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Learning to read: the zone of proximal development is ot enough

In this research project Vygotsky's ideas of language learning are applied to a situation in which children learn to read through playful computer writing. The strategy is based on the research of Arne Trageton. The participants in the application included 16 Finnish in-service elementary school and pre-school teachers who described children's book-making processes by reflecting them against Vygotskian themes. The teachers' descriptions, evaluated qualitative, were in line with Vygotsky's ideas. As a result, in proximal development the teacher must make a connection between the book-making process and children's interests and perception. On the level of actual development, the teacher monitors children's learning and teaches them skills needed in the book-making process. Children use their skills as instrumental tools and the teacher helps children to reach their goals and helps them to expose their intentions and motives during book-making. In the end, the teacher and children together attain a phase of producing new tools together and meet in the same shared zone of new cultural content and interaction through creative interpsychology.

Research method

The research task is to apply Vygotsky's ideas of language development to children's playful computer writing. The task is to present the process of learning to read as a process in which the content is socially mediated and the children take part in the production of the learned content. The participants in the research have been 16 Finnish in-service elementary school and pre-school teachers. The teachers attended a course of playful computer writing led by Arne Trageton (cf. Trageton 2008), and as a part of their

course, the teachers practiced playful computer writing with their pupils. The pupils produced their own books with pictures. The writing was done with a computer. After the practice the teachers brought examples of the pupils' books to Trageton's course, where they were discussed. After the discussion Reunamo presented the teachers a Vygotskian model of language learning (Figure 1). The teachers were asked to describe the children's book-making process in accordance with the model. The teachers wrote down their descriptions.

Firstly, the teachers were asked to describe situations that would describe the level of proximal development, the level which the children could attain with the help of a teacher, i.e. not alone. The distance from the children's own skills to those needed to make a book can be described as the problems encountered in the art of making a book.

Secondly, the teachers were asked to describe the phase of actual development, which are the skills that children had acquired during the process. The teachers were asked to describe things that the children had learned while making the book. What were the children taught? What kind of learning took place? This describes skills the children had developed by the end of the process.

Thirdly, the teachers were asked to describe the children's motives in their task. Writing begins to function as a tool for attaining objectives. What motivates and directs the children's work?

Fourthly, when all the children in the class are engaged in making books, it affects class interaction. Children make new discoveries; they learn from each other and influence each other. Book-making becomes a cultural process. The teachers were asked how the children enhanced the book-writing process.

Some teachers answered with complete sentences and some teachers only listed their observations. The teachers' descriptions were copied and delivered to every participant. Reunamo completed the actual analysis process and interpretation of the answers. The results were again related to Vygotskian ideas after the interpretation. The sketch of the analysis has been sent to the participating teachers.

Results

Trageton (2005, 2008) found that playful computer writing is an effective strategy in learning to read. This article tries to explain this phenomenon through Vygotskian eyes.

Proximal development

At the beginning of the book-writing process, children depend on co-operation with adults and on instruction (cf. Vygotsky, 1988, p. 268). The zone of proximal development can be described as the distance between children's independently usable book-constructing skills and the level of potential development as determined through book-writing with adult guidance or in collaboration with more capable peers. The zone of proximal development defines book-making functions that have not yet matured, but are in the maturation process; functions that will mature tomorrow, but are still currently in an embryonic state (cf. Vygotsky 1978).

Playful book-writing can arise as a means of communication between a child and the people in his or her environment. Only subsequently, upon conversion to internal writing skills, do they begin to organise children's independent writing process, that is, it becomes an internal mental function, and the children can start to write books themselves. (cf. Vygotsky 1978, p. 88-91). In addition, pretend writing, writing where the

child can not write at all, can be effective. In pretend writing, children can attach all of their abilities to the writing process. When the teacher gets in touch with children's pretend writing process and begins to write together with the children, the zone of proximal development becomes visible for the teacher. The teacher can begin to widen the level of shared writing. In direct teaching, children can use only the external skills that the situation has to offer, because the "right" way to write may have nothing in common with the children's own skills and ideas, and thus the action remains incomprehensible.

Children need help with writing. They cannot spell correctly, which can result from, for example, incorrectly perceiving sound-letter correspondence or the length of a letter. Some children are afraid of mistakes. When children's writing skills are limited the text can be unreadable even to the children themselves.

Children also need guidance with computers. They may be unfamiliar with the computer keyboard, mouse or other accessories. Often the user needs to sign into the computer, a process which may differ between machines. New problems arise with the software (e.g. Word, Power Point,) as children develop the practical skills in the writing process.

There is also a zone between the beginning and ending of a book. Most children need guidance in inventing the story for the book. Most children are not used to expressing themselves in a way suitable for a book, and production can be limited or blocked. Describing what has happened and putting it into writing may be difficult. The teacher helps with enriching questions.

The social aspects in the process are crucial. Children usually make the books in pairs. Children collaborate and teach each other. Nevertheless, partners also differ in their opinions or some children want to make their book alone. In a class full of fumbling children, more teacher resources are often needed. The teacher-pupil scaffolding sometimes fails, because there are too many children. Luckily, some children often have surprisingly good skills with both computers and writing, and children can help each other.

Actual development

Children's actual writing skills are intrapsychological, that is, skills that can be used independently. According to Vygotsky (1978), actual development refers to mental functions that have already been established as a result of already completed developmental cycles. When we determine a child's writing skills by using tests, we are almost always concerned with the actual developmental level. In writing, it is thus important that the child acquires independent skills and can work autonomously. In practicing writing or doing homework, peer help is often prohibited, because of the fear that the children are not learning themselves (cf. Vygotsky 1978, pp. 85).

The actual developmental level characterises mental development retrospectively: it is about developmental cycles already completed and a summary of them. Vygotsky criticises the focus on the level of actual development. It restricts the evaluation of the learning or the writing process; consideration is given only to those solutions which the child reaches without the assistance of others, without demonstrations or without leading questions. The implication to solve a variety of more advanced problems receives little attention. By concentrating on children's separate and individual

skills, we determine the mental development level with which education should reckon and whose limits it should not exceed. The result could be not only a failure to help children in their development, but also the reinforcement of their handicaps by making children to grow accustomed to the forms of earlier development and suppressing the rudiments of progress (cf. Vygotsky 1978, p.86, pp. 88-90).

In this article Vygotsky's criticism is not wholly accepted. Children's autonomous and individual skills can and should be regarded as important. Thus, it is appropriate for the teachers to describe the things children have learned and been taught through the process of writing a book. It is also quite possible for the teacher to teach the children and without feeling guilty about it. When writing a book together with others, children learn the alphabet, to spell words, to use a space between the words as well as compounds and clause structures. Children develop writing tools of their own.

Children need some solid computer skills to work effectively. Children can learn to start and close the needed software. Children need to learn to use capital and small letters, and different fonts require attention. Because children like to make books with pictures on every page, children can do the drawings or paintings by hand, and either the children or the teacher can then scan the pictures. Children can also make drawings on the computer and copy-paste them into the book. Children can learn to use the delete button, correct text and layout, and save their work. Most of the learning occurs through the proximal level as the writing advances. Thus, the children do not learn to use computers first, rather, they learn computer skills as a by-product of the book project.

Children learn social skills. They learn the skills of co-operation. Children need both to be strong to realise their own ideas, and to take the others' points of view

into account. When children learn that feedback is a natural and helpful ingredient in working, they learn something important. During the book-making process, children play many roles: they need to be writers, learners, instructors and ICT experts, among other roles.

Children learn to work autonomously. They learn to orientate themselves and they learn metacognitive skills. Children can use the pictures of the book as orientation:, they become skilled in plotting a story. Book-writing is a great way to analyse one's own writing. As children's thoughts become visible, children become more conscious and independent. According to Vygotsky, the richer the experience the child has acquired, the richer and more productive the act of imagination can be. Even if an imaginative construct does not in itself correspond to reality, the feeling it evokes can be real (Vygotsky 2004, pp.15-16, pp. 20).

Instrumental tools

The third aspect of the writing process described here is intrapsychological. The focus of the development is on playful computer writing, seen as a tool for personal production. According to Vygotsky (2004), a child's play is not simply a reproduction of what he has experienced, but a creative reworking of the impressions he has acquired. The child combines impressions and uses them to construct a new reality, one that conforms to his own needs and desires. This constitutes a situation that the child has created. A construct of fantasy may represent something substantially new, never encountered before in human experience and without correspondence to any object that actually exists in reality; however, once it has been given material form, this crystallised imagination that has become an object begins to actually exist in the real world, to affect other things

(Vygotsky 2004, p. 11-20). Creation gives rise to needs, motives and desires, the instruments an individual needs for environmental change (Reunamo 2007b).

In playful computer writing, children have a social and personal motive to use language to produce something. According to Vygotsky, a child's will is an internal process and becomes externalised in action. The route toward separating meaning from the thing is similar to the route toward becoming conscious of desires and motives. The voluntary choices, decisions, conflicting motives, and other processes begin to separate from their implementation (Vygotsky 2005). In contrast to the previously described processes, this places children in an agentive role. Children produce culturally meaningful artefacts; books. What is the motive behind the children's endeavour?

According to the teachers, the book itself is an important motive. Children make a concrete and valued product by themselves. The cover or even the pages can be laminated to give a finished look. The children can see their accomplishment. The pages are never messy, or if they are, they can be printed anew.

The book has personal relevance: I did it! I can, I want to, I will. Children can see themselves reaching and fulfilling their objectives. They can see their own creation. Children's own interests emerge. Children experience themselves as cultural producers. Many children also enjoy the role of a writer.

The computer also motivates the children. With the computer, it is easy to correct mistakes and make changes. The computer also offers the potential to make different versions of the book. Some children want their book to have many pages, which is easy with pictures and a big font. The result is always neat.

Playful computer writing also motivates children socially. Children entertain each other with their books. Children like to present their books to others. Positive feedback feels especially good when the book discussed reflects the children's personal motives. The children acquire experiences in which they are producers of cultural content and their endeavours are valued. Computer writing places weak writers on more equal footing with others. The direction of writing, the difficulties in drawing the alphabet, the distance between letters, the size of the letters or differences in hand and eye co-ordination no longer interfere with the writing process.

Producing new cultural tools

As Hakkarainen (2002) observes, the zone of proximal development differs, when there is a new creative task at hand, in which even the adult has no ready-made solution. The zone of proximal development is clearly meant for reproductive problems, where the other knows the answer in advance or can solve it along the lines of previous experience. Some actions produce novel artefacts, which can seve as a tool in the next activity (cf. Hakkarainen 2002). Because children produce novel artifacts in playful computer writing, the zone of proximal development does not cover every aspect of the book-making process. This type of activity is interpsychological, which means that development occurs between people. The focus is on producing cultural tools. When children produce different kinds of books and invent new ways of producing books, the new tools become interpersonal. As children advance in their book-making skills, they share new common ground. New social developments can be perceived arising between children. Children advance in drawing and painting on paper or with painting and drawing software on the computer. Children may experiment with animation and sounds. Children's processes

may reach another level of collaboration through email, blogs or other internet tools. As children produce new content for classroom interaction, the children are in fact adding content to the curriculum. In the end, the books that the children make are often quite impressive!

Vygotsky (2004) describes the process of the intrapersonal becoming interpersonal. Cultural creativity is present, in actuality, not only when great historical works are born, but also whenever a person imagines, combines, alters, and creates something new, no matter how small a drop in the bucket this new thing appears compared with the works of geniuses. The collective work depends on cultural conditions. The book-making experience allows children to venture beyond their own experiences. As children help each other and invent new plots and tools for making books, they add content to the classroom culture. New inventions breed from the book-making process, and children also become products of the present classroom situation. The book-making process includes elements from other children and reflects this influence (cf.Vygotsky 2004, pp. 10-11, p. 17, p.30, p. 41-42; p. 88). According to Douglas (2000), group identities, histories and ways of being can be created in participative, shared learning experiences. When the teacher lets the children use their skills to the fullest, children's interests, ideas and skills can surprise the teacher. Through participation, they learn to participate even more.

When children make books, children (with the help of adults) make books collectively. An original work of art is born that could not exist without the other. Children's ways of playing with words, their humour and the meanings they attach to the concrete unfolding action enrich both the adult's and children's input. When children

grow accustomed to producing new things together with others, their abilities to produce cultural products together with others advance even further. As Amabile (1987, p. 242-252) states, the creative use of language requires a relaxing atmosphere. With heavy emphasis on the outcomes of teaching, the creative dimension becomes more difficult and our attention shifts away from the process itself. It is important to maintain the playful attitude towards writing the book. This explains why computer writing is such an effective way of learning to read. Through playful writing children's reading improves into the same level as that of talking has been with in early childhood communication. As children are deeply involved in the process of making a book, they use their skills and motives to the fullest. The effective learning of reading skills becomes a by-product. As teacher and children can create a classroom culture where the intensive processes of book creation are rich, we find ourselves in the middle of the best possible situation to learn to read. Teachers must restrain themselves and not push too quickly for reading results. Children also practice important planning skills. When children begin to make books for each other, the book-making process benefits from another dimension of cross-cultural connections.

Podmore, Sauvao and Mapa (2003, p. 209) view literacy teaching and learning not as a set of procedures, but as a series of dynamic teacher-child and child-child interactions. Their projects also emphasise the role of "literacy as community" to better understand collective literacy experiences between teachers, students, and families. This highlighs the role of children's agency (cf. Reunamo and Nurmilaakso 2006). New language production actually requires unexpected flaws, surprises and friction in order to open up to new ground. Children learn the important lesson of evaluating the creative

process. What should we do differently next time? Is it possible to make a book like that? An important part of making a book is the presentation and discussion of it. This enhances the interpsychological elements.

Discussion

In the end, we have described a cycle and are again in the zone of proximal development. Only this time, both the teacher and children themselves produce the level of proximity (cf. Reunamo 2007d).

As we have seen, the book-making process begins in the zone of proximal development where the teacher engages the children in writing text with computers. From the beginning, the children's thoughts, emotions and opinions are important, and the teacher helps the children to start a process that requires many skills that the child cannot master yet. The teacher both seeks contact with children's motives and enriches them. The zone of proximal development consists of topics on how to write a book.

The proximal zone is nevertheless insufficient. In the next phase, the teacher also needs to confront the children's actual development and skills. The teacher must see and identify the deficiencies and advances in children's writing and reading. The teacher also must evaluate the children as separate persons along the process, including children's personal skills to write and read, to use information and to understand what they are doing. The teacher observes and analyses children's behaviour and learning. The teacher must teach the children writing and reading.

After learning something new, the children can begin to use their skills as instrumental tools. In the book-making process, the children's own motives are embedded in the process and are the reason why the child makes the book. Children

begin to apply their personal content and dynamics to the task, which carries different meanings and outcomes for each child. Children's needs, opportunities and strategies form the centre of the interaction with the teacher. The teacher helps the children to realise their aspirations.

As children's motives become interpsychological, they begin to affect others, which in turn affect the classroom culture. When new things occur, the teacher must prepare for surprises. When the children's motives begin to impact the book-making process, their ideas serve a whole new function. Now children's ideas are not only important in understanding the children or in knowing the children's needs. Now as the children's views and motives are driving forces of the activity, the teacher's contact with their evolving views becomes a necessity. Otherwise, the teacher cannot stay abreast of the process. The children are involved and surrounded by writing and reading processes. Figure 1 represents a summary of the aspects of playful computer.

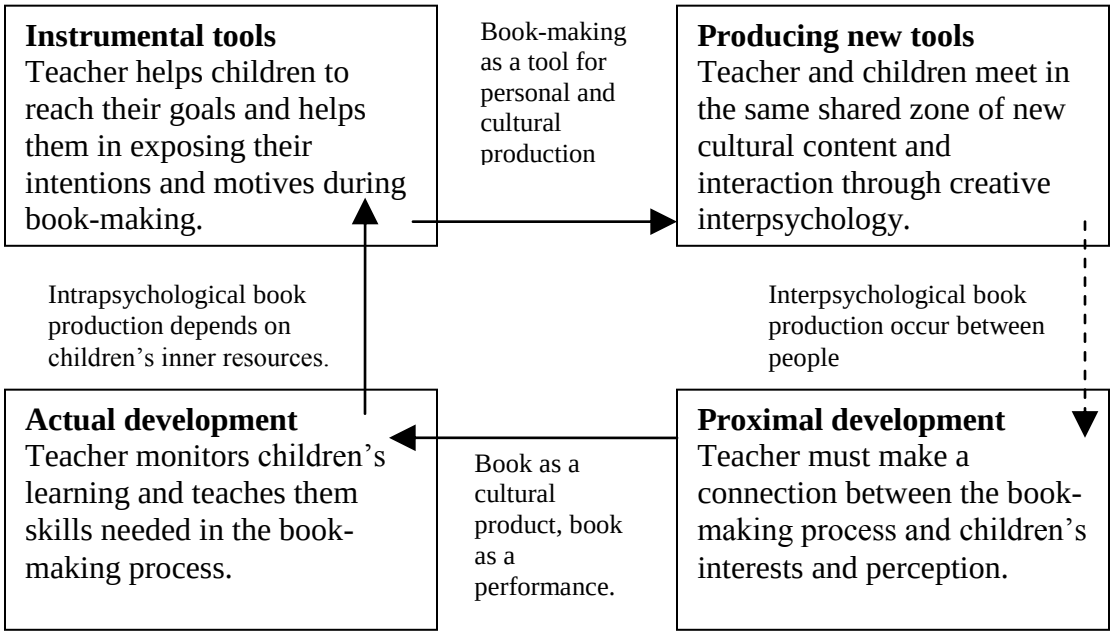

Figure 1. Playful computer writing interpreted as Vygotskian language development.

References

Amabile, T. (1987) The motivation to be creative. In Isaksen, S. (ed.) *Frontiers of creativity research.* New York: Bearly Ltd.

Cooper, P. (2007). Teaching young children self-regulation through Children's books. *Early Childhood Education Journal, 34*(5), 315-322.

Douglas, A. (2000). Learning as participation in social practices: Interpreting student perspectives on learning. *Changing English: Studies in Reading & Culture, 7*(2), 153-165.

Hakkarainen, P. (2002) Varhaiskasvatus ja tieteellinen tutkimus [Early childhood education and scientific research, in Finnish]. *Kasvatus* 33, 133-147.

Korkeamäki, R-L. (2007) Lukemaan ja kirjoittamaan opettaminen Suomessa [Teaching reading and writing in Finland, in Finnish]. In Trageton, A. *Lukemaan oppiminen kirjoittamalla [Learning to read by writing, in Finnish]*. Jyväskylä: PS-kustannus.

Leimar, U. (1978) *Arbeta med LTG. En handledning [To work with learning to read by speaking, in Swedish]*. Lund: Liber Läromedel.

Leimar, U. (1979) *Läsning på talets grund [Reading based on speaking, in Swedish]*. Lund: Liber Läromedel.

Podmore, V. N., Sauvao, L. M. & Mapa, L. (2003) Sociocultural perspectives on transition to school from pacific islands early childhood centres. *International Journal of Early Years Education, Mar2003, 11*, p. 33-42.

Reunamo, J. (2007a) *Tasapainoinen varhaiskasvatus – erilaisia tapoja suhtautua muutokseen* [A balanced early childhood education – different orientations to change]. Helsinki: WSOY.

Reunamo, J. (2007b) Adaptation and agency in early childhood education. *European Early Childhood Education Research Journal*, 15, 365-377.

Reunamo, J. (2007c) Children's agency: Imperative in education for sustainable development. In A. Pipere (ed.) *Education and sustainable Development: First steps towards changes, Volume 2* (pp. 20-37). Daugavpils: Saule.

Reunamo, J. (2007d) The agentive role of children's views in Sustainable Education. *Journal of Teacher Education for Sustainability*, 8, 68-79.

Reunamo, J. (2007e). ICT as a mediator in learning and teaching. A presentation at Kasvatustieteen päivät conference in Vaasa, Finland, 22-23.11.2007. Available online at http://www.helsinki.fi/~reunamo/article/kasvtp07.pdf .

Reunamo, J. & Nurmilaakso, M. (2006) Language objectives in the Finnish preschool curriculum. In A. Pipere, (Ed.) *Education & Sustainable development: First steps toward changes Volume 1* (pp.188-201). Daugavspils: Saule.

Reunamo, J. & Nurmilaakso, M. (2007) Vygotsky and agency in language development. *European Early Childhood Education Research Journal*, 15, 313 - 327.

Seefeldt, C. (1999) The early childhood curriculum. New York: Teachers College Press.

Trageton, A. (2005) *Creative writing on computers: 6- to 10-year olds. Writing to Read.* In Pandis, M et al: Reading, Writing , Thinking. Proceedings of the 13th European Conference on Reading pp 170-177. Newark; International Reading Association.

Trageton, A. (2007) *Lukemaan oppiminen kirjoittamalla [Learning to read by writing, in Finnish]*. Jyväskylä: PS-kustannus.

Trageton, A. (2008) Playful computer writing. Grade 1.4. Article retrieved 1 September 2008 at http://munin.hsh.no/home/atr/tekstskaping/engartikkler.htm.

Vanderburg, R. (2006). Reviewing research on teaching writing based on Vygotsky's theories: What we can learn. *Reading & Writing Quarterly*, *22*(4), 375-393.

Van Oers, B. (2007) Helping young children to become literate: the relevance of narrative competence for developmental education. *European Early Childhood Education Research Journal*, 15, 299-312.

Vygotsky. L. S. (1978) *Mind in society*. Cambridge: Harvard University Press.

Vygotsky. L. S. (1988) School instruction and mental development. In Donaldson, M. & Grieve, R. & Pratt, C. (Ed.) *Early childhood development and education. Readings in Psychology.* Great Britain: T.J.Press, Padstow, 263-269.

Vygotsky, L. (2004) Imagination and creativity in childhood. *Journal of Russian and East European Psychology*. 42, 7-97.

Vygotsky, L. (2005) Appendix. *Journal of Russian and East European Psychology*. 43, 90–97.