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Knowledge in the teaching-learning process – from meeting standards to reflecting on standards

Summary

The paper concentrates on knowledge from the perspective of constructivism. We review several concepts (Dewey, Gordon, Bruner and others), with an emphasis on those for whom understanding knowledge is crucial and who focus their attention not so much on the external manifestations of student activity but on their mental significance and the processes involved. The discussion presented in the paper is of a theoretical nature, while the analysis of knowledge is not conducted from the psychological (individualized) perspective, but exposes the social consequences of education. Thus, the analysis does not deal with the mind as such, but what the school system does with students' minds and what consequences this may have. As a result of the analysis undertaken the paper is in two parts. The first part reflects the approach of teachers to knowledge when pragmatic constructivism is the point of reference. The second presents knowledge from the learner's perspective, as a participant in the educational process. Finally, the conclusions list the social consequences of education derived from specific (positivist/anti-positivist) concepts of knowledge.

Keywords: knowledge, concept of knowledge, reflection

Understanding (school) knowledge is not unequivocal. It depends on the paradigm adopted as the basis for discussion.

The positivist conception of knowledge translates into a model of expository education, the perception of the teacher as the guide and instructor, and the student as the reproducer and passive executor of imposed school requirements. Knowledge is of a cumulative type, and its quality is measured with the amount of information memorized by students and the standards it meets.

The anti-positivist concept of knowledge is expressed in the/an authentic and absorbing activity of students. Education solutions aim at students seeking answers to questions arising from the personal needs and social expectations of individuals. They are culturally appropriate, and allow students to face doubts and understand themselves, their own experiences and needs, and the surrounding world. Knowledge is a dynamic, subjective structure in the formation of which each student has his personal share. Moreover, the role

of the teacher is changing from being depositor and knowledge transmitter to reflective practitioner.

The paper concentrates on knowledge read in the constructivism context. We review several concepts (Dewey, Gordon, Bruner and others), with an emphasis on those for whom understanding knowledge is crucial and who focus their attention, not so much on the external manifestations of student activity, as on their mental significance and process. The discussion presented in the paper is of a theoretical nature. The analysis of knowledge is not conducted from the psychological (individualized) perspective, but exposes the social consequences of education. Thus, the analysis does not deal with the mind as such, but with what the school system does with students' minds and what consequences it may bring. This imposes the two-part structure of the paper. The first part reflects teachers' approach to knowledge when pragmatic constructivism is the point of reference. The second part presents knowledge from the learner's perspective as a participant in the educational process. Finally, the conclusions list social consequences of education derived from the specific (positivist/anti-positivist) concept of knowledge.

Pragmatic constructivism

While it is gratifying that constructivist principles have been well documented in educational literature (Piaget, Wygotski, Bruner), the paradigm has arguably been far less evident in educational practice. A "fragmented" (Gordon 2009: 40) literature of relatively abstract ideas may be partly accountable for this situation, as consequently, may misinterpretations of how constructivist principles might be made manifest in classrooms. With a view to addressing this situation and to countering the perception of the constructivist discourse as "a kind of anything goes" approach, Gordon (2009) proposes a "pragmatic constructivism" that is prescriptive as much as descriptive in that "it speaks directly to the practical concerns of educators" (Gordon 2009: 40–41).

Contrary to popular misconceptions such as that 'constructivist' teachers need not have expertise in any body of knowledge, nor engage in formal teaching, as learning should be wholly student directed, Gordon (2009: 48) proposes that effective constructivist practice comprises a balance of teacher- and student-directed learning. While teacher and student are therefore seen as co-creators of knowledge, in acknowledgment of Dewey's ([1902] 1956:18–19) stance on the superiority of "adult knowledge", the teacher's prior knowledge and experience will still have ultimate authority. Appropriate methodologies will include problem-based learning, dialogues with peers and between student and teacher to encourage sense-making of subject matter, together with exposure to multiple sources of information. With a view to providing for genuine understanding, the teacher will incorporate careful questioning and opportunities for students to demonstrate their new learning in diverse ways, with particular emphasis on performance-based assessment (Windschitl 1999: 752; Gordon 2009: 54). The teacher will also employ direct instruction, and will most helpfully do so on a 'just-in-time' basis (Hmelo-Silver 2004), as the need for such

instruction becomes apparent. Thus, education becomes a shared teacher-student process of inquiry, interpretation and knowledge creation (Freire 1970, 1994).

Teacher as learner

This proposed re-framing of the teacher's role to encompass that of 'learner' adds a much-needed dimension to the traditional concept of 'teacher'. It is inevitable that classroom practitioners develop much knowledge about teaching in the course of practice. Indeed, it is fair to suggest that to a considerable extent, "teaching is situated in instructional interaction … one learns how to teach as students 'act back' and responses must be tailored to their actions" (Lampert 2005: 36). Yet, the insights on practice gleaned by teachers in the course of that day-to-day practice are not usually accorded similar status to that of 'formal', 'theoretical', 'expert'-generated knowledge *for* practice. As this implies, research and theory building are the prerogative of academic 'experts' with teachers serving merely to apply this prescribed 'knowledge'. The suggestion that teachers neither are, nor should be involved as 'learners' in reflection or research on their practice, is elitist, and in undermining the lived world of teachers and students, ultimately disempowers both (Gordon 2009: 42; Kincheloe 1991). It serves furthermore, to exacerbate the well-established divide between theory and practice in education, whereby only tenuous links have been found between beginning teachers' propositional and procedural knowledge (Ethell and McMeniman 2000). It is reasonable to suggest that insofar as the teacher is also a life-long learner, he or she potentially develops knowledge about teaching both prior to, and during appropriately reflective practice. Moreover, as Gordon (2009: 49) points out with reference to Dewey's (1988) pragmatist approach, genuine knowledge is neither located in abstract theorising nor arrived at through practice alone, but is developed "by integrating thinking and doing, by getting the mind to reflect on the act".

Reflective practice for constructivism

Schön's (1983, 1992) insightful thesis on the nature of professional practice is of interest in this context. In line with the philosophies of John Dewey, Schön (1992: 124–125) proposes that practitioners develop much important professional knowledge through 'knowing-in-action' in the course of practical experience and reflection on that experience. He explains that the world of practice does not present 'given' problems to be solved through the application of externally devised theories and established techniques. Rather, it is characterised by complex, unpredictable and often unique situations in which the practitioner is not only challenged to solve problems, but to define their nature in the first instance (Schön 1983). In essence, what Schön validly suggests is that on an ongoing basis the practitioner constructs and re-constructs the reality of the practice situation. In doing so, he or she is influenced to various extents by immediate and contextual considerations, personal factors, and professional 'knowledge' derived from formal coursework.

Hence in schools, teachers form and re-form constructs of their roles and responsibilities as educators: understandings which are likely to be congruent with their views of students and schools. The teacher's classroom actions are rooted in these constructs. It is vitally important therefore that these implicit constructs are brought to awareness through structured reflection (Ryan 2005). By reflecting on, or 'researching' practice, and by doing so through the lens of established theoretical frameworks, powerful knowledge generated by the teacher as a reflective practitioner, is not only 'legitimated', but may concomitantly serve in the evaluation and revision of established theory (Gołębniak 1998). It is such 'genuine knowledge' (Dewey 1988) developed by the teacher that has the greatest potential to significantly enhance future practice. In summary, "pragmatic constructivism" requires the teacher to take an active role in the learning process by means of structured reflection on the lived experiences of the classroom. "Thus, a pragmatic constructivist discourse is one that is grounded in doing, that is, in good constructivist teaching practice" (Gordon 2009: 50).

Teacher education

The adoption of such a perspective has potential not only to improve classroom teaching and students' learning, but also to ameliorate the theory/practice dichotomy in the context of teacher preparation for professional practice. With reference to what she describes as a "crisis" in teacher education, Grossman (2008: 15) concludes that we still know very little about the aspects of teacher education that are most effective in preparing teachers to teach well. Indeed, in the light of the constructivist discourse outlined above, it may be argued that the pedagogy of teacher education is circumscribed, above all, by persistent inadequacies in our understanding about the nature of the important knowledge guiding the effective practice of teachers and about how that knowledge is formed (Ryan 2012: 37).Of interest therefore is Korthagen's (2004) advice that teacher educators focus initially on the provision of practical learning experiences for student teachers and the often overlooked potential for valuable learning that can arise from these. In line with Schön (1983, 1992) he explains that this fundamental learning, in the form of instantaneous and unconscious 'gestalts', needs to be uncovered and supported through reflection, if it is to form conscious and appropriate 'schemata'. As in the school classroom, a type of 'just-in-time' (Hmelo-Silver 2004; Červinkova, Gołębniak 2010) approach might then be employed by the teacher educator who identifies 'key moments' when the student teacher 'wishes' to be supported in the connection of several schemata to develop a theoretical understanding. This proposed process of teacher preparation for practice is rooted in the pragmatic constructivist paradigm. It implies a re-consideration of 'relevant' educational theory to embrace a 'different type of teacher knowledge' and teaching that may arise as much from [student] teachers' research into their own practice as from academic sources (Korthagen 2010: 420; Ryan 2012: 38).

Towards exemplary teaching and learning

Significantly, each of the 'exemplary' teacher education programmes described by Darling-Hammond (2006: 152–185) is designed on such constructivist lines. As she explains, in the course of extensive, carefully developed field experience into which is woven relevant coursework, students in these programmes are facilitated in engaging in structured reflective processes with a view to linking theory and experience/practice. It is notable furthermore that the adoption of such a [student] teacher research/'inquiry stance' (Cochran-Smith and Lytle 1999) is also a distinctive feature of the teacher education system in Finland (Sahlberg2011), a country which as Hargreaves (2011: xviii) points out, has "consistently superlative performance on international tests of student achievement". According to Sahlberg (2011), much of this success is attributable to a research-based teacher education system that entails the achievement of a Master's degree as a basic qualification for teaching. As such, the development of skills in structured reflection, and hence formal inquiry/research into their practice is inherent in the 'Finnish Way' (Sahlberg 2011). The approach involves "systematic integration of scientific educational knowledge, didactics, and practice to enable [future] teachers to enhance their pedagogical thinking, evidence-based decision-making, and engagement in the professional community of educators" (Sahlberg 2011:78).

In summary, effective constructivist practice in schools calls for a different concept of teacher, teacher knowledge, teacher practice and consequently, teacher preparation. As Gordon (2009: 43) emphasises, constructivist teaching is much more complex than the traditional teacher-directed approach. In Cohen's (1988: 255) words, teachers who seek to employ constructive principles in practice "must work harder, concentrate more, and embrace larger pedagogical responsibilities than if they only assigned text chapters and seatwork". Given their relative inexperience with class management, curriculum, and school culture matters, beginning teachers are likely to be particularly challenged to employ a constructivist perspective in practice. The onus is on teacher educators, therefore, to provide preparation programmes that support future teachers' pragmatic adoption of constructivist principles and hence their potential to significantly enhance classroom teaching and learning.

The child as learner

The use of the constructivist approach to knowledge leads to a change in the attitude to students, their activity, and the learning process. It corresponds to the new paradigm of childhood (Prout, James 1990) according to which children are social actors participating in the process of creating and determining not only their own lives, but also the lives of the people around them and the society in which they live. They also have their share in learning processes, based on their knowledge arising from experience. They have the causative

power: their active attitude contributes to multiplying social resources, they have their own voice, which allows them to express their own opinions and views.

The adoption of this point of view for considerations results in giving the student a new status. According to G. Dahlberg, P. Moss and A. Pence (1999: 48–52) the child appears to be a co-creator of knowledge, culture and its own identity. The child is not understood as an object to be measured (e.g. in cognitive, social, motor spheres). No one tries to "count" the child with, for example, test results or its rank in school achievement lists. The child becomes the subject with a huge development potential and initiative to change. He or she is seen unique in terms of personal experience, numerous talents and a great desire to explore the world and discover its secrets. The child is rich in knowledge, and therefore knowledge is not an external category to him or her, as it is a personal structure in the creation of which the child actively participates. In line with P.F. Druckers, knowledge is always someone's, it is always placed in a person, taught and learned by the person, applied correctly or incorrectly by the person. Knowledge does not reside in a book, database or computer programme, because there it is only a piece of information. Its place is an active individual taking part in its acquisition and multiplication (Drucker 1999: 151–152). This means that the process of knowledge acquisition does not consist of its transmission from the teacher to student, but its active co-creation.

This type of cognitive stimulation of students requires a set of teacher competencies that are wider than a mere technical knowledge – competencies that treat experience acquired in communication and dialogue, reflection and critical thinking as a priority. Owing to these competencies the knowledge of an individual is alive, and understanding the world becomes an endless task (Kwaśnica 1994: 17–19). When working with students this task is of particular importance. As it is much easier to elicit student reflection when the teacher attitude is reflective and is accompanied by interpretation, asking questions, provoking thought. M. Piotrowski calls the change of this type "a dismissal of the police officer", when all students do not have to mindlessly repeat drills after the teacher, which only look nice and seem to form social ties, but have causative and decision-making powers (Piotrowski 2013: 158).

Knowledge in school

The dismissal of the teacher from the position of the "police officer" is at the same time the dismissal of students from the role of "privates". In this way school ceases to be an institution that follows a production-military pattern, where the actions of an individual are regular and susceptible to regulation (Bauman 1995: 53–54). Instead, it becomes a continuous teaching organization (Drucker 1999), where learning is not about cloning personalities (Wragg 1999) or making students a series (Foucault 1998). It is about increasing causativity, reflexivity, and knowledge sharing by those involved in teaching and learning.

The effects of the new approach to knowledge are noticeable in many areas of student activity. In the cognitive sphere the extent of managing one's own mental activity is in-

creased. Learning is accompanied by grasping the sense of acquired content. The student is "the thinking self", knowing self (Bruner, 2006). The learner is allowed to be active, problem-oriented, focused, selective, constructive, effect-oriented. He or she is also permitted to initiate and act independently and affect their self-esteem. He or she has cognitive control over their actions, which results in stronger involvement in actions the learner undertakes, (subjectively) stronger sense of success and greater motivation. Knowledge is not an effect of mechanical memorization, which involves enlarging information resources in terms of quantity. It is subject to development, because knowledge is created by an individual with a sense of control over their own thinking and action.

As a consequence, the child ceases to be cognitively poor or intellectually incompetent, appropriated by adults and deprived of the right to decide. What is more, the child does not have to operate under the illusion that he or she thinks, talks and knows; on the contrary, he or she is able to generate ideas independently, find solutions, and use intellectual problem-solving strategies. The knowledge of the individual becomes dynamic, living, adequate to the requirements of the times and socio-cultural conditions; it is useful in the lives of individuals and is characterized by high usability.

Changing perspective on knowledge also affects identity. Instead of unification individuals are allowed to function in the community while maintaining a subjective belief in their own independence. It consists of a self-image (the image of self in a specific time) and the self-concept as a personal, social and cultural characteristic. Research on the process of identity formation shows that individuals with this type of personality have open identities (Pervin, John 2002: 106). They operate on a high level of mental activity. They are capable of independent thinking, moral reasoning (even children) and are characterized by resistance to the manipulation of self-esteem. They have high self-esteem and have a desire to learn and understand others. They can deal with a dynamic reality. They are capable of dialogue and the exchange of meanings. They reflect on themselves. They are more likely to search answers to questions "who am I?" and "what am I?" than individuals with a closed identity. They are not afraid of otherness and difference, because they are aware of their occurrence. "Others" (in ethnic, cultural, religious dimensions) do not appear to them as incomprehensible, arousing fear, but interesting, intriguing and worth meeting. As R.H. Schaffer says, in this way the knowledge of the individual about himself and knowledge of other people multiplies (Schaffer 2006:175). With this attitude, the chance of eliminating prejudices and social stereotypes increases and individuals become more aware of themselves, others and the world around them in a real social, civilizational and cultural context.

Conditions for constructing knowledge in school

The learning process (in line with the interpretation applied in the text) is the process of the construction of knowledge by the individual. It is accompanied by changes in the teacher's strategies and the learning strategies of the child. Table 1 is a synthetic presentation of the changes. It shows factors promoting the construction of knowledge that are connected

with the student and the teacher. These attributes are interrelated, since the change in the perception of the student is accompanied by a change in the way the teacher works, just as a change in student expectations about education is accompanied by a change in the behaviour of the teacher.

Table 1. Conditions for constructing knowledge in school

Attributes connected with the teacher	Attributes connected with the learner
Organisation of learning and teaching conditions	Cognitive activity
Use of joint commitment episodes	Biographical context of activity
Reflection in action and reflection on action	Interpretive, critical, designing reflection

Source: compiled by author.

The primary attribute connected with the teacher is a shift of his or her role from the guide and knowledge transmitter to facilitator stimulating the child's actions towards independence and cognitive resourcefulness. The teacher then becomes the organizer of learning conditions. He/she focuses on creating educational situations in which the world does not appear to be unequivocal and absolutely understandable, but full of doubts, unsolved problems, and the methods of learning it are based on studying, exploring, discovering and searching. In creating these situations, the teacher takes into account for example, children's curiosity instinct (Bruner 1965), drive to explore (Kielar 1989) or children's right to interest (Piaget 1970). In all these situations the teacher is required to have knowledge of the child, educational regularities, various methodological solutions, as well as tactical knowledge – knowledge happening in social situations which the teacher is forced to produce adequate to circumstances.

The attribute of knowledge construction corresponds to the activity of the student. It is cognitive when the act of learning "is not simply information refreshing, revising or reactivating, but a continuous creation of new structures from incoming information" (Neisser1967: 285–286). This means that the change is developmental and the child's activity becomes cognitive when it has a structural dimension, and a passive perception of facts and phenomena is replaced by their active penetration; mechanical acquisition of information is replaced by its intensive analysis and recognition from different perspectives.

Another condition for knowledge construction in school is the use of joint commitment episodes that is a desire to understand the perspective of the child. The teacher is interested in the opinion of the child on a task, the child's point of view on a problem, its way of recognizing reality, and opinions on a topic. This is facilitated by dialogue with children, negotiating, problem solving, and reflection provoking. It also involves considering the child's biographical contextuality (Klus-Stańska 2009: 480). This means recognizing and taking into account the child's prior knowledge (gained in the past) and accepting the child's current goals, aspirations and intuition. This is important because the cognitive biography of every individual is different, and the conditions for its formation affect the ef-

fectiveness of the learning processes. Biographical contextuality shows that: 1) under the same conditions, information flow differs and students can construct different structures of knowledge in their minds, and 2) the same elements of knowledge developed and recorded in different conditions (e.g. the teacher presentation versus problem solving by students) can be recorded in various ways: with expository methods as static memory knowledge, and with problem methods as dynamic knowledge derived from understanding.

Reflective teacher – reflective students

Another condition for knowledge construction is reflection (of both the teacher and students) which leads to responsible and engaged learning. It is a kind of thinking, constant consideration, investigation, a type of theoretical reasoning. It helps in their vision of their It helps in their vision of their own work and it helps them to take initiative. It is expressed in many ways:

a) in a multiplicity of interpretations – taking into account various arguments and alternatives,
b) in critical judgment – an ability to predict and analyse consequences,
c) in designing actions – starting studies, exploring, constructing solutions.

The reflection results in a type of knowledge that is completely different from knowledge described as reproductively specialized or standardized. The knowledge derived from the reflection of both the teacher and students can be regarded as a kind of personal knowledge acquired, lived, derived from personal experience and action. Thus it is a fertile knowledge (Nęcka 1995: 136). Owing to in-depth reflection, this knowledge gives a picture of the world in its full complexity and makes it possible to solve difficult and innovatory problems. It is not the result of duplication of what has already been discovered, and what is already known, but the result of what is derived from inquiring, evaluating a problem, constant analysis, and modification of existing cognitive structures, creating new cognitive values. It is a critical questioning of one's own knowledge, which provides its freshness and relevance to the requirements of the times and social expectations.

Conclusion

Our discussion leads to the conclusion that a reflection on knowledge is a reflection on education and is connected with specific social consequences or specific spatial connotations.

Writing about the architecture of knowledge S. Dylak describes it using six essential characteristics (Dylak 2013). In his view, knowledge is both subjective and objective, it contains collective and personal components, it is sensitive to contexts, it is of hidden and externalized nature, it has a limited lifetime if it comes to its usefulness, but an unlimited lifetime of the component information, it is functional if it is used, and informational, if it is gained. This approach to the characteristics of knowledge makes it possible to discuss its *from-to* dimensionality (Dylak 2013: 167). Following this line of thought the teacher might be:

- an architect of knowledge, strategic designer who opens up new forms of working and learning space, carefully listens to what the students say, learns the freshness of seeing the world, learns the dispositions typical of childhood, remembers how to be genuinely surprised, how to enjoy new information, how to be curious of the result of an experiment,

or

- a holder / transmitter of knowledge, that is someone who is convinced that they are pouring or spilling their knowledge around, blocking the cognitive motivation of students and depriving them of the joy of creation (Dylak 2013: 170, 175).

When the teacher becomes a transmitter of knowledge, the school becomes the institution that transmits knowledge, and the teacher is mainly a clerk verifying this knowledge among students. This is typical of the traditional school model, which is dominated by adaptive and selective functions, and the teaching concept is based on transmitting the canon of settled knowledge and modelling students' behaviour. The adoption of this way of thinking about knowledge, however, has serious social consequences that are presented below:

1. Education derived from the positivist model of knowledge is mainly focused on meeting standards and objectives set outside an individual with the intention of normalising the development and growth of knowledge and competence. Individualization, the growth and progress of individuals in relation to their previous possibilities, a sense of being successful, and competence growth become neglected. The student is primarily an object of continuous diagnosing, monitoring, managing, supervising, comparing, verifying against established standards. It is debatable, however, what these standards are and on what grounds they were established.
2. Teachers' thinking is dogmatic in nature (Rokeach1960) and, as D. Klus-Stańska claims, teachers are mentally enslaved (Klus-Stańska 2005). These two characteristics are expressed in teachers' lack of interest in novelties and their reproduction of unambiguous and indisputable knowledge. Therefore, the result is an exceptional demand for ready-made solutions, methodical patterns, and guided scenarios for repeated usage. They tell students how to work without using their own initiative, and do not provoke cognitive activity. The report prepared under the supervision of E. Putkiewicz shows that it is necessary to develop a support network for teachers (especially for beginners and teachers with over twenty-five years of experience) in order to develop their independence and originality, interpretative skills, and creative initiative in working with children with different educational needs (Murawska, Putkiewicz, Dolata 2005).
3. Syllabus-centrism and textbook fetishization come into light in the process of teaching and learning. Teachers treat these two sources as a major aid in transmitting only the correct version of knowledge, which takes the form of unquestioned and indisputable content designed to be acquired in the form of the syllabus. Similarly, textbooks are perceived by teachers as exceptionally well-written, colourful, containing instructions and guidance as to what the student is to do and how, and

what is to happen in the lesson. As a result, the students are not inspired by the teacher to be curious and active, because everything has already been provided out of their experience, interests and needs. This leads to the isolation of students and teachers from real and current problems and to provincialism, manifested in the imposition of meanings specific to a particular cultural group, and closed in the contents of a specific syllabus or textbook.

4. Teachers' lack of ability to modify their own behaviour, resulting from being stuck in schemes, makes any changes merely apparent. Innovation usually hides "old" solutions dressed only in nicer words (to support, develop, activate), more fashionable concepts (subjectivity, creativity, integration, activating) and more attractive graphic solutions (interesting illustrations, rich colours, attractive fonts). Yes, there are new educational packages available, new exercise sets, work sheets with nice graphics, but their concept is still stuck in the methodology of expository teaching derived from the adaptive paradigm.
5. Another dimension of resistance to innovation and an example of imitation in education is the inertia of schools and teachers in the face of new media. As D. Klus-Stańska points out "although schools let in modern media, such as computers and the Internet (mobile phones are still excluded), it has not changed the essence of its functioning" (Klus-Stańska 2013: 6). This means that school has reconstructive heaviness, typical of cultural practices. Although electronic media are changing the world and people socially, emotionally, cognitively, and generations coming to school today are more and more different from the previous ones, school does not seem to notice it and remains a stubborn defender of "talk and chalk". What is natural in the life of the young generation, that is new media, school treats as a threat or necessary evil. And it is not that schools do not have computers or interactive whiteboards. The problem is how they are used.

Taking into account the above conclusions and searching for reflections to summarise we would like to quote the words of S. Dylak who writes "maybe it is time that the current generation of school children was one of the last that has to struggle with the process of transmission and acquisition of knowledge (…) maybe it is time to make a more decisive step towards the reorganization of subjects, consolidation of existing subjects (…) and the introduction of the new ones (…), maybe it is time to transform school from the knowledge providing institution to the institution of knowledge (…)" (Dylak 2013:166). Maybe it is time to move from meeting standards to the reflection on thinking about standards, making education flexible and adequate to the needs of individuals and social expectations.

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