

Questions in the School

Jana M. Havigerová, Jiří Haviger

Abstract—Paper deals with the topic of questions as important components of information behavior in the school. By analyzing the Corpus Schola2010, the state of contemporary education in terms of questioning is proven unsatisfactory: 80% of the questions are asked by teachers; most of teacher's questions are asked at the beginning of the first grade, than their number decreases and is settling down on 80 ± 10 questions per lesson. The average number of questions within one lesson per one pupil is generally less than one whole question. The highest values are achieved in the first, sixth, eighth and tenth grade, i.e. in the transition years in which pupils are moving into higher levels of education and every following year it declines. We can state Czech school do not support questioning and question skill of their pupils, thereby typical Czech schools are neglecting the development of thinking, reasoning and cooperation of their pupils.

Keywords—information behavior, questions, primary and secondary education, Czech Republic

I. INTRODUCTION

THE contemporary information society [1] imposes new demands on its members – to cope with new technologies, to orientate in the world of information; in other words to achieve information literacy. The information literacy fulfills by means of information behavior: behavior developed by the need of getting information [2]. A significant predictor of successful information behavior is question skill. Does our school support the development of this skill? Are our children been asked by teachers in the school? Are our pupils asking questions themselves during school education? These are undoubtedly important questions for our education and for our future even more.

A question is any sentence which has an interrogative form or function [3]. The ability to question is innate to man. The first observable manifestations of this ability are already apparent at the age of eighteen months (a period referred to by linguists as the first age of questions) when the questions "who" and "what" appear. The divide between the toddler and preschool developmental periods (around the 3rd year) is a period that includes the rapid development of the skill of asking questions; all other types of questions appear, including the most significant questions for this age of "why" [4].

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Jana M. Havigerová, Department of Primary and Preprimary Education, Faculty of Education, University of Hradec Králové, Rokitského 62, 500 03 Hradec Králové, Czech Republic (phone: +420 734 420 617; e-mail: jana.havigerova@uhk.cz).

Jiří Haviger, Department of Informatics and Quantitative Mathematics, Faculty of Informatics and Management, University of Hradec Králové, Rokitského 62, 500 03 Hradec Králové, Czech Republic (phone: +420 493 332 283; e-mail: jiri.haviger@uhk.cz).

From the moment a person anchors his experience with asking questions, that is, from the age of around three years, these become a permanent structure of the cognitive apparatus – respectively, they should become a permanent part, if their production is supported, because it is known about skills that if they are not strengthened, they weaken and disappear [5].

The ability to ask questions is not an isolated phenomenon but is connected with many mental functions. First, the question is the product of the thinking and experiencing processes. A question naturally arises in the human mind in a situation where the individual does not receive some information – he is thinking about something and the stream of thought stops because a) he does not know something, or b) he is not sure of something. At this moment, a feeling experience comes into play (a feeling of insecurity, curiosity, etc.) and a need for information arises (I want to know, I would like to know, I need to know, I should know, etc.) [2]. On the other hand, a question acts as a trigger to the cognitive processes. Ramey and Meegan [6] literally say that "questions generate thinking." The two basic types of questions evoke two different types of thinking: closed questions trigger convergent thinking, while open questions trigger divergent thinking. Ramey and Megan, in the same breath, added: "The problem is that questions generate thinking, while answers stop thinking in its tracks. Only through questions do our minds truly think." [6]. It is therefore very important that the educational process activate thinking and support the ability to ask questions, instead of the traditional transfer of finished knowledge, or passive responses in terms of the pupil. The ability to ask questions in children develops and activates not only thinking, but also strengthens their sociability. It can also be effective on the prevention of social exclusion and deprivation can be an emotional child [7]. The ability to ask questions is also closely related to the character strength of curiosity, which support plays an important role in positive education [8].

II. METHOD

A. Objectives

To analyze the questions asked in natural school conditions.

B. Participants and material

The basic research material is the Czech National Corpus Schola2010 [99]. The Corpus is a set of computer-stored texts (in the case of spoken language, transcripts of recorded speech), which serve primarily for linguistic research. Corpus Schola2010 contains transcripts of spoken language lessons from 204 lessons acquired in 115 different classes all over the Czech Republic. Corpus contains 792,764 words.

The material for the Corpus Schola2010 was obtained from 47 teachers and 2347 students, the ratio of male:female being approximately 1:1. The age of teachers ranges from 23 to 53 years; half of the teachers are younger than 30 years, so the file contains more younger teachers. The age of pupils ranges from 6 to 21 years, being pupils across the board from grade 1 to past the 4th year of secondary school or its equivalent (e.g. eighth year of gymnasium), excepting the fourth grade of primary school (data from this year could not be obtained).

C. Procedure

Frequency analysis of corpus data and statistical analysis was realized.

III. RESULTS

A. How many questions does the teacher or students ask during a single lesson?

There was identified a total of 20,489 questions in the corpus. We were interested in who placed the question. Table 1 shows the descriptive statistics as per role – i.e. how many questions were asked by the teachers and how many by the pupils during a lesson.

TABLE I
NUMBER OF QUESTIONS ASKED DURING ONE LESSON

Questions per lesson	Teacher	Class	One pupil	Total
N	204	204		204
Mean	80,89	19,36	1,11	100,25
Median	74,50	15,00	1,00	94,00
St.deviation	43,195	16,34	1,45	45,46

It is shown in Table I that, per lesson, teachers give an average of 81 interrogative sentences, all pupils in the class just 20. Due to the fact that there are 14 students in the classroom on average, then statistically we come to the conclusion that during one lesson only one pupil asks an average of one single question. On the first level, where there are fewer split hours, i.e. more pupils in the class, an average of only 0.33 questions per student is ascertained. We consider this finding alarming.

B. What is the relationship between the number of questions and grade?

In the research there are analyzed the data showing the questions throughout the standard schooling, i.e. from the first class (6 year-olds) to the last year of high school (20 years old adolescents). In this part of the research was intended to determine whether it is possible to notice any trends in asking questions during the whole standard school attendance.

Teacher's questions

TABLE II
THE NUMBER OF QUESTIONS ASKED BY THE TEACHER IN DEPENDENCE ON THE GRADE

Grade / teacher's questions per lesson	N	Min	Max	Mean	SD
1 st grade	11	50	214	121,64	52,456

2 nd grade	8	17	85	51,38	26,806
3 rd grade	6	52	107	78,83	22,067
5 th grade	6	38	135	91,67	43,624
6 th grade - secondary education or eight year gymnasium starts	16	10	136	73,81	34,289
7 th grade	9	63	163	87,89	32,728
8 th grade - secondary education or six year gymnasium starts	24	26	186	83,58	46,092
9 th grade	15	27	148	75,53	31,089
10 th grade - four years gymnasium starts	27	10	264	84,44	56,002
11 th grade	33	16	132	67,64	30,441
12 th grade	32	15	215	80,34	45,871
13 th grade	17	11	137	72,82	35,306

SD – Std. Deviation

The descriptive data shows that the number of teacher's questions during a lesson is usually in the range 80 ± 10 . This rule goes beyond just the first two years: in the first class the number of questions greatly exceeds the average, in the second class, on the contrary, far below the average. Why? It is obvious that the first class is very specific. It is usually completely new environment and settings for first-graders (about 90% of Czech children before entering school attended kindergarten where is a different system of education – teaching is divided into blocks, many games and playing are included, considerable part consists of free games, in the primary school requirements for a child has changed radically – the day is divided into 45 minute blocks fulfilled with managed activities, it is usually required strict discipline, children mostly have to sit at a desk, individual work is required and communication with classmates is almost forbidden, etc.). First class teacher is in the role of the person who introduces the new situation to the new group of children he or she doesn't know therefore, thus it is necessary for teacher to become acquainted with new pupils, to find out who they are and how to work with them to become familiarize with. That's a lot of unknowns and requires to put a lot of questions. During one school year, children gets up to interact with the school and their teacher, so in the second grade teacher has enough information about her or his pupils and the pupils are so adapted to its specific requirements and practices that teacher has apparently no need to give a substantial portion of questions (system works "autonomously").

The content analysis of teacher's questions reveals another unflattering fact: the majority of questions placed by the teacher are supplementary questions, so-called tag questions (e.g. "This topic was teaching in last lesson, right?!"), the remaining questions from the mouth of the teacher are largely factual, i.e. questions activating the memory (e.g. "When was Charles University founded?"). Open questions promoting independent critical or creative thinking and other cognitive functions were placed by individual monitored teachers either minimally or not at all [1010].

Pupil's questions

TABLE III
THE NUMBER OF QUESTIONS ASKED BY IN AVERAGE BY ONE PUPIL IN
DEPENDENCE ON THE GRADE

Grade / pupil's questions per lesson	N	Min	Max	Mean	SD
1st grade	11	0	4	1,55	1,214
2nd grade	8	0	3	,88	1,356
3rd grade	6	0	2	,50	,837
5th grade	6	0	1	,50	,548
6th grade - secondary education or eight year gymnasium starts	16	0	5	1,81	1,328
7th grade	9	0	4	1,11	1,364
8th grade - secondary education or six year gymnasium starts	24	0	10	1,79	2,654
9th grade	15	0	2	,60	,632
10th grade - four years gymnasium starts	27	0	5	1,11	1,396
11th grade	33	0	6	,94	1,321
12th grade	32	0	3	,81	,998
13th grade	17	0	2	,59	,712

SD – Std. Deviation

The average number of questions within one lesson per one pupil is generally less than one whole question (!). The highest values are achieved in the first, sixth and eighth grade, further also in seventh grade and tenth grade.

The interpretation of this fact requires knowledge of the Czech educational system: lower primary education has 5 grades, from 6th to 9th grade it is upper primary education, followed by secondary (grammar) school. In this research file are included primary schools, classical four-year and multi-year gymnasias: eight-year gymnasium begins in the 6th grade and six-year gymnasium begins in the 8th grade. In other words, the first, sixth, eighth and tenth grade are the transition years in which pupils are moving into higher levels of education and hand in hand with they are moving to another buildings, to a new class team and to other new teachers. The research data shows there is an increased incidence of questions in these transition years and then every following year it declines.

This finding corresponds with the first results of the qualitative analysis of issues, which implies that if all students in Czech schools ask questions, these are essentially of the operational nature ("Can I go to the toilet?", "On which side should I open up the textbook?"). Questions that would be based on internal needs of students to acquire information and develop knowledge occur only sporadically [1010].

IV. DISCUSSION

The ability to ask questions is natural to man, just like the ability to use tools or the ability to laugh. Asking questions in the school is in close relation with many other educational events: questions can verify state of knowledge, find out level

of understanding, reveal the learning difficulties, lead to further learning, lead to thinking, arouse curiosity and interest, focus attention, get opinions, feelings and experiences, and encourage discussion, if teacher use questions correctly it can leads to intellectual growth, critical self-reflection and constructing self-knowledge of pupils [11], high level questions may create cognitive flexibility and this in turn has been linked to self-efficacy [12]. That is why it worth to be researched.

One of the first research in the school questioning made Mrs. Rommiett Stevens before one hundred years in 1912 [13]. She found that teachers asked 395,67 questions per day – it is about 66 questions per lesson. After one hundred years in the Czech school there is no essential difference, our teachers ask about 80 questions per lesson which means about 480 per day (including tags).

Teacher as a mediator of a learning processes initiates with children and it was verified that the quantity and quality of teachers' questions correspond to the quantity and quality of children ones [16]. Sometimes situation is worse. Mrs. Stevens [13] in her observations found that most questions in the class were asked not by the student, the person at the center of learning, but by the teacher. The data from Czech school shows that children in the Czech school are asking questions much less than their teacher too – 80% of questions in the Czech school are asked by teachers, 20 % of questions are asked by pupils. From previous research we know that not every pupil asks a question. On average, only 4 boys and 2 to 3 girls raise questions aloud in class, remaining 75 % of pupils in the class we can denominate as an silent majority [10]. In accordance with the findings of Vogt we can assume that pupils who ask more questions will be most self-efficacious (i.e., believe they can succeed in a course) [14].

Teacher's questions can be divided into two types: lower or higher order cognitive processing questions [15]. The third important discovery Mrs. Stevens made is that the majority of teachers questions, about two out of three, were asked at a low intellectual level, usually requiring little more than rote memory and recall. We described the same state at contemporary Czech school [10]. This trend is evident in many countries, not only in the Czech Republic. Reviews of research in the United States, the United Kingdom, Germany, Australia or Slovenia and in many other nations have shown similar results [16].

In conclusion it can be said that the Czech school is in terms of questions at the same level as the American school 100 years ago, regardless of grade which is monitored. Children in typical Czech schools don't have good models in their teachers in asking questions, children are not encourage to ask questions at the school and their performance in higher cognitive processes during school attendance unnecessary decreases. If it is caused by the supremacy of transmissive education or other factors is a question [17]. The hypothesis about relationship between readiness to ask questions and IQ will be tested in the forthcoming research.

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