ADVANTAGES OF LOGICAL-SYSTEMED TEACHING AND SOME WAYS FOR IMPROVING IT

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ABSTRACT

The article considers the certain features of the development of learners' logical reasoning in classes with different subject-specialization at secondary school. In addition, the problems and solutions of organizing systematic education in higher schools and universities are presented. The development of curriculum necessary for logical-systemed teaching and the nowadays' curricula used are discussed.

Keywords: propositional logic, logical thinking, scientific tasks, fields of study, university students, subject, systematic, unsystematic, curriculum, reading instruction, abstract ideas.

Logic and logical thinking are present and play an important role in most of the disciplines at the university level but in different ways.

Current study evaluated data from 1,429 respondents involving students from 15 universities. The non-standardised knowledge test was previously pilot-tested and consisted of 15 tasks from selected elements of propositional logic in a different natural science subject-specific context. Significant differences in average results were found in terms of students' gender, age, type of secondary school leaving exam and parents' highest education level.

Researchers compared students' test scores by students' fields of study. On average, mathematics-informatics students had the highest success rate of 67.4%, compared to students in engineering (61.0%), economics (57.9%), education (56.6%), science (56.5%) and humanities (54.7%).

In an academic study in every age, the study of logic and its role in use has been of fundamental importance. Logic as a research discipline saw its greatest leap of development in the first half of the twentieth century, but with all that progress in research, its relative importance in the teaching portfolio of the academy has diminished. What is the reason for this? According to Restall (2015), the reason for this is greater specialisation and differentiation and excessive learning. Due to this

phenomenon, students avoid taking it even if a university offers logic as a subject. Restall declares this phenomenon as a cultural problem. “The research culture of logic - the kind of work it produces - seems radically alien to that of its elsewhere academic disciplines”.

Every subject that is systematic has a certain inherent order to it that dictates how it should be approached. In some subjects this order is more explicit than others. In mathematics, for example, there is a widely acknowledged sequence in terms of what should be learned and when it should be taught. In other subjects, however, such as history, there is much less agreement on how and when certain things should be taught.

Systematic is sometimes paired with the term explicit. So, how do they differ? Their meanings often overlap, but explicit is usually understood to mean that the teacher takes centre stage and the student learning is controlled by the teacher’s curriculum and teaching behaviour. Implicit is usually reserved for instruction that is student-directed. So, implicit usually refers to a discovery, constructivist, or minimal guidance model. In this implicit model, the teacher plays a lesser, guiding role, sometimes referred to as the guide-on-the-side, while the students take greater responsibility for their own learning from the outset.

So, there’s systematic vs unsystematic curriculum or (better put) a continuum from high to low level of system incorporated within any curriculum. For example, some programs may be highly systematic, and others less so. Of course, being systematic doesn’t guarantee student outcome, but when the curriculum is closely aligned with the consensus of what’s important and when it should be introduced, then such programs have a better empirical track record than those programs lacking in system.

Apart from curriculum content, there’s also a continuum of degree of system in how the curriculum is delivered. For a given curriculum, teachers may assiduously implement it as written, or they may adapt it according to their own predilections. This is usually called a departure from program fidelity, and is abhorred by those program designers who incorporate a strongly systematic bent. However, some programs are loosely coupled in that they presume teachers will be expert in presenting their curriculum. “They’re teachers, they’re professionals, they would know how to teach my stuff.” Of course, teacher variation is a major problem for our education systems, and we’ve seen that few teachers have been trained in explicit instruction generally, or in basic classroom management. Thus, many teachers have too little understanding of what’s important in reading instruction.

When to Begin the Study of Logic.

One of the most common questions parents and teachers interested in classical education ask about logic is: “When should I start teaching logic to my student?” The answer, of course, is: “When he or she is ready.” This usually happens between seventh grade and ninth grade. It is at this age that many children begin to seriously investigate the reasons for things. They are no longer satisfied with the concrete, but are beginning to understand and appreciate abstract ideas.

Children are not totally unfamiliar with abstract ideas even at this time; they have already encountered them in mathematics. But whereas mathematics deals with abstraction in the realm of quantitative relationships, logic deals with abstraction in the realm of qualitative relationships. Both math and logic deal with abstraction, but math does it with quantities; logic (at least in its traditional form) does it with language.

The analysis of mathematics teaching objectives in classes of different directions allows us to identify core goals common to all of them. One such purpose, for example, is an intellectual personality development, especially the development of students' logical thinking. Logical and coherent way of thinking is necessary for pupils of different directions as it is essential for investigating phenomena of various origin (social, humanitarian, polytechnic, natural) and contributes to the development of personal qualities, critical attitude towards oneself and the environment, and because it helps to build pupil’s ability to produce a wide range of hypotheses, innovative ideas and solutions of problems based on identification of the core elements of the studied phenomenon. Therefore, the development of students’ logical reasoning has always been in the center of attention of both theory and practice of mathematics teaching.

Conclusion

I should point out that most modern logicians disagree with this view of logic as a language art. They view math as an extension of logic, and because of this the system of modern logic is very mathematical.

Based on our results, students whose parents have a higher education achieved better results than those whose parents graduated from secondary or elementary school. According to our assumption, this may be related to the greater expectations and requirements of the parents during the student’s entire schooling. However, it may also play a role that the parents who have graduated from the university can support their child to a greater extent in learning, mastering and understanding the curriculum, and being a positive example. They also serve in the children’s further education and can take a more significant part in the financial support of their studies.

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