and free of extra, distracting information. Frames are organized in sequences to form a lesson; a lesson can have hundreds of frames.

**Overt Responding:** Overt responding occurs when response behavior can be observed. Programmed instruction is based on the assumption that overt responding is active, versus covert responding, which cannot be observed.

**Pure Behaviorism:** A branch of behaviorism that disregards internal, bodily mechanisms in explanations of behaviors and relies instead on observing overt behaviors.

**Reinforcement:** Reinforcement occurs after the presentation of a stimulus elicits a response that results in an increased response rate, or learning.

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# Instructional Design

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approaches which are still used in some form today. Instructional Systems Design is used in technological, computer and industrial learning for training in the rapidly changing environments of the modern information age.

### Overview

Instructional Design can be defined as the systematic development of instructional specifications using learning theory to ensure the quality of instruction. It includes the analysis of learning needs and objectives and the development of a delivery system including instructional materials and activities to meet those objectives. Evaluation of all instruction and learner activities is central to the theory. Its main foundation is that of an objective-oriented model for managing the instructional process, which is rooted in theories that specify how high-quality instruction should be performed. A successful learning situation is one in which behavior goals are reached through mastery of a series of small steps or tasks which represent a larger objective. Each step or task is clearly defined and outcomes and activities are continually assessed to evaluate efficiency.

Instructional Design theory has evolved over many decades and consists of several different models which can be applied to many types of learning situations. As a discipline, Instructional Design developed slowly from the time of Plato and Socrates to the philosophers of the 17th and 18th centuries. By the turn of the 20th century, the concepts of learning theory and educational psychology were beginning to take form in modern thought. The turmoil of the first half of the 20th century brought political and social changes which in turn encouraged new ways to look at the purpose and functions of our education system. By the 1950's, educational theories abounded, and Instructional Design was quickly adapted to many theories and models.

Theories that were used to approach Instructional Design were originally conceived in the military. During World War II, personnel had to be trained quickly and efficiently to perform their duties. Military researchers developed training films and corresponding programs to get the troops ready. The development of this task-oriented method of instructional technology spurred further research into the formulation of theoretical models of learning (Leigh, n.d.).

### Abstract

The concept of Instructional Design was adopted as a means of organizing learning and providing objective-based methodologies for conveying knowledge. Instructional Design Theories and Models are still changing over time, as educational philosophies and current trends in modern education evolve. This article presents an overview of the concept of Instructional Design (ID) in American education, and provides further insights into specific aspects of Instructional Design such as the Behaviorist, Programmed Instruction, Constructivist and Direct Instruction

## Influence of Behaviorism

The developers of early Instructional Design models were associated with the Behaviorist school of learning theory. Behaviorism looked at learning as a stimulus, response, and reinforcement process (S-R-R), first outlined by Ivan Pavlov's Classical Conditioning theory, and continued by B. F. Skinner. Such reactive behavior was documented in animals and adapted to human learning situations, positing that all behavior is explained by external events. The influence of Behaviorism on learning led to a form of Instructional Design that incorporated immediate feedback and reinforcement with drill and practice procedures and programmed instruction that allowed the learner to repeat tasks that were not performed correctly until they were mastered. Behavioral outcomes were directly connected to instruction systems.

The 1950's in America were characterized by a huge economic boom which followed World War II. The launch of the Soviet satellite Sputnik triggered an education panic in the U.S., prompting politicians and educators to send large amounts of Federal money to research on education, especially concentrating on studies in cognition and instruction. In Universities around the country, theoretical models of learning were being developed by educational theorists and psychologists such as B. F. Skinner and Benjamin Bloom. Skinner's work in Operant Conditioning and Stimulus-Response-Reinforcement theory ultimately led to what is considered a first incarnation of Instructional Design, called Programmed Instruction (PI). PI emphasized formulating behavioral objectives, breaking down instructional content into smaller units and rewarding correct responses early and often. Benjamin Bloom's 1956 taxonomy of educational objectives (Bloom's Taxonomy) and theory of mastery learning formed the basis of a standardized design process introduced by Robert Glaser in 1962. Glaser's model linked learner analysis to the design and development of instruction. His 'instructional systems' assessed students' entry-level behavior to determine the extent to which they would learn needed objectives. This not only tested the learners, but tested the learning system as well.

Also in 1962, Robert Mager developed the idea of Learning or Behavioral Objectives. His central concept was that training needs should be analyzed and the learning goals (objectives) of the program be defined. Each objective should then be broken down into smaller tasks. Each behavioral objective should have three criteria: Behavior, Condition and Standard. In 1965 Robert Gagné introduced the Nine Events of Instruction, a series of distinct steps necessary for learning to occur. Gagné also introduced the concept of task analysis, previously used in military training, which broke each task to be mastered down to its most basic components, or subtasks. The theories of both of these scholars are still used today in modern Instructional Design systems.

## Instructional Design in the Schools & Beyond

During the 1960's and 1970's, Instructional Design in one form or another was widely adopted in the public schools as the most effective teaching process available. Robert Morgan and Leslie

Briggs conducted several studies which demonstrated that an instructionally designed course could yield up to a 2:1 increase over conventionally designed courses in terms of achievement, reduction in variance, and reduction of time-to-completion. This was four times greater than that of a control group which received no training. New teachers were extensively trained in Instructional Design, primarily with the Behaviorist approach.

Instructional Design models flourished in the 1970's and into the 1980's, with many researchers contributing to the field, such as Robert Branson and W. Dick and L. Carey. With the onset of the Information Age, many organizations established formal education and training departments to educate employees in the rapidly developing uses of computers and technology. Instructional Design programs proved effective and efficient in introducing employees to new technological methods and concepts and training them to perform the new skills needed.

Instructional Systems Design (ISD), as the field is now sometimes called, has become a significant tool in the computer and technology training fields, as well as in computer-aided education in the schools. It has also been adopted in one form or another in corporate training programs for technical and other employees. Today, the ADDIE Model of Instructional Systems Design is widely used in all forms of instruction, particularly web-based and on-line computer instruction. Second to ADDIE is the Dick and Carey Model of Instructional Design, although it has recently been criticized as rigid.

Since the 1990's, the models have moved away from the Behaviorist approach and adopted a Constructivist approach to creating learning environments with less formal structure and facilitated by teachers. These are based on the theory of Constructivism, which differs vastly from Behaviorism in that it holds that knowledge is internal and tested by the individual in reality. Instructional Design models in today's school classroom are vastly different from their behavioral roots, but still valuable tools for effective teaching.

## Further Insights

The following relevant concepts have influenced and shaped Instructional Design in the Twentieth century, including their applications in Education today:

- Stimulus-Response theory
- Behaviorism
- Programmed instruction
- Operant Conditioning
- Constructivism
- John Dewey and Pragmatism
- Direct Instruction and DISTAR

- Madeline Hunter and Theory into Practice
- Computer-Assisted learning

## Stimulus-Response Theory

Stimulus-Response theory is the premise that stimuli exist that directly cause unconditioned, or instinctive physiological and behavioral responses in humans and animals. Ivan Pavlov first studied this phenomenon in 1927, which led to his model of Classical Conditioning. Pavlov demonstrated that stimulus and response could be controlled, or conditioned, to manipulate the responses into changed behaviors. His most famous experiment involved the association of food (unconditioned stimulus) to the salivation response (unconditioned response) of a dog. When paired with the sound of a bell (conditioned stimulus), the sight of the food causes the dog to salivate. However, after conditioning, the dog learns to salivate only at the sound of the bell (conditioned response), with no food present. Pavlov's Classical Conditioning theory, based on stimulus-response, was ultimately embraced by the Behaviorist school of learning psychology, and modified by B. F. Skinner's theory of Operant Conditioning, in which post-response consequences were introduced to provide additional motivation for positive behavioral outcomes.

## Behaviorism

Behaviorism is a school of psychology which holds that all behavior of all organisms is caused directly by responses to our environment. First introduced by John Watson and B.F. Skinner, Behaviorism has been widely studied and incorporated into educational learning theory. The doctrine of Behaviorism holds that psychology is the science of behavior, and not of the mind, and that behavior is explained exclusively by external, observable events. This movement ran in direct opposition to Sigmund Freud's school of Psychoanalysis, which was gaining popularity simultaneously. In the classroom, behavioral teaching is the arrangement of consequences and reinforcement by which students learn. Through Operant Conditioning, punishment will deter poor learning results and reinforcement will encourage positive ones. Today, Skinnerian Behaviorism is generally considered radical. Instructional Design incorporates behavioral objectives in its models, which encourage the mastery of tasks and learning. For example, an evaluation portion of the learning activity that is executed with letter grades is a form of stimulus-response-reinforcement. A good letter grade (A) is positive reinforcement. A poor letter grade (F) is punishment.

## Programmed Instruction

First popularized by B.F. Skinner in the 1950's, Programmed Instruction is a teaching method that provides students with small, manageable and precisely defined increments of learning followed by positive reinforcement for mastery. Programmed Instruction is considered the first phase of several developments that led to Instructional Design. Today, Programmed Instruction is still used in computer-aided classrooms and is generally broken down into two types. Linear Programmed Instruction guides the student through a set sequence of tasks and students do not advance to the next step until the current step is success-

fully completed. Branched Programmed Instruction allows the student to choose different paths to the correct outcome, and assumes that the learning process can be different for different learners. Both styles offer frequent and immediate feedback and reinforcement. While Programmed Instruction is still used in schools today for some types of learning, it is primarily found in industrial settings and in the armed forces, where training large numbers of personnel for specific tasks is required.

While many educators agree that Programmed Instruction and the Behaviorist approach to Instructional Design can serve as valuable supplement to other teaching methods, others have criticized the approach as not providing enough learning synthesis for problem-solving in other environmental situations. Norma Feshback and J. W. Eshleman are two critics of the theory. They have written that Programmed Instruction does not account for individual differences in students and does not apply well to higher-level material. Feshback believes that Programmed Instruction may be more appropriate for a specific group of students at a specific level, but not for general groups. Eshleman points out that Programmed Instruction does not introduce students to new material after the initial task, and its rigid sequencing is not appropriate for all learning contexts.

## Operant Conditioning

Also known as Behavior Modification, Operant Conditioning uses systems of consequences to modify behavior. It was first studied by Edward Thorndike in the 1920's; he theorized that positive behavior was ingrained over time by successful outcomes. In other words, organisms could learn to use only the behavior that produced a rewarding outcome and discard behaviors that did not. Later, B. F. Skinner, a Behaviorist, expanded the model and constructed a more detailed theory. The central concepts of his theory of Operant Conditioning are reinforcement, punishment and extinction. Reinforcement is a consequence that causes a behavior to occur more frequently, while punishment is a consequence that causes a behavior to occur less frequently. Extinction is the lack of either consequence after a response, rendering the response inconsequential. This will eventually also lead to a reduction in the occurrence of the inconsequential behavior. Operant Conditioning is incorporated in Instructional Design by the use of positive reinforcement for the mastery of tasks and objectives.

## Constructivism

Constructivism is attributed to the work of philosopher and developmental psychologist Jean Piaget, who pioneered the cognitive learning theory. The constructivist theory holds that knowledge is constructed internally within the individual, and we continually construct new knowledge through experience. In the classroom, the constructivist theory is usually employed with less formal structure in the planning of lessons and teachers take the role of facilitators who guide students to their own conclusions. Students discover knowledge through a journey of interaction and experience through the learning process. Rather than the step-by-step systematic approach to learning inherent in

Behaviorism, Constructivists believe that learning is ultimately social and cognitive, and Constructivism in schools fosters peer learning in a culturally and socially relevant environment. Today, most Instructional Systems Design models use a Constructivist approach.

### **John Dewey & Pragmatism**

While Programmed Instruction and behaviorist approaches to Instructional Design were prominent in the mid-twentieth century, another view was making its way into education theory. John Dewey was a philosopher and educational reformer, and had died before learning theory became an educational discipline. Dewey was a leader in the school of Pragmatism, and believed that education should not be the mere teaching of facts but an interactive process which should require critical thinking skills to bring knowledge into a student's life. He argued that traditional reinforcement and programming in instruction did not lead to deep learning. He promoted "learning by doing" and pioneered several efforts at school reform toward the Progressive education movement in the 1930's, which ultimately failed. While popular, few of Dewey's philosophies were ever adopted into mainstream Instructional Design. However, in the latter part of the 20th century many of his theories have been revisited by new reformers in the field.

### **Direct Instruction & DISTAR**

One of the most widely used yet controversial Instructional Design models in recent years is the Direct Instruction model. Siegfried Engelmann and Wesley C. Becker developed the model to provide systematic instruction for disadvantaged elementary school children. DISTAR (Direct Instruction System for Teaching Arithmetic and Reading) programs were implemented around the country in underperforming schools. While Direct Instruction is considered a comprehensive model of school reform in the 1980's and 90's, it has been highly controversial among educational theorists regarding its efficacy. Humanists have questioned the return of DI to a rote-style, teacher-directed model which discourages social growth and inquiry. However, recent long-term studies (such as Project Follow Through) have shown that lower-socioeconomic groups taught by a DI model have been shown performance improvement. Still, many educators feel that DI should only be used in limited situations (or not at all) and not as a primary method.

### **Madeline Hunter & Theory into Practice**

Perhaps no one more than Madeline Hunter found problems in traditional Instructional Design theory. An educator and prolific writer, Hunter recognized foremost that most Instructional Design theory and models did not spell out in plain language specific methods that teachers could implement in the real life classroom. Hunter followed a Direct Instruction model and developed the Theory into Practice teaching model. She demonstrated with specific examples how a teacher should incorporate objectives and goals into everyday lesson plans. Her Seven Components of Teaching are still taught to and used by classroom teachers today.

### **Computer-Assisted Learning**

With the increase in new media, especially the explosion of the Internet, computer-assisted learning has become widely adopted in schools. Instructional Design for computer-aided education has also evolved quickly. Originally, computer enhanced programs employed a basic Behaviorism-based approach with heavy emphasis on Programmed Instruction. Today, like in most classrooms, a Constructivist approach has become the norm. One of the leading educational theorists in the computer-aided learning field is Seymour Papert. Known as the father of Artificial Intelligence, Papert has developed a learning approach called Constructionism, an offshoot of Constructivism. He was one of the first to bring information technology to the classroom. His Logo computer language and MIT Media Lab are at the forefront of developing instruction for computer learning.

## **Terms & Concepts**

**ADDIE Model:** An early (1975) Instructional Systems Design model adopted by the armed forces and is still widely used in the industrial and technology fields today. ADDIE stands for Analysis, Design, Development, Implementation and Evaluation.

**Behaviorism:** A school of thought in psychology which holds that all behavior can be studied and explained scientifically through observable actions and responses. Internal thoughts and feelings are not considered as they cannot be seen.

**Bloom's Taxonomy:** A classification of educational objectives developed by Benjamin Bloom. Knowledge is categorized into three domains: the Affective, the Cognitive, and the Psychomotor. Within each domain occur different levels of learning, from simple recall to higher critical skills. Also called the Taxonomy of Educational Objectives.

**Classical Conditioning:** The process of manipulating stimuli to condition behavioral responses.

**Constructivism:** A school of thought in psychology which holds that knowledge is constructed internally within the individual, and we continually construct new knowledge through experience.

**Dick and Carey Model:** An ISD model similar to ADDIE but more complex in orientation. While still used today, it has been criticized by some as too cumbersome for the average design process.

**Instructional Design:** the systematic development of instructional specifications using learning theory to ensure the quality of instruction.

**Learning Objectives:** A clearly defined goal or set of goals to be reached and mastered in a learning activity.

**Mastery Learning:** An Instructional Design method in which students are provided a specific series of tasks and do not advance to the next task until the first is mastered.

**Model of Learning:** A theoretical outline for instruction which follows a learning theory.

**Nine Events of Instruction:** A model developed by Robert M. Gagné which proposed that nine conditions had to occur for successful learning. They are: Gain attention, Inform learner of objective, Stimulate recall of prior learning, Present stimulus material, Provide learner guidance, Elicit performance, Provide feedback, Assess performance and Enhance retention transfer.

**Operant Conditioning:** The process of modifying behavior through reinforcement--rewarding positive or punishing negative responses.

**Programmed Instruction:** A method of instruction which adopts the behaviorist theory of learning.

**Reinforcement:** The encouragement of a desired behavior or response with positive feedback or reward, in order to increase the frequency of the desired behavior.

**Task Analysis:** The process of breaking down a task into its fundamental components to understand how the task should be learned and performed.

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# Differentiated Instruction

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instruction is that each individual's learning map is unique and therefore, a "one size fits all" curriculum and instructional practice will not reach every learner. By differentiating the curriculum elements of content, process and product according to the unique characteristics of each student including readiness level, learning profile and interest, teachers work to ensure success for every learner. Although many differentiated instructional techniques exist, this article directly discusses learning contracts, Role/Audience/ Format/Topic (RAFT), stations, centers, tiered activities and curriculum compacting.

## Overview

Differentiated instruction is a philosophy of teaching that stems from the belief that all students are different. Students differ with regard to how they learn best, their strengths and weaknesses, their cultural and family backgrounds, what they are interested in learning about, etc. Differentiated instruction embraces these differences and creates learning opportunities that are respectful of student individuality and uniqueness. Carol Ann Tomlinson, the leading researcher in the field of differentiated instruction, asserts that differentiated instruction integrates what we know about constructivist learning theory, learning styles, and brain development with empirical research on influencing factors of learner readiness, interest, and intelligence preferences (Tomlinson & Allan, 2000).

When differentiating instruction, teachers may choose to differentiate one or more curriculum elements including content, process, and product. Content refers to the actual curriculum objectives for a unit of study or specifically, what teachers expect students to know and be able to do by the end of the unit. Process encompasses the variety of ways that students make sense of key ideas and use essential skills. Products include all vehicles through which students demonstrate and extend what they have learned (Tomlinson & Dockterman, 2002). When differentiating, teachers adapt these core curriculum elements based on one or more student characteristics including readiness, interest, and learning profile at any time in a lesson or unit.

### Readiness

Readiness refers to a student's entry point relative to a particular understanding or skill (Tomlinson, 1999). In any given class-

### Abstract

This article presents an overview of differentiated instruction, an instructional philosophy that respects and celebrates the varied ways in which individuals learn. Differentiated instruction embraces years of brain research regarding ways in which we learn best and utilizes this data to inform every day instructional practice in K-12 classrooms. The central tenet of differentiated

room, there always exists a range of readiness levels. Students who are not quite ready to learn a given concept may need more one-on-one time with a teacher, more deliberate step-by-step instructions, varied activities and final products requiring different skill sets, and more opportunities for direct instruction. Conversely, advanced students might be able to move ahead at a faster pace, follow more complex directions, or even slow down to explore a topic in greater depth (Tomlinson, 1999). When considering readiness levels, teachers ensure that students are successfully and appropriately challenged at a level commensurate with their ability to understand a particular concept at a specific time.

### **Learning Profile**

A student's learning profile is a preferred way of learning which may be influenced by learning style, intelligence preference, gender and culture (Tomlinson & Eidson, 2003). Howard Gardner's research (1983) regarding multiple intelligences serves as a primary force behind helping to differentiate according to the variety of learning styles and intelligences in a classroom. Gardner discusses eight major intelligences including

- Verbal/Linguistic
- Logical/Mathematical
- Visual/Spatial
- Bodily/Kinesthetic
- Musical/Rhythmic
- Naturalist/Environmental
- Interpersonal
- Intrapersonal

Sternberg (1988, 1997) added another element for teachers to consider with research related to analytical, creative, and practical intelligences. When differentiating by learning profile, teachers ensure that students learn through a modality that best matches their strengths.

### **Interest**

Teachers may also differentiate content, process or product according to student interest. When students are interested in learning about a topic, they are motivated, eager and enthusiastic about taking advantage of opportunities to explore and add to their knowledge base. By skillfully connecting curriculum to student interest, teachers are able to capitalize on motivation and enthusiasm that may not otherwise be present if a student has little or no interest in a particular topic.

### **Traditional vs. Differentiated Classrooms**

**Traditional classrooms** tend to "teach to the middle" and use a "one size fits all" model of instruction. When confronted with large class sizes, whole class instruction often seems the easiest methodology to employ and the one type of instruction that

most teachers feel comfortable using, as it mirrors how they were taught when younger. When teaching in a "one size fits all" model, teachers pay little attention to individual differences and aim to use as much of the text as possible to ensure coverage of the curriculum. Traditional classrooms employ assessment at the end of the unit and rarely use assessment data to drive instruction on a day to day basis (Tomlinson & Dockterman, 2002). If grouping strategies are used, most often homogeneous ability groups are created with the intention of providing remedial instruction for those students who need extra help and providing challenge for those who need an extra "push." This is most apparent in traditional high school environments where tracking is used for curriculum delivery and students are divided into remedial, regular and honors courses. As Fahey (2000) indicates, this model greatly impacts the quality of instruction provided, creates quite an inequitable structure, and sends a negative message to students regarding expectations for performance.

**The differentiated classroom**, on the contrary, greatly emphasizes and values student differences. Teachers are sensitive to student learning differences and develop curriculum opportunities that are responsive and appropriately challenging for each individual student. After careful examination of readiness levels, learning profiles and interest, teachers focus on a variety of instructional methodologies that reach each learner and create opportunities for students to make intelligent choices regarding the learning process. Ongoing assessment plays a crucial role and provides invaluable information to teachers as they work from day to day to develop lessons that best meet student needs. The differentiated classroom is responsive (as opposed to reactive) and truly emphasizes and celebrates diversity of learning styles. It does not assume that one student's road map for learning is identical to anyone else's (Tomlinson & Dockterman, 2002).

As American public education moves steadily into the future, students continue to enter classrooms with ever more diverse backgrounds, learning styles, and interests. Orfield and Kurlaender (2001) remind us that our schools are bursting with diversity and our awareness of this diversity continues to increase rapidly. In addition, Mills & Keddie found that, across many parts of the world, at the same time that the student population is becoming increasingly diverse, bringing to classrooms divergent racial, ethnic, cultural, and socioeconomic experiences, the teacher population is becoming more homogeneous, primarily white and middle class (Mills & Keddie, 2012). Although educators recognize the reality of diversity, traditional classroom practices dominate and as Kohn (2004) states, many educators are becoming increasingly uncomfortable with the perceived disconnect between the traditional classroom experience and the expectations of our future citizens.

Marx (2000) clearly identified ten trends in education for the 21st Century. Among these trends, Marx discusses the need for educators to realize that we will soon be a nation of minorities with widely different backgrounds and perspectives, that the "one

"size fits all" classroom does not address the increasing diversity reflected in society, and that we must hold all students to high expectations once reserved for only a select few. Differentiated instruction may just be the model that holds the key to enable educators to respond to increasing diversity in classrooms and to ensure that all children are appropriately challenged through modalities best suited for optimal learning potential.

## Application: Differentiated Instruction Applied in the K-12 Classroom

### Strong Curriculum Foundation

A powerful and clearly articulated curriculum is an absolute requirement for differentiating instruction. Differentiated instruction does not work if clearly defined learning objectives are not in place. In order to successfully differentiate content, process or product, teachers need to know exactly what they expect students to be able to do and understand by the end of a unit of study. Often, it is quite useful to begin with the end-goals in mind and work backwards to define the different processes and products that can be used to achieve the objectives (Wiggins & McTighe, 1998). Tomlinson & Dockterman (2002) indicate that once a teacher has a strong curriculum in place, he or she can modify instructional methodologies according to readiness, learning profile and interest so that each learner comes away with the understandings and skills necessary to move to the next level of learning.

### Respectful Tasks

Tomlinson (1999, 2003) discusses the critical importance of developing tasks that are respectful of each learner in a classroom. When teachers take the time to assess student readiness, learning profile and interest, they, in turn, respect the uniqueness and individuality of each learner. By respecting readiness levels, holding high expectations for student growth, increasing degrees of difficulty as students develop understandings and skills, and developing tasks that are equally interesting, important and engaging, Tomlinson (1999) asserts that teachers deeply respect the identity of each individual in the classroom.

When teachers create tasks respectful of different readiness levels, learning profiles and interests, all students benefit, including those with significant learning differences and those who are gifted. Lawrence-Brown (2004) discusses the impact of differentiated instruction on the learning outcomes for students with disabilities and concludes that classrooms employing differentiated instruction with appropriate supports benefit both students with and without disabilities. Reis & McCoach (2000) studied the effects on gifted children and further indicate that in classrooms where instruction is appropriately differentiated for learners, gifted students feel challenged, encounter both struggles and successes, are called on to develop advanced study and production skills, and are able to develop their particular interests.

### Assessment

In a traditional classroom, assessment is typically summative and designed to collect data regarding those students who mastered major concepts and those who did not at the end of a unit of study. This type of assessment is of little use when aiming to maximize student potential throughout the learning process because it provides relatively no information regarding how best to "reach" students through different modalities. The information obtained is typically used to assign grades and to evaluate student performance once the unit is complete. Should a student misunderstand a concept or need re-teaching at some point, teachers are unable to detect these needs when using one culminating assessment.

In a differentiated classroom, assessment takes on a variety of forms. Benjamin (2006) asserts that "students are more likely to be successful if the assessment system encompasses a broad spectrum of abilities and modes of expression" (pg. 59). When differentiating instruction, assessments are both summative and formative in nature. Summative assessments provide meaningful data regarding student understanding of core concepts while formative assessments provide information that assists teachers to formulate and modify their instruction to meet the needs of a diverse student population. Pre-, ongoing, and final assessments are all major components of a differentiated classroom.

Pre-assessments play a crucial role as they provide the necessary information for teachers to skillfully create flexible groups for different learning purposes. Such assessments may take the form of interest surveys/inventories, parent questionnaires with younger students, or quick pre-tests as well as a variety of other options. Pre-assessments help teachers determine student readiness for a particular concept, preferred learning styles and/or levels of interest in a particular component of a unit of study (Tomlinson, 1999).

Ongoing assessments are used throughout the unit of study to best meet the needs of individual students. Both formal and informal assessments help teachers to regroup students for a particular concept, recognize when re-teaching is necessary, and successfully determine optimal instructional methodologies to reach all learners (Tomlinson, 1999). Ongoing assessments may take the form of homework assignments, performance tasks, mini-projects, or student presentations as well as other options. Once a unit of study is complete, a final assessment may be given to evaluate overall student performance and understanding of core learning objectives. Final assessments can be varied to provide opportunities for students to demonstrate understanding through many different modes of expression.

### Flexible Grouping

Flexible grouping strategies are a hallmark of differentiated instruction and are of critical importance when aiming to meet the needs of a diverse student population. Traditional grouping practices tend to focus on ability and "pigeonhole" students into

a particular group level. High performing students are grouped with other high performing students and low performing students are partnered with others of the same ability. There is little movement from group to group and students tend to stay with the same groups throughout the year.

To the contrary, flexible grouping requires a more holistic perspective with regard to ability, learning profile and interest. Lewis & Batt (2005) indicate that the most important aspect of flexible grouping is that the groups are not static. Rather, they change frequently. Teachers conduct formal and informal assessments to move students from group to group as often as necessary. Pettig (2000) further claims that "the dynamic flow of grouping and regrouping is one of the foundations of differentiated instruction" (pg. 16). Flexible grouping strategies provide opportunities for students to work with different people throughout the year and to more deeply appreciate the richness and complexity of diverse learning styles, abilities, and interests among their peers.

### **Student Choice**

Student choice is another essential element of a differentiated classroom. Students are empowered to make intelligent choices aligned with their readiness, learning style or interest. As Benjamin (2006) indicates, when students have choice, it provides them with a sense of self-determination that translates into increased commitment. A central tenet of differentiated instruction asserts that students feel empowered, are more motivated and enthusiastic about learning, take on more responsibility, and make more meaningful connections during the learning process when they are provided with an opportunity for choice.

For example, a student may choose a specific final product from a learning contract that best matches his/her learning style or interest. He/she may choose to work alone on a project, with a partner, or in a group. He/she may choose to work while listening to music or, alternatively, work in complete silence. Pettig (2000) states that "choice validates student's opinion and promotes self-efficacy," and therefore plays a crucial role in the differentiated classroom (pg. 17).

### **Classroom Management**

Classroom management takes on quite a different meaning in a differentiated classroom as teachers need to be adept at facilitating multiple groups, all working on varied activities at one time. This can be especially difficult in a classroom with a large student-teacher ratio and space limitations. Teachers need to configure classroom furniture to create multiple spaces for differentiated learning opportunities as well as facilitation of both small and large group instructional methodologies. Furthermore, teachers need to think critically about materials, supplies and the best ways to maximize time.

An anchor activity is one management strategy used in differentiated classrooms to "anchor" a group of students, engaging them in a meaningful task directly related to the unit of study, while the teacher meets with a small group of students to introduce,

re-teach, or assess a particular skill or understanding. Anchor activities are not "busy work" and therefore must be designed with a purposeful connection to what students are currently studying in class. Anchor activities provide the means necessary to ensure that all students are purposefully working on curriculum related tasks and they free the teacher to appropriately allot time to those students who may need further clarification, guidance, or challenge.

### **Differentiated Learning Models (K-12)**

There are a variety of learning models used in a differentiated classroom to reach all learners at different levels. A few of the more common methodologies are discussed below.

**Learning Contracts** - A learning contract is one differentiated instructional technique used by teachers primarily to provide an element of choice in an assignment. Starting with the main objective or skill for a particular lesson, teachers work backward and create a minimum of two options on a contract for students to choose in order to demonstrate understanding. Options are differentiated according to learning style. For example, when studying conflict and resolution in literature, a teacher may develop a contract that allows students to choose between writing a song, creating a short skit, writing a three-paragraph essay, or painting a picture to depict the central conflict and the resolution. Alternatively, contracts can be differentiated according to interest. For example, when studying colonization, a teacher may develop a contract including options related to economy, government, roles of women/men/children, and relations with Native Americans. Students choose which option best matches their interest. When developing a learning contract for a particular unit of study, the options are essentially limitless and depend greatly on the creativity and ingenuity of the teacher. By extension, behavior contracts can also be valuable, especially when they build a link between school and home (Hawkins et al., 2011).

**Role / Audience / Format / Topic (RAFT)** - A RAFT is a differentiated activity used primarily to encourage writing across the curriculum. In a RAFT, students take on a specific role and develop a final product for a target audience related to a core concept or topic from a unit of study (Billmeyer & Barton, 1998). For example, when studying fractions and decimals, students may take on the role of a fraction and write a letter to a decimal explaining how the two are related to each other. When working on concepts related to persuasive writing, students may take on the role of advertisers producing an ad campaign for children illustrating why their cereal product is the healthiest option for a nutritional breakfast. No matter what type of RAFT a teacher creates, he/she begins with the major skills or concepts that students should be able to do or understand and then works backwards to differentiate multiple options that can either be assigned or chosen by interest.

**Stations** - Stations refer to different locations in a classroom where a teacher organizes materials for students to work on specific tasks related to a curriculum objective. When stations

are used, multiple locations are required as students generally rotate from station to station individually or in groups. Stations work well in a differentiated classroom because they provide for a strong balance between student choice and teacher choice. Furthermore, stations lend themselves easily to flexible grouping as every student does not need to visit every station, but can rather spend more time studying a concept in depth or even work in a small group or one-on-one with the teacher (Tomlinson, 1999).

**Learning Centers** - Centers are often easily confused with stations because, in principle, they are very similar. However, Kaplan et al. (1980) define a learning center as an area in the classroom containing a variety of activities or materials developed specifically to teach, reinforce, or extend a skill or concept. Centers require students to take on a high degree of responsibility for their own learning as the tasks are independent of teacher direction and students need to be self-motivated to explore and work on their own or with a partner. Centers generally contain a variety of activities that are differentiated for varying degrees of complexity and depth. Tomlinson (1999) also indicates that interest centers further enhance the differentiated classroom as they provide opportunities for students to explore concepts they are particularly interested in learning about.

**Tiered Activities** - Lewis & Batts (2005) describe tiered activities as a collection of assignments designed at different levels of complexity and depth according to student readiness levels. Teachers employ tiered activities when aiming to create opportunities for students to focus on the same concepts, but at varying levels of complexity (Tomlinson, 1999). This type of instruction directly addresses the differing needs of both struggling students and advanced students and offers a direct alternative to the "one size fits all" model employed in most traditional classrooms. A typical tiered activity is guided by one overarching skill that a teacher expects all students to know, understand and be able to do (i.e. identify the characteristics of a triangle). Tier one may require students to write or draw a description of the main characteristics of a triangle. Tier two may require students to compare and contrast the main characteristics of a triangle with another figure. Finally, tier three may require students to identify the main characteristics of a triangle and discuss the implications these characteristics have for the use of the triangle in society.

**Curriculum Compacting** - Curriculum compacting is a methodology employed for those students who can demonstrate they have already mastered a particular skill or understanding. Rather than repeat mastered material, students are provided with the opportunity to work on alternative, more challenging assignments. By using the results from a pre-assessment, teachers can easily determine level of mastery and appropriately assign students to a compacted activity, thus carving time for the teacher to meet directly with those students who need extra support. As Lewis and Batts (2005) claim, accurate records are extremely important when compacting the curriculum as teachers need to be sure to provide accountability and a rationale for creating an opportunity for students to work on alternative assignments.

## Viewpoints

Two conflicts that teachers often struggle to resolve are the perceived mismatches between differentiated instruction and grading systems as well as differentiated instruction and standards. The traditional box that most grading systems operate within does not quite match with the reality of what takes place in a differentiated classroom. When different students are working on different activities at different times, teachers often grapple with how to grade student performance. Tomlinson (2005) demonstrates that the barrier is more imagined than real and that the ultimate goal of grading systems is to be accurate, reflective of student performance, and useful for growth and development.

Similarly, teachers grapple with how to reconcile the perceived mismatch between increasing standards based accountability and differentiated instruction. They worry that if they are required to address all of the content and performance standards in order to ensure success on standardized tests, it is even more difficult to be responsive to all of the diverse learning needs and styles in a classroom. McTighe and Brown (2005) assert, however, that differentiation and standards can not only peacefully coexist, they must coexist if we seek to continually improve our schools. All students can and must be held to the same high expectations and standards for learning. It is the teaching methodologies, however, that must be differentiated to ensure that each student successfully meets the standards.

It is difficult to challenge the underpinnings of differentiated instruction, as every classroom includes a range of learners with varying abilities, learning styles and interests. Although there still exist many traditional classrooms and many teachers continue to employ "one size fits all" instructional techniques, these teachers are not intentionally negatively impacting student learning outcomes. The real issue at stake is the level of time, support, and energy necessary to change (George, 2005). There is no doubt that creating a highly differentiated classroom environment can be very difficult for some teachers as they need to consider many different facets of teaching and learning in order to reach each individual student. Moreover, most teachers have been exposed to very few models of differentiated instruction throughout their own education and therefore find it difficult to transfer these instructional methodologies into their own classrooms. As Tomlinson (2005) states, "one reason responsive teaching is scarce is that teachers lack images of such classrooms. We teach as we were taught. Furthermore, most educators have had little opportunity to study in depth the need for differentiation" (p. 183).

School leaders need to support teachers in their endeavors to adapt teaching methodologies to incorporate differentiation. They need to provide time and exercise much patience. Furthermore, teachers need extensive professional development opportunities to hone their craft and study differentiation and how it applies in the classroom setting. In many ways implementation of the Common Core State Standards, adopted by forty-five of the United States following their release in 2010,

continue to raise the bar for what is expected of current and future teachers. This requires deep understanding and knowledge that cannot be accomplished through quick-hit training. In order to encourage successful implementation, education and professional development for teachers must be ongoing and deep (Liebtag, 2013). Moreover, Holloway (2000) discusses the need for universities to develop pre-service programs that help teachers understand differentiated instruction. We need to prepare the next cadre of teacher leaders with the skills necessary to employ these instructional techniques. Once these teachers are in our schools, we need to support, encourage, and nurture them (Holloway, 2000). Tomlinson reminds us that substantial change is slow. When aiming to employ differentiated instructional methodologies in the classroom, schools need to start small, avoid overload and prepare for the long haul (Tomlinson, 1999).

## Terms & Concepts

**Anchor Activity:** An anchor activity is a management strategy used in differentiated classrooms to "anchor" a group of students, engaging them in a meaningful task directly related to the unit of study, while the teacher meets with a small group of students to introduce, re-teach, or assess a particular skill or understanding.

**Curriculum Compacting:** Curriculum compacting is a methodology employed for students who demonstrate they have already mastered a particular skill or understanding. Rather than repeat mastered material, students are provided with the opportunity to work on alternative, more challenging assignments.

**Flexible Grouping:** Flexible groups are not static but rather "fluid" in terms of students consistently moving in and out of different groups according to a holistic perspective with regard to readiness level, learning profile, and interest.

**Formative Assessments:** Formative assessments provide information that assists teachers to formulate and modify their instruction to meet the needs of a diverse student population on an ongoing basis.

**Learning Center:** A learning center is an area in the classroom containing a variety of activities or materials developed specifically to teach, reinforce, or extend a skill or concept.

**Learning Contract:** A learning contract is a differentiated instructional technique used by teachers primarily to provide an element of choice in an assignment. Contracts can be differentiated according to readiness level, learning style, or interest.

**Learning Profile:** A student's learning profile is a preferred way of learning that may be influenced by learning style, intelligence preference, gender and culture.

**Multiple Intelligences:** Gardner (1983) discusses eight major intelligences including verbal / linguistic, logical / mathematical, visual / spatial, bodily / kinesthetic, musical / rhythmical, naturalist / environmental, interpersonal and intrapersonal. These intelligences serve as indicators to help assess learning preferences and styles.

**Ongoing Assessment:** Ongoing assessments are used throughout a unit of study to best meet the needs of individual students. They may take the form of homework assignments, performance tasks, mini-projects, or student presentations as well as other options.

**Readiness:** Readiness refers to a student's entry point relative to a particular understanding or skill. In any given classroom, there always exists a range of different readiness levels.

**Role/Audience/Format/Topic (RAFT):** A RAFT is a differentiated activity used primarily to encourage writing across the curriculum. In a RAFT, students take on a specific role and develop a final product for a target audience related to a core concept or topic from a unit of study.

**Pre-Assessment:** Pre-assessments help teachers determine student readiness for a particular concept, preferred learning styles and/or levels of interest in a particular component of a unit of study. They may take the form of interest surveys/inventories, parent questionnaires with younger students, or quick pre-tests as well as a variety of other options.

**Stations:** Stations refer to different locations in a classroom where a teacher organizes materials for students to work on specific tasks related to a curriculum objective. When stations are used, multiple locations are required as students generally rotate from station to station individually or in groups.

**Summative Assessments:** Summative assessments are given at the end of a unit of study to provide meaningful data regarding mastery and student understanding of core concepts.

**Tiered Activities:** Tiered activities are a collection of assignments designed at different levels of complexity and depth according to student readiness levels.

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# The Socratic Method

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## Abstract

For some teachers and administrators, just asking a lot of questions in class is considered Socratic method. However, the term is more specifically applied to an array of teaching methods that developed over the last eighty years. The Socratic method, when applied to reach specific goals and objectives can be called teacher-directed, or curriculum-directed. In the student-centered, or seminar method, the teacher must give up the didactic role of know-all lecturer and transition toward becoming an equal participant in a conversation. Even when teachers are able to use seminars on a regular basis, many issues arise, such as meeting state standards while still giving students intellectual and academic freedom.

## Overview

As Moeller and Moeller (2002) indicated, there is not an official definition of Socratic method. The term is derived from Socrates, the ancient Greek philosopher, who was made famous in Plato's Dialogues for asking questions, and especially for answering questions with more questions. The Socratic method was not passed down from ancient Athens across continents and millennia (Schneider, 2013). It is traditionally seen as an experiential learner-centred pedagogy that values creativity and intellectual independence (Gorry, 2011). On a simple level, the term refers to constantly asking questions in order to further investigate core issues and ideas. The Socratic method can be used for all ages, although some, like, Strong (1997) suggested different frequency and length for various ages.

For some teachers and administrators, just asking a lot of questions in class is considered Socratic method. However, the term is more specifically applied to an array of teaching methods that developed over the last century. According to Strong (1997) the term "Socratic Seminars" was first coined by Scott Buchanan in 1937 and has evolved ever since through St. John's College, the University of Chicago, the Great Books Foundation, and the Paideia program. In particular, authors like Strong (1997), Copeland (2005) and Tredway (1995) trace much of the proliferation of the Socratic method to Mortimer Adler's 1982 *Paideia Proposal*.

## Questioning for Deeper Investigation

Questions are central to any application of the Socratic method, but crucial differences emerge when considerations such as *how* the questions are asked and under what circumstances they are being asked are taken into account. These differences become clear when the applications and purposes are examined. A brief look at Plato's Dialogues can reveal the idea that Socrates, despite asking questions, was actually steering his students toward a pre-determined goal. Whether this was the case or not, teachers wishing to use the Socratic method face a crucial fork in the road: Are the students being guided by the questions to a specific destination or are they free to explore their own interests?

This distinction is best illustrated by the difference between dialogue or conversation on one hand, and discussion on the other. Dialogue and conversation are meant to be free flowing and may or may not lead to any resolution. In this sense, they can be considered student-centered, since the students themselves follow what interests them. Discussions are meant to arrive at specific answers, and, therefore, can be considered teacher-directed or curriculum-directed. Copeland (2005) considered dialogue an inductive process that produced more questions and ideas, whereas discussion was a deductive process that led to fewer questions and ideas.

## Applications

### Traditional Teacher-Directed (Discussion) Method

The Socratic method, when applied to reach specific goals and objectives, can be called teacher-directed, or curriculum-directed. In this situation, the students are guided by the questions the teacher asks in order to reach pre-determined destinations. The students are not free to explore in the sense that there is a specific point to be made or a lesson to be learned by the conversation. The teacher knows most or all of the answers to the questions he or she poses in this application, creating or perpetuating the teacher-knows-all dynamic.

In the teacher-directed application, the teacher retains intellectual authority over the classroom and the material, even when asking questions. In other words, the students view the teacher as the dispenser of knowledge who has the final say in conversation. These teachers often endorse and encourage certain answers and ask leading questions where the answer is embedded in the question. Moeller and Moeller (2002) referred to these teachers as pseudo-Socratic teachers who actually practice nothing more than disguised lectures.

There are benefits to the teacher-directed application. Teachers who want to break away from straightforward lecturing may find asking questions more interesting, not only for themselves but for the students as well. After all, questions invite dialogue and encourage new ideas. Teachers may be pleasantly surprised to hear what their students are actually thinking, rather than hearing a steady stream of regurgitated information. Students may find the experience more engaging since their ideas are being voiced.

The real benefit of Socratic method comes in a seminar format, when the students are empowered to explore what they feel is important, when they are taught *how* to think, not *what* to think.

### Student-Centered (Socratic Seminar) Method

Most of these applications of Socratic method are student-centered. Hence, the term "seminar" will be used in this paper to generically refer to the many variations of the student-centered approach. These include, but aren't limited to:

- Touchstones™ Seminars,
- Junior Great Books™ Seminars,
- Paideia Seminars,
- Harkness Table,
- Socratic Seminars,
- Socratic Circles,
- Literature Circles, and
- The fishbowl method.

Although each has its own set of specific rules, they all share similar ideas.

In the student-centered, or seminar method, the teacher must give up the didactic role of know-all lecturer and transition toward becoming an equal participant in a conversation. This can be a difficult process for some teachers. The dialogue in such seminars is not driven to resolution by the teacher or by the curriculum, but instead is steered by the students and their interests in an open-ended way. From the students' perspective, seeing the teacher as a learner as well can be extremely beneficial. Since the teacher doesn't have all of the answers, as not all issues have resolution, learning appears as more a process than a product.

Because the structure of a student-centered Socratic method encourages students to do the work of thinking and analysis in a cooperative manner, there are a large number of benefits. Strong (1997) and Copeland (2005) list many of the typical virtues of Socratic method:

- Increased critical thinking and reading skills
- Increased speaking and listening skills
- Greater teamwork and politeness
- Increased honesty and integrity
- More willingness to accept criticism

In addition, Tredway (1995) indicated that Socratic seminars also build self-esteem, since students are engaged in significant work. The emphasis for many seminars, then, is skills, rather than content.

Although there is not yet a lot of specific research on Socratic method, Strong (1997), for one, has shown that the students in two separate schools made significant gains in critical thinking skills as measured by the Watson-Glaser Critical Thinking Appraisal.

## Getting Started

Teachers wishing to start a student-centered version of the Socratic method, or seminar, should first establish classroom expectations and procedures for having conversations. This includes general things, like being polite and courteous, and specific recommendations, such as disagreeing with ideas rather than people. Many seminar programs, like those from Touchstones and Junior Great Books, have clear and useful recommendations.

At first, teachers may need to take measures for creating artificial dialogue by using talking sticks, raising hands, and taking turns around in circles. However, seminar practitioners like Strong (1997) and Copeland (2005) have suggested shedding the constraints as soon as possible, to create more natural conversation. Two strangers meeting on a sidewalk, after all, will not raise their hands to speak to each other.

Participants, including the teacher, should be arranged in a circle, so that all may see one another. In the case of large classes, an inner and outer circle can be formed. Ball and Brewer (2000) have suggested a horseshoe shape for the outer circle, so that there are no students seated behind the teacher. There are several techniques, such as the fishbowl and Socratic Circles, for engaging the inner and outer circles. Copeland (2005) has also suggested changing the lighting in the classroom, in order to help students transition into dialogue mode.

There are six basic components of a seminar conversation:

- The pre-seminar activity,
- The text,
- The opening question,
- The facilitator,
- The students involved, and
- The post-seminar activity.

## Pre-Seminar Activity

Pre-seminar activities are for preparing the students for the actual dialogue of the seminar. Often students must read and annotate the text in order to participate in a seminar. Moeller and Moeller (2002), Copeland (2005), and Ball and Brewer (2000) all share strategies for annotating texts. Journaling, free writing and other techniques for connecting to prior knowledge can be useful as well.

## The Text

The text is a general term for the central focus of the seminar. A "text" can be a poem, a short story, a painting, a primary resource, song lyrics, or anything else that the students and the teacher wish to explore thoroughly. The text can be read ahead of time for homework, or at the beginning of class.

Text selection is extremely important. A poorly chosen text can fall flat, failing to engage students, whereas a well-chosen text can carry conversation through several class periods. A text should be rich in ideas and able to produce numerous questions that have no right answers. In the beginning shorter pieces are better, since they allow students to move line by line and learn to construct meaning. According to Strong (1997), the ideal text is "one in which students know the meaning of each word individually but have no understanding of the paragraph as a whole," (p. 21). Longer texts can be used, but often anything longer than a few pages will generate too much dialogue and may not be focused enough to be useful for most teachers. Poems, which tend to be short but dense with ideas, may be a good place for many teachers to begin. Riddles, on the other hand, which often appear to have a right answer, tend not to work well. For those who are unsure where to begin with text selection, Copeland (2005) and Ball and Brewer (2000) provide lists of selections that have worked well.

There are mixed views on text selection. Some, like Copeland (2005), suggested the most important reason for choosing a text has to do with connecting it to the curriculum, whereas others, like Strong (1995), are more interested in the conversation that the text produces. Teachers may find that establishing their purpose for using Socratic methods may help clarify the process of selecting texts.

## The Opening Question

The opening question starts the actual seminar itself. Because it is meant to promote useful dialogue, the opening question should not have a right answer. Instead, it should challenge students to find evidence, formulate ideas, and converse with others. Copeland (2005, p. 61) defined a good starting question as one that had specificity, was based in opinion, was focused on the meaning the writer was trying to convey, and had the potential to produce multiple answers. Zeiderman (1989) insisted that the question should be short and simple. Moeller and Moeller (2002) included an evaluative checklist that can help teachers frame better questions.

## The Facilitator

The facilitator of a student-centered Socratic method must move away from didactic instruction and toward constructivist or dialogic instruction. Here, the teacher is more of a coach or tutor, rather than a lecturer. The general rule is to say as little as possible, letting the students do the work of thinking and analysis. As Copeland (2005) wrote, "Ultimately, the less the teacher par-

ticipates, the more ownership, control, and investment students feel for the conclusions their conversation draws" (p. 32).

Taking a backseat to the process does not mean that a seminar facilitator has it easy. On the contrary, the seminar facilitator has multiple roles that must be juggled in order for the seminars to be as successful as possible. Copeland (2005), for example, suggested four specific roles for Socratic Circles:

- Selecting text;
- Keeping inner circle dialogue moving;
- Directing feedback of the outer circle; and
- Assessing the students and the seminar.

Over time, the role of the facilitator can undergo subtle changes. Strong (1997) suggested five roles that are roughly sequential:

- Justifier of the activity;
- Socratic questioner;
- Provider of synthesis and clarification;
- Process coach; and
- Genuine participant.

Each step moves the seminar facilitator closer to the student-centered model, where finally, the teacher is a participant as well as a student.

### The Students

The students, or participants, must share responsibility for the quality of the seminar. They should be taught how to participate effectively, including: annotating the text, actively listening to one another, speaking clearly and succinctly, and working cooperatively. Students generally lack these skills in the beginning of a seminar process, but can develop them over time through reflection, direction instruction, and, most importantly, practice.

### Post-Seminar Activity

Post-seminar activities typically consist of writing activities in one form or another. Quizzes, essays, and journal entries are often assigned, both as a means of assessing the student's participation in the seminar, but also to gauge the student's comprehension of the concepts involved.

Reflecting on the seminar itself is also extremely important, since it provides an opportunity for students to improve. Billings and Roberts (2006) in a yearlong study of the Paideia Seminar method in one teacher's classroom concluded "that teaching practice only improves when it takes place consistently within a full Teaching Cycle of deliberate planning, careful practice, and thoughtful assessment" (p. 2). Copeland (2005), Ball and Brewer (2000) and others provide reflection forms that can be useful for reflecting on the quality of the seminars.

## Issues

Many issues are raised when a teacher wishes to endeavor a student-centered Socratic methods class. For starters, many teachers will not find adequate examples in their own histories as students to inform their practice as teachers. This can leave teachers in an exploratory mode, and, unsure of the benefits or values of seminar, they only try one once in a while. Since seminar methods are most valuable developed over time, sampling them unsystematically will not reveal their true potential or value.

### Classroom Management

Even when teachers are able use seminars on a regular basis, many issues arise. Concerns about making connections to district or state standards face most teachers, especially those in particular years when standardized tests are administered. Related to this is the concern about relinquishing the reins of authority. Giving up control of the classroom and taking a back seat to the proceedings can be scary even for veteran teachers.

Seminar methods rely heavily on questions, starting with a great deal of importance placed on the opening question. With many teachers experiencing the unpleasant silence that follows a confusing or poorly phrased question, the idea of an entire seminar's success being contingent on asking "good" questions can be intimidating. Add to this a typical restriction that the facilitator's role is to just ask questions and the pressure can be too much.

Even when a teacher can make sufficient connections to the curriculum and is confident in his or her own ability to ask questions, there are still issues with the students and how they participate. Some students will attempt to dominate the conversation, while others may not speak at all. Some students will search for opportunities to argue a point just for the sake of arguing, while others will struggle to voice their opinions. Some students will cite the text effectively, while others will tell loosely connected anecdotes. Teachers will want to track and manage student participation, but this process can be very time consuming.

Seminar methods are often about developing critical thinking and reading skills and these both raise issues about assessment. Trying to measure the quality of a student's thinking or speaking skills is not only difficult, but may seem remarkably arbitrary as well. Many questions arise: When is a comment "good"? Are questions worth more than statements? What about a comment that at first seems off task and irrelevant but leads to the most fruitful dialogue in the entire seminar? How does talking a lot compare to listening well? These and other questions make assessment extremely complicated.

### Curriculum Connections

For many teachers, the biggest challenge to using student-centered Socratic methods will be in making connections to a required curriculum. Since seminars attempt to pass responsibility over to the students and their interests, specific curriculum

goals can be difficult to achieve. If possible, the easiest way to use seminar methods is to find shared goals and purposes, such as critical thinking, critical reading, cooperative learning, and so on. According to Copeland (2005) "Critical reading, critical thinking, discussion skills, listening skills, team-building skills, vocabulary improvement, and student ownership are all valid reasons for including Socratic circles in the classroom" (p. 3). If these goals are also part of the mandatory curriculum, then the seminars themselves can be the focus, rather than the content, freeing teachers to use whatever texts will inspire the students. When student-centered Socratic methods cannot be the goal in and of themselves, they can be connected to a curriculum.

### **Relinquishing the Reins**

As Tredway (1995) indicated, the process of letting go makes many teachers feel like the discussion might not have enough direction. Students, though, do not often get opportunities in school to dialog about issues that concern them, so they often eagerly embrace seminars. When anchored by a text and with clear seminar expectations, students can stay focused on the conversation quite easily.

A teacher wishing to try a student-centered Socratic method should be prepared to give up a lot of control of the dialogue. (This should not be confused with classroom authority that has to do with enforcing school rules, etc.). It may be tempting at times for seminar teachers to interject with *the* correct answer, but this undermines the whole idea of the seminar being student-centered. This is perhaps why some programs recommend that the teacher *only* ask questions.

Teachers should let the students discover meaning for themselves, even if it means suffering through long, awkward pauses. By letting go of the reins, the teacher sets up a situation in which the students are actively engaged and doing the work of thinking.

### **Asking Questions/Facilitating**

Relinquishing the reins and letting the students do all the work is one thing, but keeping them actively engaged is another. As Ball and Brewer (2000) pointed out, seminars are great for block periods of 60-90 minutes since conversations about texts can productively fill the time. But the idea of keeping students engaged in a single conversation for that long can be intimidating, especially to teachers who do not feel clever enough or spontaneous enough to ask fruitful questions.

Effective facilitation starts with quality text selection and preparing powerful opening questions. Sometimes these alone are enough for entire seminars. Other times, the opening questions fall flat or fizz out and more are needed. Simple follow-up questions such as, "Why?" and "Where in the text makes you say that?" can work miracles for almost any teacher. Not only do follow-up questions extend dialogue, but they force students to dig deeper as well. Some teachers may find that many of their questions are too similar. Moeller and Moeller (2002) suggested

teachers use three types of questions, factual, interpretation and evaluation, to help create more variety.

In terms of facilitating, teachers must first remember to stick to the standard rules of their school and classroom. Misbehavior is misbehavior in and out of seminars. As mentioned earlier, teachers in seminar should be careful about providing answers, but they should also be mindful of making procedural comments, such as, "We should move on now." Comments like this can imply to the students that there really is a specific goal in mind for the seminar. In the beginning, however, students may need nudging as they get stuck on repeating ideas, telling long anecdotes or debating. Teachers should gently intervene in the beginning, but over time should pass those responsibilities over to the students.

### **Participation**

From the teacher's perspective, tracking and managing student participation is important in reflecting on the success of the seminar and in student assessment. Studies on students' preferences for course attributes indicate students prefer classes that rely less on lecture and more on participatory engagement through class activities and related experiences (O'Connor, 2013). A seminar may fall flat because the opening question was poorly phrased, because certain students dominated the conversation, because students didn't cite the text enough, or numerous other reasons. Many teachers use a simple tracking system of making tally marks whenever a student participates. Ball and Brewer (2000) and Copeland (2005) included more complicated systems of tallying types of contributions.

From a student's perspective, participation can be intimidating, since it involves so many possible tasks: reading, annotating, listening, citing, reasoning, speaking and more. For students who are concrete thinkers, open-ended dialogue in a seminar can seem like a whirlwind of activity without clear goals. Clarifying student roles, therefore, becomes extremely important. Daniels (1994) created specific job sheets that delineate concrete tasks, such as "illustrator," "scene setter," and "summarizer," for students in Literature Circles that can be used in seminars. Ball and Brewer (2000) proposed four categories of student responsibility, along with specific descriptions. Moeller and Moeller (2002) also provide job sheets that help to clarify student roles.

### **Assessment & Grading**

Tracking participation is primarily quantitative, whereas assessment and grading are more qualitative. Like any assessment that strives to measure quality, assessing a seminar can be difficult. Teachers should decide if they want to assess individual students or not. Because seminars often supplement and enhance other curricula, some teachers simply grade the seminar itself and not students themselves. The individual grades are instead produced from quizzes, tests, papers and so on. No single method is comprehensive, so many teachers use a variety of techniques, including rubrics, self-assessments, classroom disposition checklists, observations, note taking, writing assignments, and follow-up projects.

## Terms & Concepts

**Dialogic Instruction:** A method where the students and the teacher create meaning together around a central text, issue or idea.

**Fishbowl Dialogue:** A classroom dialogue method with an inner and outer circle, where only the inner circle may speak. The outer circle participants may enter the inner circle to speak using various procedures.

**(Junior) Great Books Seminar:** A classroom dialogue method using the principles and structure created by the Great Books Foundation.

**Harkness Table:** A classroom dialogue method around an oval table (Harkness table) developed at Phillips Exeter academy.

**Literature Circle:** A classroom dialogue method where students are assigned concrete jobs in order to facilitate participation.

**Paideia Seminar:** A classroom dialogue method using the principles and structure created by the National Paideia Center.

**Seminar:** The term used in this paper to generically describe student-centered Socratic methods.

**Socratic Circles:** A classroom dialogue method with an inner and outer circle, where only the inner circle may speak. The outer circle participants typically observe and assess the inner circle participants and help to reflect on the seminar.

**Socratic Seminar:** A classroom dialogue method where the teacher attempts to become an equal participant and shares responsibility for the quality of the seminar with the students.

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## Essay by Charles Fischer, M.Ed.

Charles Fischer has been a teacher in both public and private schools in a variety of settings, from rural Maine to inner city Atlanta. He has worked with a wide range of students from 4th grade to AP English, including special needs and gifted & talented. In his spare time he likes to write poetry, travel the world, and attend unusual professional development workshops.

# Reflective Teaching

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reflection: open-mindedness, responsibility, and wholeheartedness. Teachers can use a variety of methods to promote reflection both in their professional lives and in their classrooms.

## Overview

Reflective teaching has become a focus of interest and a powerful movement in teacher education. The complexity of teaching requires teachers to question their practices for their own professional development in order to improve and to increase learner performance (Taole, 2012). The ability to reflect correlates with a person's ability to reason logically (Ostorga, 2006). Parsons and Stephenson (2005) see critical reflection as a crucial part of the complex activity of teaching. Teachers can make sound pedagogical decisions, "if reflective thinking becomes a habit of the mind based on specific epistemic views that promote its development" (p. 19). One's epistemological worldview, or an individual's system of values and beliefs about the nature and acquisition of knowledge, defines attitudes about teaching (Ostorga, 2006; Schraw & Olafson, 2002). Through reflection, teachers can examine the how and what of their teaching "by examining the underlying premises on which they base their work" (Hubball, Collins, & Pratt, 2005, p. 59). They can "reconstruct experiences," attending to features of a situation and assigning new significance to them" to make sense out of that which may no longer work within the classroom (Yusko, 2004). As Brookfield (1995) points out, "We can stand outside ourselves and come to a clearer understanding of what we do and who we are by freeing ourselves of distorted ways of reasoning and acting" (p. 214).

## History

Reflective teaching or practice has its roots in the Enlightenment era. John Dewey, an early-20th century educational philosopher, was one of the first theorists in the United States to see teachers as reflective practitioners who could reform education (Zeichner & Liston, 1996). For Dewey, the purpose of reflective practice is to change teachers' classroom practices or actions. Teachers begin the process of reflection when they experience "a difficult, troublesome event or experience that cannot be immediately resolved" (Zeichner & Liston, 1996, p. 8). Because of teachers' concern about their practice, they analyze the experience.

### Abstract

Reflective teaching or practice is defined as "the thoughtful consideration and questioning of what we [teachers] do, what works and what doesn't, and what premises and rationales underlie our teaching and that of others" (Hubball, Collins, and Pratt, 2005, p. 60). McApilne and Weston (2000) state that expanding one's knowledge through reflection increases one's ability to develop as a teacher. Dewey identified three attitudes that facilitate

In the early 1980's, reflective practice began to appear in literature about teaching and learning (Eryaman, 2007). Donald Schon (1983) wrote widely about reflective practice, highlighting its use in fields besides education, such as architecture and medicine. Education theorist David Kolb (1984) promotes reflection, viewing it as a necessary part of engaging the learner. Psychotherapist Carl Rogers (1982) states that reflection is appropriate to enhance self-discovery; he views self-discovery as the only learning which significantly influences behavior. In 1986, educational philosopher Lev Vygotsky promoted reflection, as reflection helps students make connections between themselves and the world around them. Sociologist C. Wright Mills describes the three types of teachers who do or do not promote reflection.

- Vulgar believers are not invested in reflection and are not interested in listening to opposing views or analyzing their own beliefs in any reflective way.
- Sophisticated believers are interested in knowing about opposing viewpoints, but only so they can argue against others' positions. They do not see that their belief systems may be flawed.
- Critical believers are open to opposing views, understanding that they may have weaknesses in their own thinking, and are strengthened by different beliefs (as cited in Valli, 1993).

### **Reasons for Reflection**

McAlpine and Weston (2000) state that expanding one's knowledge through reflection increases one's ability to develop as a teacher. Schon (1983) promotes the idea of reflection by explaining that the time when reflection occurs can have an impact on the level of reflection. Teachers who regularly reflect do so for many reasons. They reflect on:

- The assumptions underlying teaching and learning;
- The appropriateness of their instructional decisions;
- Improving actions in a particular course;
- Generalized knowledge or approaches to teaching; and/or
- Cognitive awareness of their reflective processes (McAlpine, Weston, Bethiaume, & Fairbank-Roch, 2004, p. 342).

### **Dewey's Attitudes Promoting Reflection**

Dewey (1933) states that the function of reflection is "to transform a situation in which there is experienced obscurity, doubt, conflict, disturbance of some sort, into a situation that is clear, coherent, settled [and] harmonious (p. 100-101). He proposes three attitudes that promote reflection:

- Open-mindedness,
- Responsibility, and
- Wholeheartedness.

### **Open-Mindedness**

Open-mindedness is the most important attitude of reflection and is defined as the ability to remain open to multiple, alternative ideas (Parsons & Stephenson, 2005). While teachers may have certain values and beliefs about how students learn, those who are open-minded are aware that there is no one right way to teach. Schon (1983) states that professionals need the "capacity to hold several ways of looking at things at once without disrupting the flow of inquiry" as they experiment with different problems (p. 130). Open-mindedness leads "to a plurality of ways of noticing, understanding and working towards improving practice and policy" (Ghaye, 2005, p. 182). Teachers are also open-minded when they can listen to and accept strengths and weaknesses of their perspectives (Zeichner & Liston, 1996).

### **Responsibility**

Another attitude that promotes reflection is responsibility. To Dewey (1933), being a responsible teacher means intentionally reflecting upon one's actions to bring about improvements in practice. Before they act, teachers reflect carefully about the consequences to which action might lead them (Zeichner and Liston, 1996). They realize that there are consequences to teaching - personal consequences, academic consequences, and socio/political consequences (Valli, 1993). Ideally, students learn that the best leaders inspire trust among followers by listening to them, understanding them, and serving as mentors and role models (Chih-ling, 2013).

### **Wholeheartedness**

Wholeheartedness, the third attitude proposed by Dewey (1933), is the commitment to pursuing something worthwhile -- in this case, reflection (Ghaye, 2005). Teachers who are wholehearted in their reflection have attitudes that include the desire to learn something new through their reflections (Valli, 1993).

### **Mezirow's Qualitative Aspects of Reflection**

Mezirow (1991) has categorized reflective thinking into qualitative aspects of reflection; this leveling of reflection is called the taxonomy of reflective thought. One category is non-reflective action, which is considered superficial in nature. Within the category of non-reflective action is habitual action. In habitual action, a learned action is performed automatically, with little or no reflective or conscious thought involved. Thoughtful action includes prior knowledge, but there is no reflective appraisal of this prior knowledge. Through introspection, one is aware of feelings about learned actions (Parsons & Stephenson, 2005).

The second category of qualitative aspects of reflection is reflective action. Here, reflection begins through content reflection, process reflection and content/process reflection. Through content reflection, the person reflects upon perceptions, thoughts, feelings or actions. Through process reflection, reflection is on the processes of perceiving, thinking, feeling, or acting. Content/process reflection is a combination of both types of reflective action (Mezirow, 1991; Parsons and Stephenson, 2005). Premise reflection is one's awareness of the reasons behind one's

perceptions, thoughts, feelings and actions. Often called critical reflection, this is the highest level of reflective thought.

### Ganor's Problematizing Model

Ganor (2005) proposes yet another reflective model that includes problematizing, to ask questions and critique more deeply the issue at hand, whatever that issue might be. By problematizing, teachers respond "to the complexity of teaching and place value on the way in which teachers reflect upon the questions they have about their teaching" (p. 52). Ganor (2005) has outlined several patterns of reflection:

- **Unproblemized reflection:** This type of reflection focuses only on the practical strategies in which teachers engage, with only superficial discussion about issues and assumptions about teaching.
- **Problematized reflection:** This type of reflection promotes the idea that teachers have the insight to understand student demographics, as well as the social and political conditions of the community, that could impact and influence students' lives and successes in schools. This type of reflection promotes the confrontation of existing beliefs and a transition to newfound insights.
- **Critically problematized reflection:** This type of reflection creates fundamental change in thinking that results in radically different practice. Reflection can result in innovative action that impacts the greater educational community (p. 56).

Hubball, Collins, and Pratt (2005) state that there are several elements that facilitate reflection:

- Those reflecting must be provided a structure or some guidance for those engaging in reflection, that there must be "an explicit rationale and criteria for critical analysis."
- There must be integrative, reflective activities, with ongoing reflection as part of a larger commitment to reflection.
- Reflection should be "authentically related" to teachers' actual teaching contexts.
- Reflection can be individual, but collaborating with others will enhance "a contextually-bound process."
- Those involved in reflection must understand that there are varying degrees of interest in different reflective activities; some prompts may be more stimulating to one person as opposed to another (p. 62).

## Applications

### Reflective Activities

Reiman (1999) suggests that there needs to be "guided reflective frameworks" (p. 603), or explicit prompts that help those reflect-

ing upon their practice to regulate and monitor their cognition (Schraw, 1998). Other reflective activities include:

- Developmental portfolios,
- Action research,
- Writing educational philosophy statements, and
- Telling stories within teacher dialogue groups (Ganor, 2005).

Brookfield (1995) outlines six additional points of entry for teachers to enter in self-reflection:

- **Teaching Logs:** Recording weekly events of teachers' lives that have impressed themselves most vividly on their consciousness.
- **Teacher Learning Audits:** Responding to questions that are expressly designed to probe how the teachers have changed over the previous 12 months.
- **Role Model Profiles:** Talking to colleagues that teachers admire and outlining their qualities and abilities that could be emulated.
- **Survival Advice Menus:** Advising future teachers about how they can survive in a job such as their own.
- **Videotaping:** Viewing one's own teaching to see how much teacher talk occurs instead of student talk.
- **Peer Observation:** Inviting colleagues to view their teaching (p. 72).

### Student Reflection

Teaching students to reflect is also a strategy used within the classroom, as a means of helping students reach their fullest potential (Easley, 2006). Dewey (1933) sees reflection as an education experience that fosters purposeful and meaningful learning. Hubbs and Brand (2005) state that reflection can "actively engage students with content in an intensely personal way" (p. 61). To Kolb (1984), reflective journaling within the classroom can create learning conditions that result in meaningful and purposeful learning. Students must be taught about the purposes of reflection and the importance of self-knowledge in learning. Kerka (1996) states that students who are reflecting must trust the reader of their reflections, must be provided clear expectations and must receive quality feedback.

### Reflective Journaling

Reflective journaling is used as a tool for reflection. Seen as a versatile strategy that can be used by students and teachers alike, journaling can also be used for in-class learning activities that can stimulate learners to link critical class concepts to reflective thinking. Reflective journals are defined as "written documents used to stimulate learners to increase their awareness of their beliefs, values, and practices" (Billings and Kowalski, 2006, p. 104). Boud

(2001) views journaling as a pedagogical device that can be used to extract meaning from events and experiences in the classroom, as well as to enhance writing and critical thinking skills. Journaling becomes "a questioning attitude" (Moon, 1999, p. 189). The key advantage to journaling is "the ability to prompt learners to think critically and process information in the affective domain, as well as cognitively" (Billings and Kowalski, 2006, p. 104). Reflective journaling can lead students through a transformative process, as they move towards learning new material.

## Rubrics

If journals are used to enhance reflection among students, rubrics can be used to assess them. Rubrics are grading criteria given to students at the time of the assignment. Sections on the rubric can measure judgments about the depth of thought of journal content; the completeness of entries; the relationship of course concepts to the entries; as well as the connection between theory and practice (Billings & Kowalski, 2006). Lyons (2006) suggests that there are five potential outcomes of sustained reflection. They include: performing a defined action, based on reflections; preparing systematically to reflect more; acting to deliberate in an intentional fashion; knowing what we are about when we act, and constructing meaning (p. 154).

## Actions of Reflective Teachers

Zeichner and Liston (1996) state that reflective teachers act in specific ways. Reflective teachers:

- Examine, frame, and attempt to solve the dilemmas of classroom practice;
- Are aware of and question the assumptions and values they bring to teaching;
- Are attentive to the institutional and cultural contexts in which they teach;
- Take part in curriculum development and are involved in school change efforts; and,
- Take responsibility for their own professional development (p. 6).

## Journaling

Journaling is reflective in nature and can be used by teachers within the classroom as a learner-centered assessment tool. Teachers can use journaling for students to reflect within so that the teachers can determine if and how students are understanding content. Students can also reflect upon their understanding of content by self-assessing where they need to devote more time on a particular content area. Teachers can also use journaling for formative assessment, as journaling entries can reveal insight through student responses so that teachers can construct questions or future assignments. There are downsides to journaling, as journaling can be perceived as busywork. Also teachers can be disappointed in the level of reflection that students may place in the assignment; reading journals also takes time on the part of the teacher (Angelo & Cross, 1993).

## *Electronic Versions of Journaling*

Most recently, reflective journaling has taken the form of electronic media - web logs or blogs. Blogs are postings on the web that appear in reverse chronological order. They can be personal or public in nature. Teachers may move to require reflective journals to take the form of web blogs, as there is a time stamp posted on each entry. The blogs are easily accessible, as they only require a computer instead of many unwieldy notebooks. Bouldin, Holmes, and Fortenberry (2006) state that teachers must set guidelines for blogging that include expectations and descriptions of journal prompts and ways to respect one another as they share their responses.

## *Assessment of Reflective Journals*

Journals can be assessed through frequency of postings, clarity of writing, and relevancy of entries. Rouldin, Holmes, and Fortenberry (2006) state that entries should be "thoughtful, engaged, and relevant to course content" (p. 2).

## *Reflective Engagement*

Lyons (2006) defines reflective engagement as:

a deliberate and intentional act of interrupting, or suspending, one's teaching processes to interrogate or inquire into them systematically and to heighten one's conscious awareness of one's practices and of one's students and then using that consciousness to redirect one's practice and actually acting to change (p. 166).

Those teachers who are involved in these acts of inquiry may reflect alone or with others to promote change in the classroom. Change may include teaching students in a new way about concepts or processes.

## Conclusion

Reflective teaching or practice is challenging, as reflection is often a struggle to begin and maintain. Reflective analysis enables teachers to make appropriate instructional decisions; however, the skills to make such analysis may take instruction and experience, and, therefore elude many pre-service and novice teachers (Thomas & Packer, 2013). Ostorga (2006) states that novices in reflection often do not understand their own beliefs, values and attitudes about teaching or possess the cognitive ability to reflect effectively. Often in teacher education programs, novices reflect superficially. Boud and Walker (1998) state that novice reflections often are "diffuse and disparate (in their reflections) so that conclusions or outcomes may not emerge" (897). Reflection has also become a buzzword or catch-all term, as those in teaching may not clearly understand the role of reflection in their professional lives (Brookfield, 1995). Those who are "required" to reflect may be very uncomfortable with sharing ideas that they may consider to be too superficial, particularly if they do not understand the value of or purpose to reflection.

NCATE, the National Council for Accreditation of Teacher Education, promotes reflection as an important element of teacher education programs. Reflection on one's teaching is "likely to raise the question of how one teaches and, in the end, to have a positive effect on the improvement of teaching" (Hubball, Collins, and Pratt, 2005, p. 60). Ghaye (2005) states that through the practice of reflection, teachers and students alike can learn "to appreciate the successful aspects of our work, no matter how small, and the practical wisdom that led to them" (p. 182).

## Terms & Concepts

**Academic Consequences of Reflection:** Valli (1993) states that academic consequences of reflection are "the effects of one teaching on pupils' intellectual development" (p. 11).

**Blogs:** A blog (or web log) is a website where entries are written in chronological order and posted by time stamps. Recently, blogs have been a source for posting reflective journal entries.

**Formative Assessment:** Formative assessment is a form of assessment that provides for immediate evidence of student learning in a particular course or at a particular point in a program. Formative assessment improves the quality of student learning and should not be evaluative or involve grading students. By informally evaluating students during a lesson, the teacher can gain an understanding of what the students know or can do, based on instruction to that point in the lesson.

**Personal Consequences of Reflection:** Valli (1993) states that personal consequences of reflection are "the effects of one's teaching on pupil self-concepts" (p. 11). What one teaches impacts student self-discovery.

**Rubrics:** Rubrics are documents that explicitly state the criteria for student work. They are developed through gradations of criteria that are specific and detailed. They generally appear in chart form.

**Self-Discovery:** Self-discovery is the act or process of achieving understanding or knowledge of oneself through reflection.

**Socio/Political Consequences of Reflection:** Valli (1993) states that socio/political consequences of reflection are "the projected efforts of one's teaching on the life changes of various students" (p. 11).

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# Lesson Planning

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the sequence of procedures; and, the formative and summative assessments. Resources for teachers in lesson planning are also discussed.

### Overview

Lesson planning is the teacher's instructional roadmap, a choreographing of a productive instructional plan that could encompass a day, a week, a month, a semester, or yearlong. Through lesson planning, teachers decide what content or skills need to be taught, how they are taught, and how they are assessed. Planning serves as an organizational tool that may provide a strong foundation for new teachers. For seasoned teachers, planning acts as an outline for structuring classroom activities.

Long-range planning, intermediate planning and short-range planning are incorporated into a school year. Long-range planning encompasses the yearlong or semester-long plans, which are generally made up of multiple unit plans. All plans should be up-to-date in content and reflect research-based strategies. As with any lesson plan, long-term plans should reflect what a teacher knows about his or her students and should be free from bias.

Intermediate plans or unit plans cover a larger topic and outline a series of individual lessons that are carried out in relation to that topic. Unit plans are more detailed and can be made up of many lessons. There are many types of unit plans that are used in today's classroom, including resource units, those plans that are packaged units prepared by the state education department, special interest groups, government agencies, or book publishers. Teaching units are those units that are prepared for a specific student body. Teachers are flexible in developing and modifying teaching units, and allow for "teachable moments," those spontaneous teaching moments when a classroom event happens and immediate follow-up and discussion is necessary. Subject matter units are linear in nature, as students must master one piece of the content before moving on to the next. Experience units include the evolution of one lesson to the next, as teachers decide the next lesson based on the experience of what happens in a lesson in progress. Integrated units are often used in elementary schools and combine study across the curriculum.

### Abstract

This article presents an overview of lesson planning, an organizational tool that provides a strong foundation for novice teachers and an outline for structuring classroom activities for seasoned teachers. Basically, there are five major parts to any lesson: goals or rationale generally connected to state and/or national standards in the content area of study; statement of central content that will be addressed; list of materials to be used;

Short-range lesson plans are those plans that are prepared for one or more class periods and focus on specific content or skills. Lessons can be planned using curriculum guides, or frameworks, that prescribe to teachers what the state or school district wants students to know at different times in their educational lives. Resource units can be helpful in developing lesson plans; textbooks and non-print material also are useful sources in planning lessons. Many teachers work in teams to develop plans, sharing objectives, materials and instructional ideas.

There are many benefits to lesson planning. Planning provides a sequence to the classroom activities and directs classroom experiences in a positive way. Pupils are motivated by proper planning, and they learn best from planning practices that include the formulation of clear plans and examples that move from the simple to the complex. Thorough lesson plans include provisions for individual student differences.

Historically, an earliest form of lesson planning was evident in the 1820's as monitors served as instructors in small classrooms across the United States. Teachers taught their lesson plans to bright students who then taught these lessons to their peers. The lessons were structured and included rote memory of reading, writing and arithmetic. Lesson planning further evolved when the monitorial system shifted to a recitation model in the latter part of the 19th century. To enhance the recitation model, teachers focused on their lesson planning and organization of the classroom. Teachers focused on personal contact between the teacher and the student, with a greater emphasis on teacher training. The lesson plan became structured, becoming one of the most important activities in teacher practice (Linne, 2001).

At the beginning of the 20th century, lesson planning further evolved to include the study of literature, mathematics, biology, and psychology. Lesson planning took on a more prominent role in directing teacher practice, as mass education developed during the industrial revolution. Most recently, there have been societal factors that have influenced lesson planning in American classrooms. International and national events have brought curriculum changes involving lesson planning. With the Soviet launching of Sputnik, the first satellite into space, in 1957, curricula changed as government officials noted that American students were lagging behind others in science and mathematics. As a result, science instruction shifted from mere rote memory of facts to a problem-solving model. Rapid growth in the teaching of technology has also affected lesson planning.

Political and economic changes in social science also impacted lesson planning, as teachers rushed to include knowledge about the changing venues in Eastern Europe, Asia, and Africa. Scores on standardized tests began to decline as students grasped for new knowledge. As a result, teacher education standardized proficiency tests appeared in states across America. Teachers also began focusing on individual learners and their instructional needs in daily lesson planning to accommodate the No Child

Left Behind Act (2001). In the late 1990's, Wiggins and McTighe (1998) developed the "Backwards Design" model. Backwards Design is a standards-based format for developing lesson plans and units that are driven by outcomes rather than activities.

Lesson plans can be influenced by many elements. Different teachers may focus on select elements that they deem important in planning lessons for their students. For instance, elementary school teachers may focus on the context of teaching, choosing activities that will interest and involve their students. Secondary education teachers may focus on content, presenting knowledge in interesting ways. Special education teachers may focus on their students' individual goals written in an Individual Educational Plan (IEP). Plans can also be affected by a teacher's educational beliefs or philosophy or the classroom's diversity (Cooper, 2006).

There are basically two typical models of planning. In one model, a teacher decides what knowledge is important to teach, based on standards; selects the activities or strategies by which students will learn; and designs the assessments that will determine if students are learning. In the second model, a teacher decides what knowledge is important to teach, based on standards; designs the assessments; and selects the strategies.

Lesson planning can include any one of three common teaching approaches: direct instruction, informal presentation (often called *mini-lessons*), and structured discovery (Price & Nelson, 1999). These approaches are guides that teach students in specific ways in order to attain the specific learning objectives developed for the lesson. Teachers select among these approaches, based on their objectives, choosing the model that they determine is the best way to present material to students.

Duplass (2006) suggests that lessons can be planned effectively by asking certain questions that will aid teachers in developing challenging lessons:

1. What goals and standards are important?
2. What background knowledge do students have?
3. How long will it take to teach the lesson and what materials are needed?
4. What big ideas are important?
5. What processes will enhance learning of basic skills of the lesson?
6. How is the lesson relevant to students' lives?
7. What tasks will the students complete?
8. How will the lesson be differentiated to meet the needs of all the students?
9. How will the students change in their thinking because of this lesson plan? (Duplass, 2006).

Lesson planning continues even after the lesson is completed. Teachers reflect upon their lesson and what worked best. Duplass (2006) states that the next time most lessons are taught, 20% of the lesson will have been redeveloped based on changes from reflection. Student achievement and enthusiasm indicates what parts of the lesson will remain in the next implementation.

Lesson planning takes many forms. Basically, there are five major parts to any lesson. These include:

- Goals or rationale, generally connected to state and/or national standards in the content area of study
- Statement of central content that will be addressed
- List of materials to be used
- The sequence of procedures; and,
- The formative and summative assessments

Lesson planning can also be sequenced to include other aspects of information to provide thorough instructional guidelines for teachers: goals; objectives; state frameworks or professional standards; connections across the curriculum; materials and time needed for each section of the lesson; outline of classroom activities and choice of strategies; source for motivating students; key questions; teaching of terms and vocabulary; adaptations for diverse learners; organization of the classroom; both formative and summative assessment; and reflection. Other models include defining the objectives in terms of the cognitive domain, the affective domain and the psychomotor domain.

There are many resources for teachers in the planning of lessons. Colleagues share ideas about what worked well. The internet offers many resource materials for developing lessons. The teacher's edition of a textbook offers suggestions for lesson planning and related ancillary materials offered with textbooks all offer suggestions for developing strong lessons. Teachers can also look to their national and state standards for aid in developing effective lessons. The Interstate New Teacher Assessment and Support Consortium (INTASC) (1992) exhibits the process of lesson planning in their core standard Principle #7: "The teacher plans instruction based on knowledge of subject matter, students, the community and curriculum goals."

## Applications

### Assessment

An important element of lesson planning is providing for assessment of the objectives that are outlined as important content and skills that students must learn. There are two types of assessment: formative and summative. Formative assessment is the continual assessment of students during the course of the lesson. These informal assessments are given throughout the lesson so that teachers can modify activities and check for understanding. Here, teachers are interested in determining whether students are grasping the lesson while the actual lesson is taking place. Formative

assessment includes observations of performance tasks, skills checklists, portfolio assessment, conferencing, peer reviews, *writing to learn* activities such as journaling, and self-assessment. Summative assessment is the culminating evaluation of a student. This form of assessment is that final paper, project or activity that shows if students have learned the material presented.

### Differentiating Lessons

Differentiating means providing appropriately challenging learning experiences for all the students. Teachers should plan lessons with all students in mind. There are basically three groups of learners that require differentiating of lessons: those of diverse cultural or linguistic backgrounds; those who are at-risk, having problems that could interfere with successful learning; and students with disabilities. However, teachers also can differentiate lessons based on differences in readiness and interest (Tomlinson, 2001).

### Developing Objectives

Objectives are descriptions of learning outcomes. Outcomes refer to both the anticipated results of the lesson as well as the general kinds of student outcomes desired in the mode of lesson planning (Uhrmacher, Conrad, & Moroye, 2013). These objectives clarify exactly what teachers want their students to learn, providing focus and direction to any lesson. Through use of well-developed objectives, teachers are signaling what is important in the lesson. Bloom's (1956) 'Taxonomy of Educational Objectives' breaks down objectives into three domains: the cognitive, the affective, and the psychomotor.

The cognitive domain of objectives focuses on intellectual outcomes, specifically understanding of knowledge and developing thinking. Generally, this domain encourages objectives that include elements of: knowledge, comprehension, application, analysis, synthesis, and evaluation. The affective domain emphasizes feelings and emotions and encompasses students' interests, attitudes, appreciation, and methods of adjusting. The psychomotor domain emphasizes motor skills.

Another model by Gagne, Briggs and Wager (1992) outlines different forms of objectives and includes: verbal information, intellectual skills, cognitive strategies, problem solving, motor skills, and attitudes objectives.

### Motivating Students

Lesson plans must include strategies for motivating students. While teachers don't have to do as much to motivate students who already possess intrinsic motivation (an inner need for interest in learning), teachers do need to provide incentives or reinforcers to those students who need to be extrinsically motivated. Orenstein, Lesley, and Mindes (2005) suggest several ways to motivate all students. They suggest that teachers must:

- Encourage student interest at the beginning of a lesson
- Maintain student curiosity and involvement throughout a lesson

- Provide interesting and varied methods to activities
- Provide active learning experiences
- Permit student autonomy in organizing their time and effort, and,
- Provide choice and alternatives in meeting lesson requirements

### **Sequence of Procedures / Activities**

Lesson plans include activity planning, or the written description of exactly what the teacher will do or say to help students learn content or develop a skill or strategy (Price & Nelson, 1999). There are certain elements that are incorporated into any activity or procedure sequence. Teachers pre-plan their activities, outlining those that will bring about the outcomes that have previously been outlined in a lesson plan. Part of the pre-planning includes determining how to motivate students.

The next part of the activity sequence is the activity beginning, where students are prepared for the start of the lesson and expectations are set up. The activity middle provides a specific description of what the teacher and students will do. The activity closing ties up all the elements discussed in the lesson, reviews major ideas, and discusses future lessons or activities (Price & Nelson, 1999).

Orenstein & Hunkins (1993) outline criteria for selecting and organizing appropriate content and activities in lesson plans. Content should be valid or truthful and carry some significance by meeting state and/or national standards. There must be a balance to the content and activities, as students learn general and specific depth to a lesson. The content and activities must possess *learnability*; in other words, the content and activities must be in the capacity of students to learn. The lesson must also be feasible to complete during a certain time frame and materials and other resources must be readily available.

Cruickshank, Bainer-Jenkins, and Metcalf (2003) list over thirty instructional activities that promote learning, such as academic games and competition, brainstorming, case studies, classroom centers of interest, debates, demonstrations, direct instruction, discovery learning, discussions, drill and practice, field observation, field trips, independent study, individualized instruction, learning modules, mastery learning, oral reports, presentations and lectures, problem solving, programmed and computer-assisted instruction, role playing, simulations, and tutoring.

## **Further Insights**

### **Backwards Design**

Backwards Design is a standards-based format for developing lesson plans and units that are driven by outcomes rather than activities. It is an inquiry-based process to help students facilitate standards-based inquiry in their classrooms more effectively. Teachers begin their lesson planning by identifying

specific learning objectives that are connected to state and/or national standards. They create detailed alignments of standards to assessments and then plan learning experiences and instruction. Instead of moving linearly through a series of activities, teachers make a conscious effort to emphasize particular skills and knowledge needed to meet specific learning objectives (Hendrickson, 2006).

There is a detailed correlation of academic standards to each activity, with an alignment of an assessment that illustrates and assesses that activity. Backwards Design stresses this relationship between objectives and assessments. Assessments are critical for monitoring student learning (Wiggins & McTighe, 1998).

### **Children Develop at Own Pace (DAP)**

DAP is a model of lesson planning for younger children. Developed by Sue Bredekamp (1997), this model advocates the planning of instruction by evaluating knowledge about younger children to develop daily plans. This model promotes methods and approaches that are good practice for younger children, as teachers analyze milestones to develop lessons: physical, intellectual, and socio-emotional milestones. Steps to planning lessons within DAP include checking the calendar to see what impacts the classroom on a daily basis; reviewing program goals and frameworks; reviewing the developmental milestones of the age group; choosing sequenced skilled activities that are developmentally appropriate; developing a theme for instruction; checking anecdotal notes and IEPs for special needs students; and, gathering the materials needed for the activities (Petersen, 1996).

### **Direct Instruction**

Direct instruction is a teaching model or approach for implementing standards-based instruction. In this model, the teacher demonstrates the lesson, the teacher works together with the students to practice the lesson, and then the students practice the skills by themselves. The students are assessed to determine if they have mastered the content or skill. The teacher is involved in explicit teaching, with the teacher directing the lesson. Information is presented in small steps, with mastery of that step before students can move on to the next part of the lesson. Content that is appropriate for this approach to teaching includes: basic knowledge, basic skills, strategies, concepts, class rules, procedures, and social skills (Price & Nelson, 1999). This convergence of important factors includes the right kind of comprehensible input, a supportive context, large amounts of time and conducive psychological characteristics (e.g., patience, tolerance of ambiguity, and integrative motivation) (Morrow, 2013).

### **Informal Presentations, or Mini-Lessons**

Mini-lessons are those short 15 to 20 minute focused presentations, whereby teachers deliver information in a clear and concise way to small or large groups. Teachers need to have strong knowledge of the topic and often present the material

through use of graphic organizers. Mini-lessons are generally focused on topics that students need to know in order to complete the activity required in the lesson plan.

### **Structure Discovery Model**

In this model or approach to teaching, students discover content or skills rather than having the teacher present it to them. The teacher pre-determines lesson objectives in their lesson plans and students satisfy the objectives by working to learn the academic content. This approach to teaching promotes higher-level thinking skills and enhances retention.

## **Terms & Concepts**

**Advanced Organizers:** Advanced organizers are graphic organizers or statements that are presented to students so that they have a better understanding of a concept or new material.

**Extrinsic Motivation:** Students who do not possess the ability to motivate themselves into action must be extrinsically motivated through use of tangible rewards or intangible rewards such as praise.

**Formative Assessment:** Formative assessment is a form of assessment that provides for immediate evidence of student learning in a particular course or at a particular point in a program. Formative assessment improves the quality of student learning and should not be evaluative or involve grading students. By informally evaluating students during a lesson, the teacher can gain an understanding of what the students know or can do, based on instruction to that point in the lesson.

**Individual Educational Plan (IEP):** An Individual Educational Plan (IEP) is a written plan for the special education of a child with a disability. The IEP describes what the student can already do and what the student needs to learn in order to reach his or her goals. A team of professionals writes the IEP.

**Intrinsic Motivation:** Intrinsic motivation is apparent when students engage in an activity for its own sake, without an external incentive.

**Objective:** An objective is a statement of a learning outcome.

**No Child Left Behind Act:** The No Child Left Behind Act (2001) was passed by the federal government in 2002 to improve failing schools, and to assure all students in the U.S. receive the education needed to succeed. In 2012, the administration of President Barack Obama distributed waivers to the act, which exempted states from certain aspects of the educational standards (Klein, 2013).

**Summative Assessment:** Summative assessment is a form of assessment used to check the level of learning at the end of

the program. This form of assessment gives the teacher a clear understanding of what the students know or can do at the end of a lesson, unit, or semester.

**Teachable Moments:** Those spontaneous teaching times when a classroom event happens and immediate follow-up and discussion is necessary.

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# Addressing Plagiarism

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## Overview

### What is Plagiarism?

Plagiarism is defined as presenting someone else's work or ideas as your own (Badke, 2007). Often this involves student's copying homework, wandering eyes during an exam and, in more serious cases, it can mean entire report plagiarizing (Berger, 2007). Plagiarism essentially constitutes misrepresentation and fraud (Badke, 2007). In all cases, plagiarism is cheating.

Studies have shown that cheating is on the rise, specifically cut-and-paste plagiarism from Internet sources. According to various studies and reports, over two-thirds of college students admit to cheating on a written assignment or test during college (Glazer, 2013). A 2005 study from The Center for Academic Integrity showed that 40 percent of the 50,000 undergraduates interviewed admitted to having plagiarized from the Internet, compared to 10 percent in 1999 (Badke, 2007, p. 58). The Center, which researched more than 50,000 students since 1990, cited that in a 1999 survey of college students, 75 percent said they had plagiarized during the past year and 10 percent of the students admitted they had plagiarized off the Internet (Embleton & Helfer, 2007). By 2001, 4 percent of survey participants said they had copied off of the Internet (Embleton & Helfer, 2007). However, a 2013 study by the Josephson Institute (Glazer, 2013, p. 4) showed that the percentage of students who reported plagiarizing on a test or homework dropped slightly from 2008—when 82 percent of students admitted to copying homework, 64 percent admitted to cheating on a test, and 36 percent admitted to plagiarizing content from the Internet—to 2013 when 74 percent admitted to copying homework, 51 percent admitted to cheating on a test, and 32 percent plagiarized content from the Internet. While some experts attributed this to tougher anti-cheating policies, others claim that students are becoming more adept at avoiding detection.

The International Institute for Educational Planning has conducted a research that looked into the extent of poor ethics and corruption in education since 2001. Their report, "Corrupt Schools, Corrupt Universities: What Can Be Done?" presents their findings from 2001–2006 and determined that there is an overall "weakening of ethical norms" in the United States and internationally (cited in Labi, 2007). The problem of academic fraud in the United States is so pervasive that it is beginning to dilute the quality of educational degrees, whether Bachelor's, Masters, or Doctorates. The United States is particularly

### Abstract

Studies have shown that cheating is on the rise, specifically cut-and-paste plagiarism from Internet sources. This article provides an overview on the subject of plagiarism in the public schools, a general definition of the subject, and various statistics on the rise of plagiarism over the past several years. The Internet is cited as a major factor in the increase in plagiarism. The article also covers the options that are available to schools and teachers to help identify plagiarized work as well as to help students understand the difference between legitimate research and plagiarism.

susceptible because it is so advanced in terms of technological offerings, such as distance learning.

Alarmingly, 77 percent of the 50,000 students polled by the Center for Academic Integrity did not view plagiarism as a serious offense (Badke, 2007). The International Institute for Educational Planning report noted that in India, cheating is now so prevalent that when some universities tried to fight back, students protested their right to cheat (Labi, 2007). Some blame technology, from text messaging to iPods and their nearly invisible earphones. There are also websites that advertise term papers for sale to students. Yet the problem isn't technological; it is human (Berger, 2007).

### Why do Students Cheat?

There are many reasons why students continue to plagiarize work. Some students complain about the types of assessments teachers give, others blame the pace and demands brought on by the No Child Left Behind Act (NCLB) (Dye, 2007). Students certainly are under a lot of academic pressure and are expected to know more with regards to technology and information than they did twenty years ago. According to a 2011 ethics survey of over 20,000 Los Angeles, California, high schoolers, one-third of those polled believed they needed to cheat in order to be successful (Glazer, 2013, p. 4).

Other students simply are unaware that the information they take from one source and use in their own work constitutes plagiarism. Tom Holt, CEO of the technology company Surf Wax, clarified that every individual has a different idea of what plagiarism is and this creates confusion for both the teacher and the student (cited in Dye, 2007). Yet none of these reasons fully explains or justifies the outbreak of cheating that is taking place.

Aside from the students who are ignorant of the fraud they are committing, there are plenty of other students who are fully aware of their deception (Badke, 2007). These students have decided that the risk is worth taking. Often these students are desperate, because they lack time or the necessary skills to complete an assignment (Badke, 2007). Other times, they simply have not done their own work and are confident that they will not get caught.

Another breed of plagiarism is the most worrisome. This is the group of people who argue that nobody owns words and thus published information is free for the taking (Badke, 2007). Today's hyper-technological generation has repeatedly challenged the concept of intellectual property by lobbying for free access to, well, pretty much everything (Badke, 2007).

## Further Insights

### What Can be Done to Address Plagiarism?

Print plagiarism used to be considered a nuisance that only affected scholars and writers, but with the upsurge of the Inter-

net, copying someone else's work is easier than ever (Dye, 2007). Some obvious signs of plagiarism are a writing style that differs from other work the person has submitted, uneven language and ideas or diction that seem more sophisticated than the writer's previous work (Badke, 2007). One warning sign is when a student who does not speak well in class or never seems prepared, submits an articulate and detailed paper (Embleton & Helfer, 2007).

In the past, it was difficult to prove a student had plagiarized unless a teacher knew exactly what source was copied. Now, there is such a massive amount of information online that a teacher or expert can no longer be familiar with every source that exists on a topic making it even more difficult to identify plagiarized work. Many teachers and schools utilize plagiarism software that compares a student's submitted work to online documents.

Many teachers have similar consequences for cheating including giving a zero to the offending students. Sometimes parents are contacted and detentions or suspensions are given (Berger, 2007). And always, there is the loss of trust. Unfortunately, some teachers and parents hold contrary views so students can get mixed messages.

### Education as the Best Prevention

The real "challenge is to help students recognize plagiarism as a problem and to correct it" (Badke, 2007, p. 58). Many people do not realize when "they are committing plagiarism. They cite sources carelessly, or they falsely believe that information" that is available for free on the Internet is fair game (Badke, 2007, p. 58). Some students believe that what they are doing is simply research. Better education on the subject of plagiarism is certainly an essential aspect to the reduction of this widespread problem.

Research is an interactive process in which the researcher reviews sources, evaluates them, challenges and then forms his/her own opinions about the topics (Dye, 2007). Education in avoiding plagiarism should include detailed information regarding how to cite sources explaining specifically what information requires citation (Badke, 2007). Teaching students how to evaluate the reliability of sources, especially websites and the accuracy of their information will also help students appreciate the value of conducting quality research (Embleton & Helfer, 2007).

A lesson in paraphrasing would also help minimize confusion for students who honestly are not intending to plagiarize (Badke, 2007). To help students avoid unintentional plagiarism and to verify that they actually do their own work, teachers can require students to begin the process in class or ask students to turn in a paper outline and early drafts to see the paper in process (Embleton & Helfer, 2007). Teachers could also have students attach printouts of the sources they have used to their paper (Embleton & Helfer, 2007).

Trying to stop plagiarism requires that teachers help students understand why it is wrong. Teachers need to explain that intellectual property rights are valuable because everyone should get credit for the work they produce (Dye, 2007). Teachers must explain the difference between access and appropriation, and students need to understand that while conducting research, access to information does not equal permission to use the information as your own (Badke, 2007). Also important is the idea that information is only as reliable as the source from which it came (Dye, 2007). If that source is not credited, then the information is not valuable (Dye, 2007). Crediting sources gives strength to both the student's paper and the source itself.

It is also important for teachers to remember that a student's reasons for committing an act of plagiarism have nothing to do with the teacher (Lang, 2007). It is not personal; it is academic dishonesty and should be dealt with accordingly. The proper response is to document the offense and follow the standards that have been established (Lang, 2007).

Students should be provided with a written contract that outlines the expectations of each specific course including plagiarism policies (Carter & Punyanunt-Carter, 2007). The generic warning in a class syllabus may not be enough for students to understand exactly what constitutes plagiarism (Embleton & Helfer, 2007). Many schools have academic honor codes, but students probably get this information with a lot of other details and its seriousness is not often emphasized (Embleton & Helfer, 2007).

### **Strategies & Tools to Curb Web-Based Plagiarism**

Fortunately, computer programs that alert teachers and other professionals when someone is taking credit for work that is not his or her own are becoming more common (Dye, 2007). These anti-plagiarism tools are being used from grade schools to colleges and universities.

Certain digital programs allow teachers to conduct an automated search of digital content databases to make it easier to identify if work has been published or submitted before (Dye, 2007). The basic idea behind these tools is similar to what teachers used to do by hand; but it operates much faster and covers much more territory. The teacher uploads the document in question, whereupon the program checks each word pattern against billions of original sources and then creates a report pointing out passages that match too closely with existing information from books, articles and Internet websites (Dye, 2007).

### **Image Protection**

Digital tools to address the theft of text-free intellectual property like video, graphics, and pictures, do exist, but they are often very expensive and unaffordable for many. A lot of online content utilizes a process called digital fingerprinting, which is an online watermark that can be monitored on major search engines in the event the watermark appears anywhere the user did not authorize (Dye, 2007).

The makers of anti-plagiarism programs claim their purpose is to deter plagiarism. If teachers inform students that they use these programs, many students that might have considered cheating may decide against it (Paterson, 2007).

Google has also taken action to combat plagiarism with the rollout of the AdWords program, which places certain companies in Google's "forbidden advertising zone" (Fischman, 2007). Advertisements for essay writing services will no longer be allowed to display on Google's pop up ad space (Fischman, 2007). These "paper mills" are legal because they advertise under the stipulation that they are to be used for assistance only, but it is clear that students are buying these customized papers and placing their own names on them.

### **Student Response to Plagiarism Treatments**

All colleges and universities have written procedures that outline the specific guidelines regarding academic plagiarism and how their institution decides to take action in the event of student dishonesty (Carter & Punyanunt-Carter, 2007). The response by college instructors to students cheating varies greatly depending on the individual teacher. "Social validity research focuses mainly on the appropriateness of treatment procedures, an area of research also referred to as treatment acceptability" (Carter & Punyanunt-Carter, 2007, ¶ 3). The term treatment acceptability is a term used to describe the judgments in response to treatments by actual or potential consumers of treatments. For example, "in the college classroom, the consumers of treatment are the college students" (Carter & Punyanunt-Carter, 2007, ¶ 3).

One study focused on various treatments employed in response to incidents of plagiarism by college students (Carter & Punyanunt-Carter, 2007). Participating college students rated the acceptability of different treatments by college faculty in response to a hypothetical student who plagiarizes a research paper (Carter & Punyanunt-Carter, 2007). 267 students participated in the study at a large public university (Carter & Punyanunt-Carter, 2007). The subjects first looked at a description of a student who had plagiarized and then read five treatments used by instructors to handle the incident:

- The student who plagiarized received a failing grade on the assignment
- The student failed the course
- The student was required to go before a university review board
- The student was required to redo the assignment
- The student was not penalized by the instructor (Carter & Punyanunt-Carter, 2007).

The participants then rated each action on their extent of acceptability.

The results of the study revealed that students favored the “choices of giving the student a failing grade and allowing the student to redo the assignment as the most acceptable treatments” (Carter & Punyanunt-Carter, 2007, ¶4). Students determined that students going before the review board and not getting punished at all were equally undesirable treatments. The study also suggested consequences should be delivered immediately in order to be effective. Delayed action was found to be less effective and may even imply condoning dishonest behavior (Carter & Punyanunt-Carter, 2007).

## Viewpoints

### Critics of Digital Monitoring Tools

Many institutions believe these tools remove a layer of trust between teachers and students (Dye, 2007). In fact, some Ivy League colleges such as Harvard and Yale initially decided not to institute anti-plagiarism programs (Dye, 2007). Charlie Lowe, a writing professor at Grand Valley State University, MI is the spokesperson for the Conference on College Composition and Communication, a 6,000-member group that has published a paper criticizing anti-plagiarism tools (Paterson, 2007). Lowe states that these programs create a negative environment for student writers because it indicates a lack of trust (cited in Paterson, 2007). The CCCC also believes these programs infringe on students' rights by putting their work into databases to be inspected and compared (Paterson, 2007). Lowe and the CCCC also have a problem with the fact that student work is being handed over to these software companies, who then turn a profit (cited in Paterson, 2007).

Students at Virginia's McLean High School started a petition to protest the use of Turnitin because they felt students were considered guilty until proven innocent; 1,200 individuals signed the petition (Paterson, 2007). Likewise, Rebecca Moore Howard, associate professor of writing and rhetoric at Syracuse University, worries that anti-plagiarism programs focus too much on pointing out flaws and failures rather than teaching students how to write well (cited in Paterson, 2007).

Another complaint of plagiarism detection services is that they can give false positives or even miss a paper that has been entirely plagiarized. Plagiarism of ideas is still something that technology cannot detect as well (Paterson, 2007). Others critics believe that teachers should not rely on the technology because eventually students will find a way to bypass the system or create a counter-program to overcome detection (Paterson, 2007). This is already happening with the advent of essay writing services that will custom create an original paper at the right price (Embleton & Helfer, 2007). Since the paper has never been written before, it will not be in a database for detection, even though it is still plagiarism.

The founder of the anti-plagiarism tool Turnitin, John Barrie, defends his product saying that it is just an instrument to help

teachers address the existing problem. He compares it to a test proctor at a test or a referee, who is there to assist in keeping a level playing field (Paterson, 2007). It was never intended to replace instruction. Barrie estimates that Turnitin, which is used by about 6,000 schools, has reduced plagiarism rates in those locations by more than 80 percent (cited in Paterson, 2007). A separate study printed in the journal *PS: Political Science and Politics* proved that when teachers inform students that they plan to use plagiarism detection software, plagiarism was reduced significantly, compared with warning them not to plagiarize, which had no effect on students (cited in Paterson, 2007).

### Cheating or Collaborating?

Some critics even believe that plagiarism is not that big a concern. Advocates of cooperative learning suggest collaborating on tests and papers is more like the real world, where people work in teams (Berger, 2007). Berger (2007) argues that school is not the real world and if it were, a multitude of students would have to be fired because they do not contribute enough. It is important that students understand what they are taught rather than just work with others who understand (Berger, 2007). Tests and essays serve to show teachers what students have to offer so that when the time comes they will be able to collaborate effectively. Adults do students a disservice when they justify and condone deceit. If incidents of plagiarism are going to decrease, students need clear rules and ethical standards (Berger, 2007).

## Terms & Concepts

**Access:** Access refers to having permission to view information.

**Appropriation:** Appropriation refers to taking and using information as one's own

**Cut-and-paste Plagiarism:** This term applies to the type of plagiarism that is performed when a person simply copies text verbatim off the internet and pastes into their own work.

**Distance Learning:** The term distance learning is applied to instruction that occurs remotely rather than in person. Teachers and students may communicate via mail, telephone, email or online programs.

**Intellectual Property:** Intellectual property refers to the specific legal rights which authors have regarding ownership of their work.

**Internet:** The Internet is the electronic communications network that delivers information and connects computers around the world

**No Child Left Behind Act of 2001 (NCLB):** The No Child Left Behind Act is a United States federal law that aims to streamline education and narrow the achievement gap across the nation's schools.

**Plagiarism:** Plagiarism refers to presenting someone else's work or ideas as one's own.

**Treatment Acceptability:** The term treatment acceptability is defined as the judgments in response to "treatments by actual or potential consumers of treatments. For example, in the college classroom, the consumers of treatment are the college students" (Carter & Punyanunt-Carter, 2007, ¶ 3).

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