

SCIENTIFIC ACTIVITIES IN SCHOOL EDUCATION

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***Abstract:** This report outlines several options to change current teaching methods of natural sciences toward the better operational skills of students for everyday life.*

***Key words:** educational methods in the natural sciences, scientific literacy*

State of art

Strategic importance of technological innovations enforces an intensive effort for improvement in disconsolate state in science education. Lamentable public level of mathematics and poor science usage is ever before fixed star for researchers in the educational sphere. Pedagogic periodicals describe modern progress ways on enhancement mathematical, physical or generally naturalist knowledge upon years. However, these advances have influenced only negligible and time restricted the operational math or science skills. The development of effective educational methods within sciences discipline requires a redesign process of continuous long-term classroom use. Their students indeed differ in their position if the learning environments effectively assisted them for science knowledge, but most of them can't use science or math for problem solving.

Nowadays kids mostly have no possibility to run outdoor freely or to dabble in mint. Environment, where children grow up, isn't "realistic" from view of natural science. Today's style of life gives problems that don't push one to solve them with the aid of natural science questions. So the appetite and the indolence to deal with real thing go hob-and-nob with the failure of the capability of the critical thinking, with the weakening imagination, with the absence of the systematization, that are needed as well, to man complete any concrete task.

Knowledge and adventures are pestering in wholly complete status on students; the others were putting their imagination for it. Can simple fantasy and family style handyman individual compete with it? That, they can see on TV screen where everything is detailed fully-fashioned, perfect and "comfortable", is far from the reality.

Enjoyments as: "...those I don't understand, ...this is not relevant to me, ...I don't know it express" lead hereto, that curriculum recede interpretation for student, because it don't-shows nothing next for them, it don't help to pass reality "what is on".

Students are not able to assign the sense for that curriculum. So, sometimes they resign quite on this effort. In the cases when they need to obtain some special compe-

tences there are available special courses for particular subject matter, which helping participant avoid trouble, rather as though technology deprive of operation learning necessity negotiation hurdles, patience and practice will.

Realistic curriculum would bring students to their own intellectual feet: pass on them framework basic method and conception, they could have to go out at analyses his life situation. Practical scientific literacy man have try out on concrete examples how inquiry into nature, how with theory formation, test, validate and temporarily received.

The assumption of necessary scientific principle is possible verbally reach, but indeed this way access common individual inadequate toward obtaining competence, which characterize naturalist literate man in wide sense. Actual understanding theory and the capacity to use scientific knowledge, to identify questions and to draw evidence-based conclusions in order to understand and help make decisions about that natural world and the changes made to it through human activity.

All reformatory efforts have fallen short over well-meant proclamation, student's scientific skills resists. Classic curriculum didn't achieve any provable shift in operative component science, though attractive illustrations in textbooks, video or E-learning.

Hypothesis of this state

Students are faced with unused terms in the beginning of their science study, they have not inherent any motivation or life experience for using terms. The rate and extent of learning content frequently doesn't allow absorbing science ideas.

The will to clearing difficulties for well-disciplined long-term collectedness is weakening thereby, that meanwhile they were served by finished stuff or at least semi finished goods. Scientifics investigation is process worked with hypothesis, with question and their corrections and with awakening limits at „scale world” without any guarantee for glory and wealth.

It isn't indeed necessary for every generation to detect nature principle from roots, but every generation could look-in thought process, which contemporary scientist understanding mankind get.

If instead the whole ready conceptions and terms, the teachers could afford students possibility glance nature by means of concrete, though less noble, problems and confront it with their incident to skill, they would acquired required scientific skills and own insight. Good science curriculum preferred phenomena of everyday life before mysterious dictionary modern physics and chemistry, would soon reveals that teachers knowledge are in this respect nearly identical as theirs scholar.

Understanding is creating in the dialog with others by means of activities, which stay in the foundation in the previous own experience. It is starting point to the constructivistic approach educational course. This approach suggests that educators first consider the knowledge and experiences students bring with them to the learning task before student list with idea and after only with term. This conception synthesizes information from observation experience. If experiment is impossible, it uses with method analogue, observation and investigation correlation.

Methodological steps to improve the state of art

Not all scientific concepts allow to build necessary knowledge by mentioned method, indeed every education could contribute for better style thinking.

Just at the moment that is why educators need pick and choose subject matter. Graphic representation of physical relationships are frequently entire than representations by formulas. Each relationship holds just for special circumstances, whereas an experimental graph holds living reality. First of all things man perceives and saves into own memory phenomena and significances, which often encounters or which personally has experienced. He instinctively attaches a major importance at thinking to phenomena that are intimate to him.

Science education would keep affect on estimate operations. The quality estimation and the ability to decide, whether phenomenon is possible, would belong to fundamental aim. Nature constants are objectives, which are resulted from universe. Their existence shows that the nature has own regularity. We're skilful for measuring these constant, but ours ability for their explanation has limits. Nevertheless we obtain all practical prognoses outdoor with estimations. Practice proportion in these constant and common used units useful for good estimation and decision making.

People usually do the operation estimation in the everyday life so, that they determine known appreciate like a reference point and the resulting estimation acquired from some range shift and direction, which they just now account as correct. Insidiousness of that common intuitive step is just at the moment of the selection of this shift range. Man polls an extent shift very subjective and frequently ill-fitting. To pass under somebody a certain statement as reference point is frequent advertising gimmick. Psychological experiments have evidenced, that it is easy to deviate estimation of numbers upon unknown circumstances.

A good or worse estimation ability doesn't need to manifest only near numeral funds. Man at usually try to use procedure, which he already successfully used once. There are very different response rate of awakening that he cannot use it in new situation, because conditions are changed. Somebody several times repeats that mistake.

As well the adolescence complex of hazard behaviour is related to faithless estimation. Adolescent intuitive wishes for changes, hence priority of his estimation and evaluation in all options has a big preference of changes regardless of target point state. Adolescents competence to estimate the incidences of this behaviour in different situation is producing incident to life practice. Here to overcome this stadium fast, they had to carry an incidence of the mistakes. Their life estimation will accurate with longer-term orientation.

Science education can contribute in practical life skill hereby, that teacher performs with student's concrete experiential activity, prepared examples of scientific methodology and theory estimation into current practice. It is only small aid, but students they can develop their acuirements into common life.

Conclusions

An emphasis on interactions between disciplinary knowledge and pedagogical knowledge directly contradicts common misconceptions about what teachers need to know in order to design effective learning environments for their students. The misconceptions are that teaching consists only of a set of general methods, that a good teacher can teach any subject, or that content knowledge alone is sufficient.

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PŘÍRODOVĚDNÉ AKTIVITY VE ŠKOLNÍM VZDĚLÁVÁNÍ

Souhrn: Cílem této práce bylo nastínit možnosti změn ve výuce přírodních věd směrem k lepším operačním dovednostem studentů.

Klíčová slova: přírodovědná gramotnost, metody výuky přírodních věd