DOCUMENT RESUME

ED 377 473   CS 011 939

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TITLE   Vygotsky and the Socialization of Literacy.
PUB DATE   [91]
NOTE   13p.
PUB TYPE   Reports - Descriptive (141)

EDRS PRICE   MF01/PC01 Plus Postage.
DESCRIPTORS   Class Activities; Cognitive Development; Cross Age
              Teaching; Grade 6; Integrated Activities;
              Intermediate Grades; Middle Schools; Theory Practice
              Relationship; *Writing Assignments; *Writing
              Instruction
IDENTIFIERS   Collaborative Writing; *Vygotsky (Lev S); Writing
              Development; *Zone of Proximal Development

ABSTRACT
              An activity has been used successfully for several
years in a middle-school computer class to integrate writing
instruction with computer science. Taking approximately five class
periods, the activity consists of three phases: (1) the 6th-grade
students use paper and pencil to write a story in any literary
format; (2) 11th- and 12th-grade volunteer editors from a typing and
word processing class help the students edit the stories; and (3) the
editors and authors work collaboratively to enter the text of the
story into a desktop publishing program. The activity never fails to
capture the imaginations of the students. The activity is repeated
three or four times before the end of the trimester. The stories
become more intricate and need less editing as students repeatedly
participate in the activity. The students also become proficient at
publishing their own text. The theoretical background to explain why
the activity is successful lies in Lev Vygotsky's theory of the zone
of proximal development. He proposed that a child's immediate
potential for cognitive development is bounded on the lower end by
that which the child can accomplish with the help of a more
knowledgeable other. Three aspects are crucial: the use of whole
activities, the need for social interaction, and change or growth.
These concepts may be applied to numerous activities, in diverse
domains, in many classrooms, including science and mathematics
classrooms. The underlying assumption behind these concepts and
activities is that cognitive development and instruction are socially
embedded. (RS)

Running head: Socialization of Literacy

Vygotsky and the Socialization of Literacy

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Vygotsky and the Socialization of Literacy

As teachers, we tend to have special or favorite activities, lessons, or presentations that we "know" will work. These lessons or activities may have been passed on from teacher to teacher, or may be activities that the teacher has created. Unfortunately, we tend not to explore *why* the activity is effective; merely having an activity that one can count on is often reward enough. However, there is real professional growth to be made in understanding the foundation and theory behind why certain activities are effective. Understanding the *why* of an activity empowers the teacher to construct similar and equally effective activities for classroom use. The following article discusses an activity that I have used for several years in a middle school computer class to integrate writing instruction with computer science. In addition to discussing the activity itself, a t! eoretical framework is constructed that allows for both an explanation as to why the activity is successful and provides for the creation of similar activities.

An Effective Classroom Activity

The activity that I have used in my 6th grade middle school computer science class is neither exceptionally novel nor complex. The activity takes approximately five class periods and involves three phases. Phase one entails the students writing a story using paper and pencil. In phase two, the 6th grade story *authors* are paired with 11th and 12th grade student *editors* - volunteers from a typing and word processing class. Following the editing process, phase three involves the authors and editors working together to enter the story into the computer using children's desktop publishing software.

Phase one, the initial story writing, usually takes two days, and I actively solicit help from the students' English teachers. The students are giv' ` the freedom to choose any topic in which they are interested, and to write in any literary format, such as narratives, poems, or mysteries. Students are free to roam the class and share ideas with others as they compose their stories. Students are encouraged to write for meaning and not to be concerned with writing mechanics. My role, and the role of any assisting teacher, is to be an interested reader first and a collaborator second. The focus of this · phase is on the meaning of the literary work.

After the rough drafts are completed, the authors are paired with more experienced students, 11th and 12th grade volunteer editors from a typing and word processing class. At this point, the authors read their stories to the editors, and the editors help the authors with spelling, grammar, flow, and any ambiguities in meaning. The editors do not rewrite the story for the authors, but merely suggest improvements. Editors may be very direct in helping to correct errors in spelling and grammar, yet more inductive in improving a story's meaning and flow. This editing phase normally takes only one class period.

The final phase of the activity involves entering the text of the story into the computer. The editors and authors work collaboratively to enter the text using a desktop publishing software title that was written especially for children. The editors are experienced at using the publishing software as the result of their typing and word processing class. The publishing software allows the authors and editors to enter and edit the story's text, create a title for the story, and add a series of pictures to the text. The objective of the editors is not only to enter the text, but to also teach the authors how to use the p 'blishing software.

Once the stories have been created using the publishing software, three copies of each story are printed. One copy of the stc y is given to the author, one copy of the story is posted on the wall for all to read, and the third copy of each story is bound and placed in the library. Over the course of a trimester, this activity is repeated three or four times. Authors are usually adept at using the publishing software by the end of the second time this activity is completed; thus, the editors are no longer needed during phase three.

This activity never fails to capture the imaginations of the 6th grade students. They will often take their stories home during phase one, so that they are completed and ready for editing, and eventually for desktop publishing. As authors repeatedly participate in this activity three major changes occur: (1) the stories become more intricate, that is, authors begin using several characters in differing situations, performing different actions, (2) the stories need less and less editing and thus become more conventionally correct, and (3) the authors become proficient at publishing their own text.

Why this activity is successful is very important, as it allows for the generation of other successful activities. The theoretical background to explain why this activity is successful may be found in Lev Vygotsky's theory of the zone of proximal development.

Writing Within a Social Context

Lev Vygotsky (1896-1934), a Russian psychologist, formulated a theory of cognitive development that is based on a child's ability to learn socially relevant tools (e.g., hands, hammers, computers) and culturally based signs (e.g., language, writing, number systems). According to Vygotsky, children learn and develop through their interactions with their immediate social and culture' surroundings. Vygotsky believed that

a child first experiences an idea, a behavior. or an attitude in a social setting, the child then internalizes this experience so that the experience becomes a part of the child's cognitive structure. Thus, all psychological processes originate as social processes.

A central construct of Vygotsky's theory of cognitive development is his concept of the zone of proximal development. Vygotsky proposed that a child's immediate potential for cognitive development is bounded on the lower end by that which the child can accomplish on their own and on the upper end by that which the child can accomplish with the help of a more knowledgeable other, such as a peer, tutor, or teacher. This region of immediate potential for cognitive growth is Vygotsky's zone of proximal development.

Consequently, a child develops cognitively by first being exposed to tasks or situations in the upper end of the zone of proximal development. These tasks or situations may require a significant amount of assistance in order to complete. As the child learns to complete the task with less and less assistance, and eventually with no assistance, the child's cognitive skills develop. Vygotsky (1987) has stated, "What lies in the zone of proximal development at one stage is realized and moves to the level of actual development at a second. In other words, what the child is able to do in collaboration today, he will be able to do independently tomorrow" (p. 211).

In understanding the scope of Vygotsky's zone of proximal development, as it relates to the story publishing activity previously discussed, three aspects are crucial: the use of whole activities, the need for social interaction, and change or growth.

First, Vygotsky believed that we must not reduce higher mental functions, such as reading, writing, or problem solving, into a study of their component parts; but rather, we

need to study, teach, and learn higher mental functions in whole activities. Cole and

Griffin (1983) have stated that from a Vygotskian perspective

> we should be trying to instantiate a basic *activity* when teaching reading
> [and writing] and not get blinded by the basic *skills*. Skills are always part
> of activities and settings, but they only take on meaning in terms of how
> they are organized. So, instead of basic skills, a socio-historical approach
> talks about *basic activities* and instantiates those that are necessary and
> sufficient to carry out the whole process of reading [and writing] in the
> general conditions of learning. (p. 73)

According to Vygotsky, children are empowered as readers and writers when they

use reading and writing in authentic situations where the children are engaged in

purposeful and meaningful use of language. The authentic situation, or whole activity,

establishes the environment in which the zone of proximal development is embedded.

With respect to the story publishing activity, the writing, editing, and publishing

are all approached as whole activities. Authors are not asked to complete grammar sheets

or to identify main topics; authors are to write. The goal of the authors is to complete an

entire story, to engage in the whole activity of composing. After completing the rough

draft of the story, the authors then begin editing, with assistance from an editor. The

editing process involves the entire story, not just a single sentence or phrase. The authors,

with the help of their editors, are asked to take into account not only the mechanics of

spelling and grammar, but the fundamentals of meaning, style, and flow. Finally, the

authors are involved in the entire process of publishing their stories. Their involvement

may be minimal during the publishing of their first story, yet even then they are involved in

the entire publishing process from starting the program, to printing the finished product.

Second, Vygotsky concluded that children learn through their interactions with

others. Vygotsky (1981) stated, "Any higher mental function necessarily goes through an

external stage in its development because it is initially a social function" (p. 162). He believed that children initially experience knowledge and skills through interactions with other children and adults. Children internalize the knowledge and skills experienced during these interactions and eventually use the knowledge and skills to guide and direct their own behavior. Thus, social interactions, between those less experienced and those more experienced, are at the very heart of the zone of proximal development.

In addition, the social context of the zone of proximal development suggests that the zone must be viewed as not solely relative to the child, nor to teaching, but of the child engrossed in a collaborative activity within a specific social environment. The core of the zone of proximal development is the social system in which the child learns; a social system that is actively constructed by both the child and the teacher. It is this interdependence that is central to a Vygotskian view of the educational process.

The story publishing activity involves much social interaction, especially from those able to support the author's learning. The authors have full control over their writing endeavors. The teachers, however, are available for encouragement and support, both technical and moral, during the writing of their rough drafts. Thus, the teachers act as more knowledgeable others, and assist the authors whenever needed. The teachers are able to respond to the authors with assistance when the authors are pursuing skills and knowledge that lie in the upper end of their zone of proximal development.

During the editing phase, the authors work closely with the editors. The editors are able to demonstrate many skills the authors have yet to acquire. Thus, the editors provide instruction that is in the author's zone of proximal development. The editors,

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while not experts, are certainly far superior to the authors in terms of their knowledge of editing.

In addition, the authors work with the editors collaboratively to publish the authors' stories. Again, the editors are much more knowledgeable in the use of the publishing software than the authors, and the editors are able to model skills and knowledge that the authors do not currently have. Therefore, the editors are able to stimulate the authors within their zone of proximal development.

Third, Vygotsky believed that the goal of the zone of proximal development was change, or growth, in the individual. That is, the individual can do something independently today, that they could only do with assistance yesterday. However, this change need not be only in observable behavior; this change may also be metacognitive in nature.

According to Luis Moll (1990), "The focus [on change] would be on the appropriation and mastery of mediational means, such as writing, assessed not only or necessarily through independent performance, after guided practice, but by the ability of children to participate in qualitatively new collaborative activities" (p. 13). Therefore, change *may* involve more of a modification in the collaborative use of reading and writing in order to communicate meaning than in the transfer of knowledge from those more learned to those less learned. The end result of this type of metacognitive change may be to make children consciously aware of how they are directing the literacy process and applying this knowledge to reorganize future experiences or activities (see Moll, 1990).

In regards to the story publishing activity, with repeated exposure to the activity authors demonstrate change in all three phases. Some changes are behavioral and some

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changes are metacognitive. During the writing phase, authors begin writing more intricate stories with greater plot variation and character development. The authors begin using more than one character, engaged in more than one activity. As a result, the stories become longer.

With repeated experience, the mechanics of the writing also improves. The authors are more aware of the need for transitions and are more weary of sudden jumps in the story line. The authors also perform more self-editing during the writing process. Due to this increased self-monitoring, the editing phase is abbreviated. In addition, authors continue to need help with some vocabulary and grammar; however, the story's meaning, flow, and organization tends to improve greatly and needs little revision.

The final phase, the publishing of the text, shows the greatest behavioral improvement. Authors typically take over all the duties of publishing the stories from the editors during the second or third time the authors complete the story writing activity. Thus the authors have learned to do independently today, what they could only do in collaboration yesterday.

Implications and Applications

Applying Vygotsky's theory of the zone of proximal development to the successful story publishing activity illustrates several major concepts that may be used to create future successful activities. These concepts include,

- teaching using whole, authentic activities
- creating classroom exercises that allow for interaction with peers, upper class students, teachers, and parents

- allowing the students as much choice in completing a task as realistically possible

- presenting some tasks that students can perform successfully only with assistance

- providing sufficient support to enable students to perform challenging tasks successfully, then gradually withdrawing the support as they become more skilled

- constructing activities that are designed to stimulate both behavioral changes and cognitive changes

These concepts may be applied to numerous activities, in diverse domains, in virtually any classroom. In the science classroom, an example of an activity that would employ these concepts would be the much feared egg drop challenge. Middle school students, in small groups, are asked to design some type of protection for an egg that is to be dropped from a second story window onto a slab of concrete. Students may use any creative means for protecting the egg and may seek help from the teacher, their parents, or upper class students. An alternative would be to assign each group a "consultant" from an upper class science class.

An additional example from a middle school mathematics class would be the creation of word problems by small groups of students. For example, after completing a unit on a specific topic, such as equations with one variable ($2x + 5 = 25$), students would create five word problems that are relevant to their lives, such as, "If the cost of new roller blades is 60 dollars more than twice the cost of new knee pads, and new roller blades cost 100 dollars, how much are new knee pads?" Constructing word problems is a daunting task for most middle school students, however, with sufficient support all students should be able to create their own novel word problems.

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The underlying assumption behind these concepts and activities is that cognitive development and instruction are socially embedded. The knowledge and skills that children acquire depend on how they interact with others. They internalize the social world in which they find themselves, and these internalizations later form the basis for self-directed, conscious behavior.

The purpose of this paper was to demonstrate the usefulness of examining *why* certain activities work, that is, to propose that understanding the foundation and theory behind an effective classroom activity will help in the construction of additional effective activities. As classrooms become more diverse, and teachers are asked to do more with less, perhaps the most powerful weapon a teacher may possess is the knowledge of *why*.

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