

## **MODEL OF CONTENT TECHNOLOGY EDUCATION**

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### **INTRODUCTION**

The problems of modelling the contents of technology education are extremely complicated from the view of pedagogical theories, as well as didactic and educational activities undertaken for teachers. Modern technique is different from the they, which existed five or ten years before. So far dominant of content from the scope of the craft (characteristic for varieties of the nineteenth slojd), but are already sufficient. In the contents plane the education of technology should be based on a model consisting of “universal” activities, characterising technique at various stages of its development. A model of technical activity is such a the model.

### **1. ACTIVITIES APPROACH IN MODELING OF CONTENT OF TECHNOLOGY EDUCATION**

This in which one manner of content given domains of education are well-chosen, and then arranged, that is to say which one create structure decides about processes didactic stepping out in given schools object. Content of teaching this is – most simply – of what learns, more exactly we can say, that content of education is collection planned activities of schoolboy, appointed across substance of teaching and planned psychical change [1].

Accepting, that content is all this, of what teacher wishes to teach schoolboy organising in this of aim didactic processes, we can point two conceptions of content of teaching:

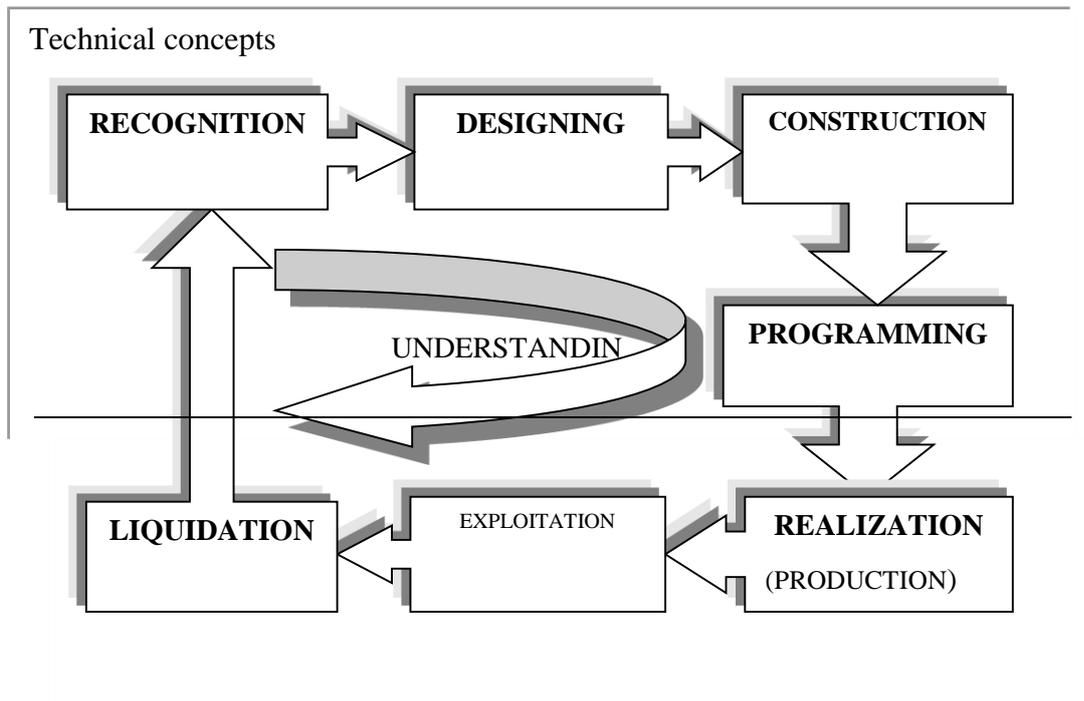
information, leaning on knowledge, accenting memorisation and reproduction of theory knowledge, and so rich information, but poor activities;

– activities, leaning on skills, accenting production and use of message, and so rich activities, but poor information [2].

### **2. ARRANGEMENT CONTENTS OF TECHNOLOGY EDUCATION**

Technical contents in area bets oneself resignation from cognition individual, separate from oneself of domains of technique on thing of cognition and of using with methods interdisciplinary (universal), resistant on changes connected with dynamic development of technique. Approach such protects us before overload of programmes of teaching across superfluous information, is however rich in activities technical.

This leads to necessities of settlement and arrangements of content of technology education according to characteristic phases of activity undertaken across man. Best to this of aim grants model of activity, which consists oneself from seven phases (draw. 1). Model this was of service as base of constructing structures of content of handbooks to learning technique and technology information [3].



Draw. 1. Structure of model of technical activity

**2.1.** Phase of **recognition** of technical situation, we call also phase of **identification**. It joins oneself with describing knowledge and with valuing all of elements consisting on situation, and across this mans technical environment in given time. Them are objects, devices and machines, processes and occurrences of technique. They can co-operate with elements of nature and man.

Our interests object are here results hitherto existing peoples technical activities, which fold on content of situation. We are interested all products (objects, machines, devices and tools) and compositions (methods of activities, methods of organisation, technical rules and principles, technical messages and records), and also whole of a public of relation in which one they in given time are entangled, deciding at last about mans “situation” (profitable-unprofitable).

**2.2.** Phase of **technical designing**. Recognition of situation leads to it understandings, often it transformations and conferment subjective meanings. Confrontation this meanings with experience and with knowledge of man (with knowledge of rights and of rules) permits on considering of transformations of situation or only it select of element. Whole of a public these of forms of activities technical we call with designing.

Can it rise character of designing general (complex) and to refer can of objects, of situation, change of relation – of activities etc. It can to embrace also activities redesigned of existing products or designing being lacking of elements. We speak about designing accommodation, interpolation and extrapolation.

Activities designing – as a rule join with necessity of introduction oneself with suitable literature, with catalogues or with folders. It will needs also often of researches laboratory – and modelling.

Results of researches project, so-called projects, are recorded. Comes into being records of project. Recording executed one-can words or graphically, with sketch or of different types with drawings technical. Projects have to embrace to recordings evaluated of conceptions of idea. Express manners of using well-known regularities in concrete situations.

**2.3. Phase of technical constructing** – it is seizing shortest - materialising of idea. Embraces it analysis of possibility realisation of technical project, it is papers of paperwork.

Characteristic forms of constructional activities are: calculations technical, calculations resistant, laboratory researches, selection of constructional materials, papers optimum shapes of elements not standardised, paper of compositions of unification and standardised elements, modelling, research of models, paper of paperwork, on which consist necessary descriptions, compositions, calculations, constructional drawings of elements, composition drawings etc.

**2.4. Phase of programming** of activities is this phase of activity, which embraces whole of a public of activity about character organisational. Refer they analysis of paperwork, papers of processes technological, papers indispensable paperwork, embracing among other things selection of tools, selection of technological parameters etc.

Essential part perform here also activities connected from working out of plans of organisation of activities seized in form of time-tables or nets of dependence.

**2.5. Phase of production**, realisation prepared activities, and this phase of activity most well known and from times slojds in education technical prevailing. Too often seized in this to phase of form of activities technical limited to processes productive.

We embrace this with phase as well activities connected with preparation of materials and of positions of work, how also farther tracing on the ground of paperwork, formation of materials in elements peaceably with worked out technological processes. It can accept character of manual or machine tooling, tooling with machine cutting or tooling (paper, substances, thin sheet metals), however also of pouring off. With processes these unite control activities, processes of joining of materials and of montage of elements.

**2.6. Phase of exploitation** of technical products embraces service (function useful products), regulation (adaptation to needs of user), preservation (protection of technical fitness). In structure of exploitation are found also activities and diagnostic activities, however through this and measuring – and repair. In these case is realizing road safety education [5].

**2.7. Phase of liquidation** negative results of activities, however also liquidation used machines and of devices. We embrace this with phase of activity about character economic and ecological. They will need estimations of condition technical structures, of disassembly, of selection of elements, of regeneration of elements or of condition of environment.

Leaning technical acceptance for base arrangement contents of technology education of characteristic phases of activity permits to shake oneself free from necessities continuous additions of information from every now and again new technology domains, on thing of teaching oneself skills on its methods.

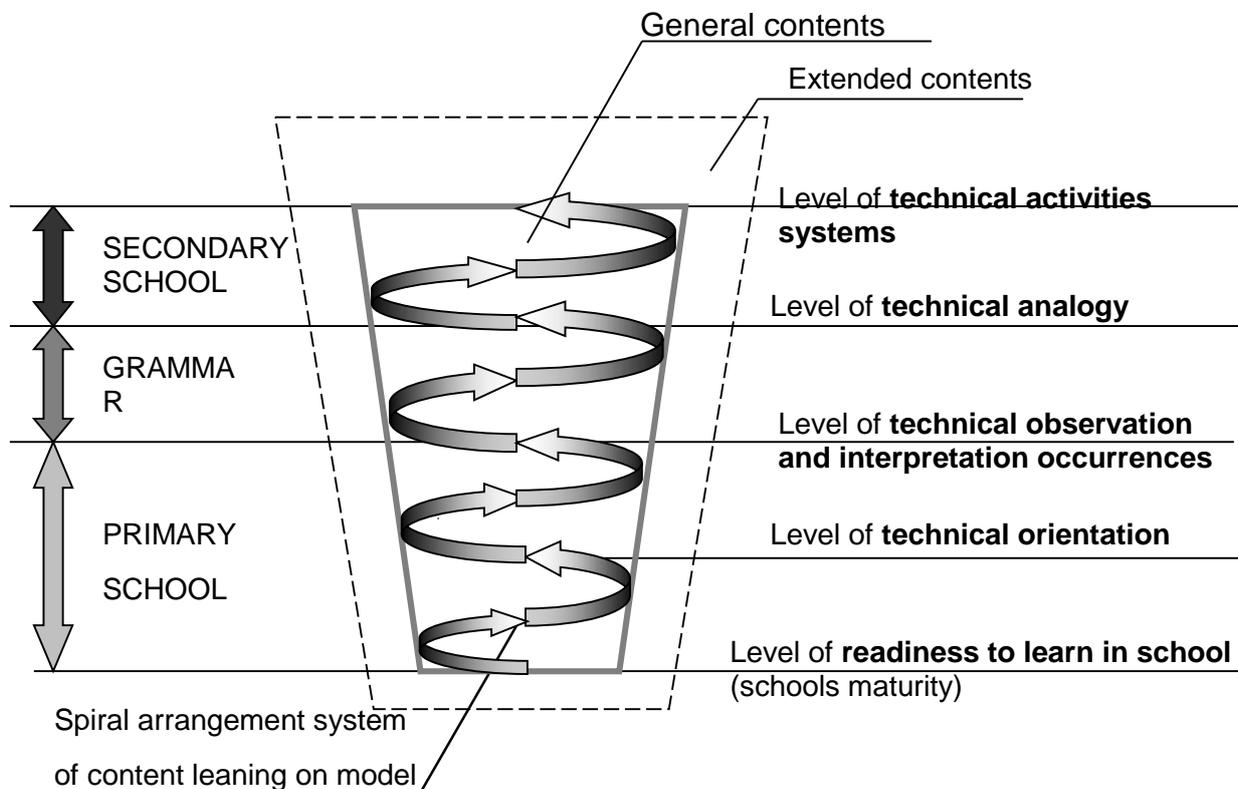
### **3. SPIRAL ARRANGEMENT OF CONTENT OF TECHNOLOGY EDUCATION**

About arrangement of content of technology education not maybe to decide oneself logic and arrangement of content of activities technical man. To them of realisation one should prepare schoolboys basing on topical level them of psycho-physicals development and system of justification.

Leading arrangement contents maybe to be: **lines** (taking into account basic criterions logical cohesion and regularities), **concentric** (taking into account postulate of concentrating contents of teaching round common idea) and **spiral** (then, when ideas round of which contents will concentrate create system of line of vertical arrangement of content for each classes).

From regard on dynamic character of development of technical modelling of programme of teaching to be based one should on cognition through schoolboys of system methods of technique. From elementary methods of activities technical on level of elementary education for systems of activities technical on level Polish secondary school. At such foundation only possible to emotions contents model of technology education is spiral arrangement (draw 2) (wrote about spiral model J. Bruner [6]).

Proposed model of arrangement of content folds in basic parts from core contents, round which are found contents complementing, supplementary and widening. Whole has form truncate cone (upside-down base to tops), in what contains oneself idea spiral arrangement of content.



Draw. 2. Spiral model of arrangement of technology education content [3].

If we will cut cone with areas parallel to bases, we will receive sequence of truncated cones symbolising each stages of education. Two first represent elementary and primary school, third grammar school, and however fourth polish secondary school. Changes psychical taking place in result of leadership of activities technical through schoolboys on every stage of education one can qualify in manner following:

- stage first represents level of **technical orientation**;
- stage second marks level of **technical observation and interpretation occurrences** in environment of man;

- stage third is level of **technical analogy**;
- stage fourth, this level of **technical activities systems** (of full competence).

## SUMMARY

Problems of modelling contents of technology education is not as usual complicated as well from point of view theory, how also of didactic activities undertaken through teachers often basing on one's own experiences from times of learning. Use model of activity permits to include every now and again new methods of activities technical as warp designed of didactic situation.

## LITERATURE

- [1] NIEMIERKO B., *Między oceną szkolną a dydaktyką*. WSiP, Warszawa 2001.
- [2] KRUSZEWSKI K., *Sztuka nauczania. Czynności nauczyciela*. PWN, Warszawa 2009.
- [3] WALAT W., *Modelowanie podręczników techniki-informatyki*. Wyd. UR, Rzeszów 2006.
- [4] FURMANEK W., WALAT W., *Technika-informatyka dla klasy 1 gimnazjum*. Wyd. Oświatowe, Rzeszów 2002.
- [5] RYBAKOWSKI M., STEBILA J., *School education for road safety*. Ed. Zielona Góra-B. Bystica 2010.
- [6] BRUNER J., *W poszukiwaniu teorii nauczania*. Warszawa 1979.

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