

FORECASTING AND PROGNOSING IN EDUCATION

BEATA PITULA, BARBARA GRZYB

Abstrakt: *Forecasting in education, in the context of events and processes also of a social nature, allows to draw attention to the important role that it plays today. It externalises not only the complexity of the child's problems, but also the confirmed and empirically described difficulties, resulting after all from realistic information closely related to the development of education. Hence the discussion on the terminology of forecasting, models and types of prognostic forms as contemporary indicators of the conceptual prediction of the child's educational future arises in the article. The presented prognostic proceeding, which is presented in the form of a five-layer process, shows that every action closes in an area that is also very important both for specialists and parents. Making an in-depth analysis of the forecasting process, so specific and rarely discussed in the subject literature, highlights the increasingly observed dynamization of this impact in the sphere of contemporary education.*

Key words: *forecasting, education, forecasting model, prognostic forms, prognostic process.*

INTRODUCTION

Predicting future events and processes based on the existing in the past authentic social events allow today to make a statement that in many areas of life the issue of forecasting begins to play a very important role. Most frequently it allows to predict certain events or facts, but one cannot resist the impression that a complete surrender to a prognosis is associated with a certain skepticism in assessing the accuracy of "events within the same science as well as outside of it"¹. It is easy

to notice that attempts to obtain reliable knowledge about the future within a certain science encounter numerous theoretically described and empirically confirmed difficulties. These difficulties are manifested with the greatest strength in the so-called issue of prognostic accuracy².

However, looking from the perspective of the contemporary education, K. Denek remarks that "prognosing in education is one of the most neglected elements of the rational shaping of its

¹ A. Kołodziej, Prognozowanie zjawisk społecznych w obrębie socjologii – nadzieje, możliwości, ocena trafności, [in:] I. Sobieraj, A. Kołodziej (ed.), Prognoza, interwencja i ewaluacja

w naukach społecznych. Teoria socjologiczna i praktyka badawcza, Wydawnictwo „Adam Marszałek”, Toruń 2015, s.19

² Ibidem, p.13

policy in the first quarter of the 21st century”³. In this situation one should pay attention to the realistic degree of the prognostic information, as these are determined by historical experience resulting from the development of education. Nobody can deny that the knowledge, skills, visions and paradigms accumulated by humanity have left their mark in education in their characteristic way. On the other hand, its historical and often timeless overall impact is of considerable importance for the current level of pedagogical opportunities, the implementation of which continues to influence future generations⁴.

In this case it is justified to sketch not only the issues of contemporary prognosing but also a definitional explanation of both the content and possible conditions regarding the date of the prognosis.

In general, it can be said that the terminological formula of the concept of prognosis is explicated very differently, and the difference in the way it is approached most often results from the field in which it is applied. According to the dictionary of psychology, the forecast (prognosis) in the strict sense is the prediction (in the sense of a guess based on the collected information) of the presumed course and outcome of some process, for example:

- educational;
- methodological;
- programmatic;⁵ etc.

³ K. Denek: *Tocząca się reforma edukacji. „Nauczyciel i Szkoła”* 2006, Nr 3-4 (32-33), 21-42.

⁴ S. M. Markova, E. Pavlovna Sedhyh and S. A. Tsyplakova, *Upcoming trends of educational systems development in present-day conditions*, „Life Science Journal” 2014;No 11; pp.489.

⁵ *Słownik psychologii*, 2000, s. 551-552

In the view presented by W. Okoń, a pedagogical prognosis (Greek - *prognosis*) is a prediction of this state in some chosen field of education and upbringing, which will take place at a given time. With reference to time, a distinction is made between a *short-term one*, e.g. predicting the results at the end of the school year, a *medium-term one*, covering several years, (...) and a *long-term one* pertaining to important, anticipated changes in a couple or several decades. The prognosis is usually treated as a numerical result of the prediction process, i.e. inference allowing of an accurate assessment of the value of implementation of a random variable in the adopted period in the future⁶.

A fairly popular definition of a prognosis can be read from the “Pedagogical Dictionary”, as it indicates that it is “the prediction of the course of specific phenomena and processes based on justified premises and formulated by specialists dealing with a given field. A pedagogical prognosis consists of predicting changes that can and / or should be introduced in the education system of a given country, as well as the effects of these changes, after a certain period of time”⁷. Therefore, forecasting in pedagogy can be defined as a certain assumption regarding events that may occur in the future. In other terms, “the prognosis is the result of a scientifically

⁶ W. Okoń(1998): *Nowy słownik pedagogiczny*. Wyd. drugie, Wydawnictwo Akademickie „Żak”, Warszawa, s. 316.

⁷ Cz. Kupisiewicz, M. Kupisiewicz, (2009): *Słownik pedagogiczny*. PWN, Warszawa, s. 145.

based prediction of the course and condition of possible (probable) future events (matters, facts, phenomena) expressed in the form of prognostic information". However, it should be emphasized, just as the author does it, that the prognosis should be treated as a theory of solving specific problems related to predicting the future⁸.

Prognosing is a cognitive activity, usually exercised by using scientific procedures, aimed at showing the most likely directions of social and economic changes, their pace, structure and range⁹. The benefits of forecasting are also experienced in education. It is first and foremost "a scientific activity aimed at expressing the judgment about the occurrence of a given educational phenomenon in a specific place and time in the future"¹⁰. To hint at this issue is nothing more than to draw attention to the fact that the achievements of pedagogy so far, and in particular its theory and practice, constitute a rich source of knowledge which, according to K. Denek, allows children and youth to be prepared for the future that awaits them¹¹. The author's observation is also confirmed by S. M. Markov, E. Pavlovna et al. because they point out that both the content and the realistic degree of scientifically proven information is determined by the historical experience of education itself. In turn, prognoses in the sphere of education are related not

only to perspective needs as well as the social ones in the scope of far-reaching planning, but also to making decisions and determining priorities in the educational policy¹².

Relying on the process of conditions regulating the very aspect of predicting certain events in the educational process, it is important to recognize experience, knowledge and substantive data obtained from many sources, which can confirm the occurrence of a certain phenomenon in education. Very frequently "the consequences of the current reform efforts can only be seen in the long term"¹³. Hence, "predictivism in the approach towards the tasks of the educational system is deterministic. The prognosis provides a vision of the future condition, allows of the preparation of appropriate staff, infrastructure, content, methods, etc. Formulating a future condition image – which is always associated with evaluation (valuation) - creates opportunities to take such steps so as to make the future state of the matters valuable and socially desirable"¹⁴.

Considering the definitions quoted above, as well as the orientation of the prognosis in the field of pedagogy, we note that it can most frequently relate to demography, and diagnosing didactic, educational, social or economic problems based mainly on hard data, as confirmed by the contemporary scientific literature¹⁵. From the point of view

⁸ A. Filasiewicz (1977): Prognoza, program, plan, Wiedza Powszechna, Warszawa, s. 20-21, s. 42.

⁹ Ibidem, p. 946

¹⁰ A. Marszałek (2005): Encyklopedia pedagogiczna XXI wieku, Wydawnictwo Akademickie „Żak”, Warszawa s. 953.

¹¹ K. Denek: Tocząca się reforma edukacji... op. cit., p. 33.

¹² Markova S. M., Pavlovna E., Sedhyh and. Tsyplakova S. A., Upcoming trends of educational systems development in present-day conditions, „Life Science Journal” 2014; No 11; pp.489.

¹³ A. Marszałek (2005): op. cit., p. 954.

¹⁴ Ibidem, p. 954.

¹⁵ Cf. Encyklopedia socjologii, 2002; U. Gruca-Miąsik, (2005): Encyklopedia pedagogiczna XXI wieku; K. Denek: Tocząca się reforma

of pedagogical practice, we notice many common conditions in the prognosing space. They allow not only to anticipate certain phenomena, but also to regulate the process of individual, group or institutional impacts. These activities usually lead to the harmonization of the support process, whose predictability in many areas is already documented. In addition, standardization in prognosing that we deal with in case of a diagnosis, allows to organize the impacts, their regulation as well as planning and designing future initiatives and practices.

MODELS AND TYPES OF PROGNOSTIC FORMS

By situating the concept of the model with reference to a definitional dimension of the prognosis, it is noted that it is a construction, scheme or description showing the operation, structure, features, dependence of a phenomenon or object¹⁶. "A very frequently used technique in the field of modeling is the technique of operational description"¹⁷. "If the model is correctly constructed, it allows of the orientation in the current reality and prediction of changes related to the processes under consideration to its specific parts"¹⁸. The components of the prognosis itself indicating the overall

structure of this process are also important and based on its characteristic assumptions. They mainly concern the time, purpose of the prognosis, tasks, planning and evaluation. Assuming, however, that the prognosis in education is regulated by a number of conditions of interdisciplinary importance, the modeling of this process may be considered important (Fig. 1).

As emphasized by A. Marszałek, the nature of the prognosis focuses on objectives and tasks specific to the potential variants of their implementation. The essence of the conceptual strategy is primarily to determine the time, course of action and conclusions resulting from the analysis of the state of a given segment of the reality being examined, by using, among others, the following methods:

- monitoring;
- observation and analysis of the educational process;
- analysis of professional activities;
- analysis of scientific discoveries;
- inventions;
- socio-economic changes¹⁹.

The model approach to the prognosis is today a starting point for analyzing a number of problems of modern education, which should be anticipated in

edukacji. „Nauczyciel i Szkoła” , 2006, Nr 3-4. K. N. Ross, L. Mählck (Edited by), Planning the quality of education. The collection and use of data for informed decision-making. Unesco: International Institute for Educational Planning Pergamon Press, 1990, pp.15. http://wiki-devel.sugarlabs.org/images/4/4c/Somerset_Chp2_Different.pdf, [accessed on: 14.10.2017.].

¹⁶ Słownik Języka Polskiego PWN: <http://sjp.pwn.pl/slownik/2484153/model> (10.04.2017).

¹⁷ Parametryzacja i kwantyfikacja w analizie efektywności organizacyjnej Piekarczyk H., Stabryła A (red.) Zeszyty Naukowe Akademii Ekonomicznej w Krakowie nr 345, Wydawnictwo AE w Krakowie, Kraków 1991, s. 85-101.

¹⁸ J. Zieleniewski, Organizacja i zarządzanie, PWE, Warszawa 1979, s. 46; quoted after: B. Glinikowska, Modelowanie w procesach usprawniania organizacji - uwagi teoretyczno-metodyczne, „Acta Universitatis Lodzensis Folia Oeconomica”, 2010, nr 234, s. 257.

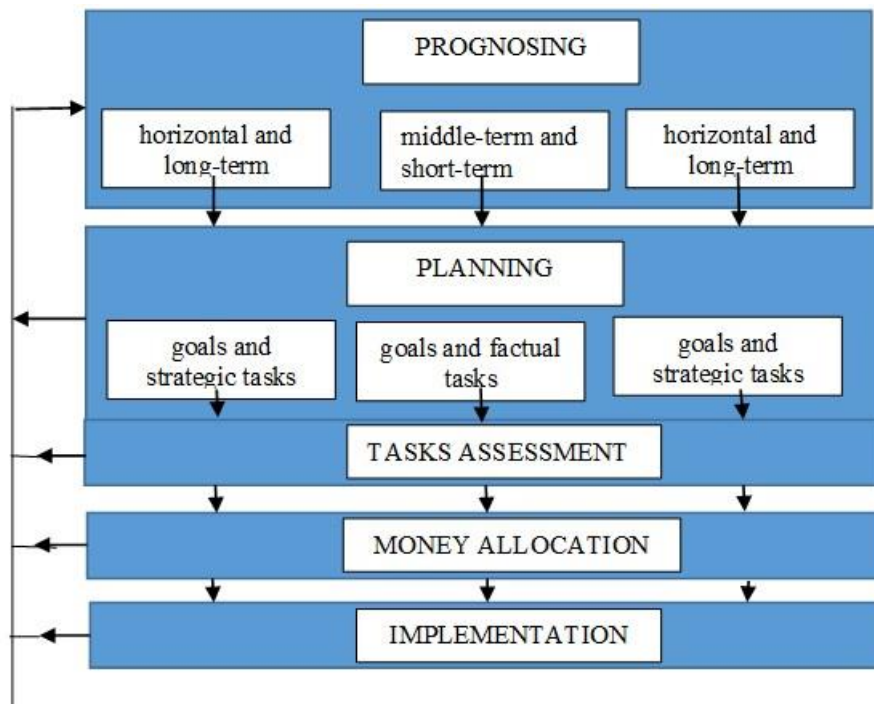
¹⁹ A. Marszałek (2005): op. cit., s. 959.

the area of effective care, education and upbringing of children and youth.

In contrast to the definition of the prognosis and its model, the key issue is the prognostic forms. Their role is primarily to recognize and search for such assumptions the targeting of which will be closely related to the studied segment of the reality, e.g. the educational one. This is an extremely difficult task, because we do not always deal with the same or a similar complex of conditions

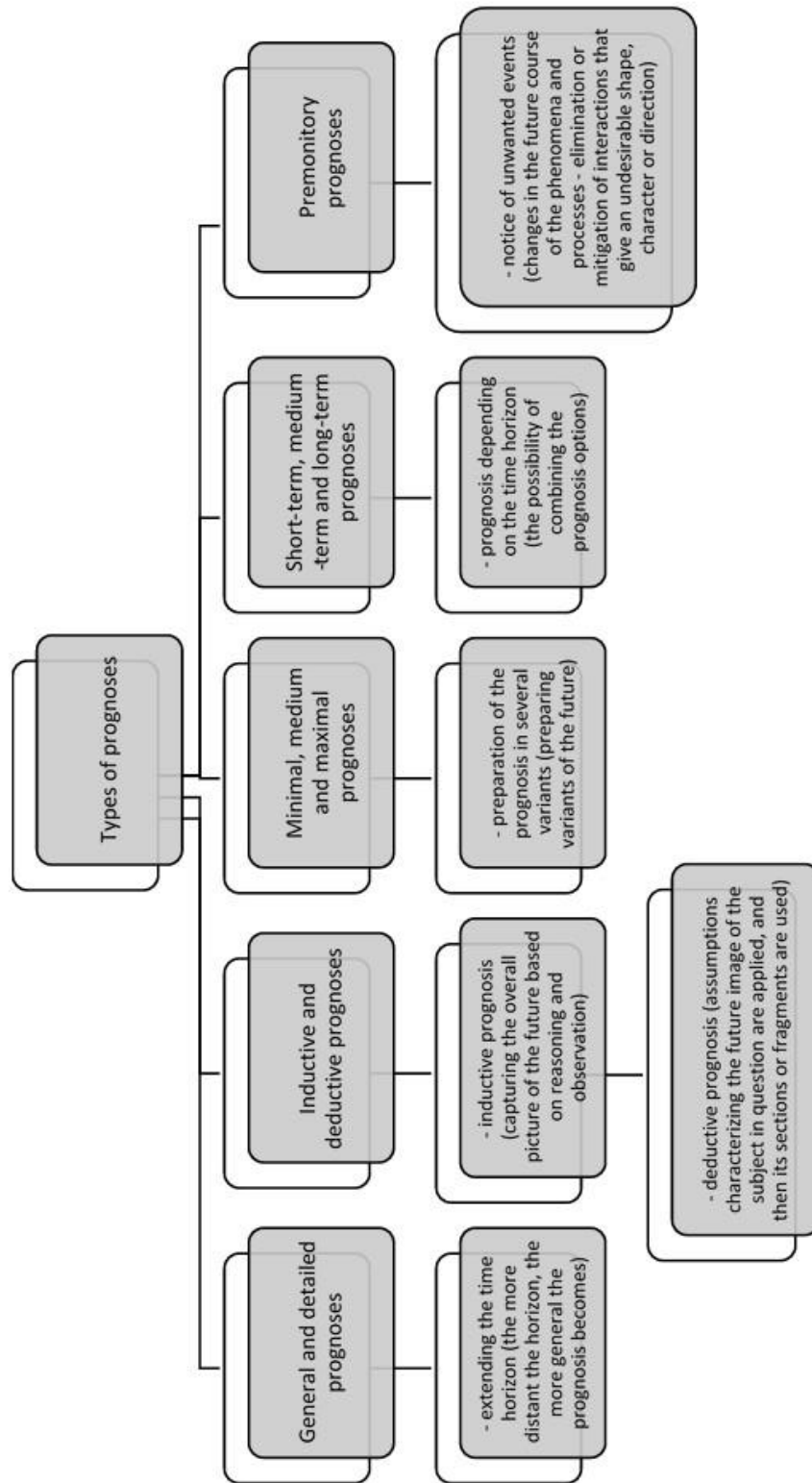
having a significant impact on the regulation of all variables that cause the same social phenomenon in different periods of time and place. It should be emphasized, however, that many kinds of prognoses can be found in the scientific (pedagogical, sociological, psychological) literature. To approximate the specificity of the prognostic forms, the following scheme was used (Fig. 2).

Fig. 1 Model of the application of prognosing with different time horizons in the modernization of any selected system



Source: A. Marszałek (2005):*Encyklopedia pedagogiczna XXI wieku, Wydawnictwo Akademickie „Żak”, Warszawa s. 960.*

Fig. 2 Types of prognostic forms



Source: Own elaboration based on U. Gruca-Miąsik (2005): *Encyklopedia pedagogiczna XXI wieku*, Wydawnictwo Akademickie „Żak”, Warszawa.

U. Gruca-Miąsik, while defining the general conditions of the most frequently indicated prognostic forms in education, signaled not only a certain hierarchy, but also the purposefulness of their application. Thus, we have a division of the prognosis into five separate variants with the individual dynamics of the processes, characterizing each of the areas indicated in the scheme. These forms have their own specificity and scope of assessment based on diverse and often individual conditions. However, from the perspective of the author, one can say that "the prognosis as its main goal accentuates the most accurate and objective diagnosis of the future, and therefore its faithful reflection in the content of the prognosis and its developed description."²⁰

In relation to the described issue, it is worth using a different approach to forecasting in order to approximate possible impacts focused on the extrapolation of trends, expert opinions and recognized assumptions, and, as emphasized by K. Denek²¹, normative and integrated actions. Referring to the views of the author, a diagram was prepared on prognosing in education, including the basic areas of the assessment of development processes, allowing of the initial prediction of the child's educational future. The variants indicated in the diagram do not exhaust all the possible solutions, but only specify the basic criteria for their application (Figure 3).

The developed scheme, which characterizes, inter alia, K. Denek's views on prognosing, has been extended by the issue of the child's educational future. The

most important criteria related to the investigative, heuristic, normative and integrated prognosing have been assigned to the identified areas. However, looking from the perspective of the contemporary prognosing indicators, which relatively affect the concepts of forecasting the child's educational future, we will notice that the indicators presented do not exhaust all the possible variants of its occurrence in the social reality. It can therefore be said that they are a reference point for the development of individual criteria and verifiers of forecasting and prognosing in education.

PROGNOSTIC PROCEEDINGS IN EDUCATION

Forecasting and prognosing the educational future of children, as well as the prospect of the continuity of their education are increasingly becoming a prognostic issue in many scientific disciplines such as pedagogy, psychology and sociology. Owing to their perspective we can identify a lot of important issues concerning not only the prognosing process including the forms or problems but also even anticipating the occurrence of a certain phenomenon in education. Undoubtedly, educational forecasting is an important aspect in terms of prediction, that is, anticipating and even preceding certain phenomena based on the previously existing problems. However, from the perspective of R. A. Slaughter, we notice that the discourse concerning the future is absent in educational practice, both at the highest levels of executive decision-making, universities [...] as well as in school classes²². The necessity of

²⁰ U. Gruca-Miąsik (2005): op. cit. s. 948.

²¹ K. Denek: *Tocząca się reforma edukacji*. „Nauczyciel i Szkoła” nr 3-4 (32-33), s. 21-42. 2006.

²² R. A. Slaughter: *Futures Education: catalyst for our times*, [in:] M. Bussey, S. Inayatullah,

these activities results from many variables, but according to the idea of anticipation, it is of great importance for forecasting possible formal solutions in education, not only on the basis of intuition, but also scientific and research knowledge, which is essential for future actions and decisions in many areas of education.

Looking from the perspective of the child's education, a significant diagnostic activity is an exploration of the knowledge of its functional capabilities and predispositions that result from the interdisciplinary view of many specialists. It becomes the starting position of the prognosis focused on the overall development of the child and his/her potential education.

Regardless of the forecasting and prognosing system and a number of determinants regulating this process, A. Kołodziej draws attention to its essential criteria, namely:

- the prognosis should be treated as the ultimate goal and describe the shape of future solutions;
- the guarantee of the correctness of the diagnosis (prognosis as the basis for verification of theoretical conditions);
- the basis for the implementation of practical measures aimed at the child and his/her family, sup-

porting decision-making processes²³ (prognosis as the basis for determining / justifying the direction of the future, often necessary, actions, but in this sense it can take the form of a premonitory prognosis);

- the basis for evaluation of previously undertaken activities (assessment of the effectiveness of specific activities, programs, therapies, etc.)²⁴.

Considering the above conditions of the prognosis, we can say that it is primarily the ordering of the information obtained in the context of evaluation and individual decision-making processes. It is worth stressing, however, that the procedures related to prognostic and diagnostic activity indicate that the interdisciplinary diagnosis will play a key role as one of the main indicators of the developmental prognosis. It is the basis for recognizing and identifying the child's abilities, but also for exploring possible pedagogical or therapeutic solutions. "The diagnosis is crucial not only for this quest, but also for human development and functioning in general. An improper placement may intensify the effects of, for example, disability. Hence, the triad should always be present: diagnosis - prognosis - therapy²⁵. Referring to the author's indications, we notice a separate

I. Milojević (eds.), *Alternative Educational Future: Pedagogies for Emergent Worlds*, Sense Publishers, Rotterdam 2008, pp. 68.

²³ M. Cieślak, Wprowadzenie, [in:] *Prognozowanie gospodarcze*, Wydawnictwo Akademii Ekonomicznej im. Oskara Łangego, Wrocław 1996, s. 9-28.

²⁴ A. Kołodziej, *Prognozowanie zjawisk społecznych w obrębie socjologii – nadzieje, możliwości, ocena trafności, ...* Op. cit, s. 14.

²⁵ M. Prokosz, *Diagnoza dziecka z zaburzeniami w rozwoju – konteksty definicyjne*. [in:] B. Cytowska, B. Winczura. (red.), *Dziecko z zaburzeniami w rozwoju. Konteksty diagnostyczne i terapeutyczne*. Oficyna Wydawnicza „Impuls”, Kraków 2005., s. 15-35; quoted after: D. Gorajewska, *Fakty i mity o osobach z niepełnosprawnością*, Wydawca: „Integracja”, Warszawa 2006, s. 51.

system of three important areas that guide the correct diagnosis of e.g. a child. In this cycle of interactions, there is also a prognosis as the second component of this triad.

Perceiving the diagnosis as a component of prognosing is a very important link in this process, because the information obtained in this way determines the direction of the therapy based on the experience of specialists and empirical data²⁶. They are quite often very distant from parents' expectations or assumed prognoses, but they play a fundamental role in getting to know the child.

Looking from the perspective of the concept of the prognosis and its conditions, one should refer both to the process itself and to the most common factors which, due to the observations of many specialists, regulate the scope of possible diagnostic, prognostic and therapeutic activities (Figure 4).

The presented model of prognosing in education indicates five main processes, which were assigned to specific primary activities. They provide a point of departure for continuous monitoring of the child's therapy, rehabilitation and education, including special educational needs, taking into account an active participation of parents. The final result is a long-term prognosis, owing to which we will be able to determine the child's capabilities and the continuity of the specialist assistance

provided to him/her. It is not without significance in this period to support parents/guardians in making decisions about the place of the child's education, because in many pedagogical and psychological environments, this is the issue that raises anxiety, often well-founded. Moreover, when developing a long-term prognosis, one cannot reject the analysis of educational trends in the context of school-related problems of the child, which often are visible in the statistical data and scientific research. It is worth noting, quoting after J. Skibska, that determining the impact of developmental abnormalities on the functioning of the child, but also determining at what stage of the development the child currently is and what his/her prognoses are²⁷, is one of the most important indicators of prognostic diagnosis in education.

AN ALTERNATIVE TO A CONCLUSION

Due to the seriousness of the problem, which is prognosis, but also challenges of the contemporary education, the economics of time, the accuracy of decisions and choices becomes significant, which entails the polarization of the positions in the field of prognosing an effective organization of social life. In turn "constant observation of the changes in civilization and the knowledge of tendencies and trends are among the basic conditions for achieving success in educating

²⁶ Cf. 1. B. Grzyb (2013): Uwarunkowania związane z przenoszeniem uczniów ze szkół integracyjnych do specjalnych. Oficyna Wydawnicza „Impuls”, Kraków; 2. S. Sadowska, Z. Janiszewska-Nieścioruk, (2015), O dobrodziejstwie starej, dobrej szkoły specjalnej w perspektywie realizacji obowiązku szkolnego przez uczniów niepełnosprawnych – napięcia między ideą integracji a rzeczywistością.

„Przegląd Badań Edukacyjnych” nr 21 (2/2015), s. 137 – 152.

²⁷ J. Sibska, Model kształcenia ucznia ze specjalnymi potrzebami edukacyjnymi w placówkach oświatowych ogólnodostępnych, [in:] K. Denek, A. Kamińska, W. Łuczuk, P. Oleśniewicz (red.): Edukacja jutra. Uczeń i nauczyciel jako główne podmioty edukacji jutra. Oficyna Wydawnicza „Humanitas”, Sosnowiec 2012, s.160.

and raising children, adolescents and adults. Tendencies and trends should not be identified with fashion. A trend is an evolution, a social process whose course is known. A trend occurs when its signs of the same or increasing rate are present for a long time. Conducting a rational and effective social policy in the field of education requires its prognosing²⁸. The already mentioned efficiency and rationalization of trends does not disregard for education, and one of its dimensions is in particular making a prognosis of the future path of education for children, including those at risk of disability.

It can therefore be said that the contemporary effectiveness of educational theory and practice allows to find in its achievements both successes and failures. Unfortunately, the sensible dynamics of the educational process is becoming more and more distant, the implications of educational goals are often achieved through intuition. Even in pedagogical tactics which defines the way of acting or diagnosing, the lack of detailed information about the student and its fragmentation makes it necessary to have a plan of action, which is often based on pedagogical intuition and the parents' wishes. Such an action makes the low probability of educational success of the child become a possible reality. It is right, therefore, for G. C. Chang to point out that there are too many entities of interest and interconnectedness in the education

sector, which requires not only a reliable information system, but also objective prognostic tools to facilitate consultations²⁹ regarding, among others, a reliable and responsible construction of the contemporary educational process of children and youth. It can thus be said, quoting after B. Agboola and J. Kola Adeyemi, that achieving accuracy in educational prognosing is not an easy task, because many conditions co-decide on its effectiveness. The authors also emphasize that procedures, cost-benefit analysis, operational research, analyzes and prognoses (projections) are not insignificant. Forecasting in rational planning may require more detailed analyzes, deterministic models, descriptive analyzes (extrapolation of trends, econometric modeling, etc.) or probability in probabilistic prognostic forecasting³⁰.

Y. Berra rightly pointed out that predicting is a difficult thing³¹. Is it possible to imagine situations in which managing such complex processes as education could take place without making their prognosis? It is integrated into every contemporary system of organisation and management. Making rational decisions in education is associated with the ability to prognose its development. It is difficult not to share the opinion of C. Banach, "that the difficulties and errors of studying the past and formulating prognoses are much smaller than the losses resulting from the lack of thinking about the future."³²

²⁸ Denek K.. (2006): *Tocząca się reforma edukacji...* op.cit., s. 31.

²⁹ Chang, G. C. (2008). *Strategic planning in Education: Some concepts and methods*. Paris: UNESCO, pp. 11.

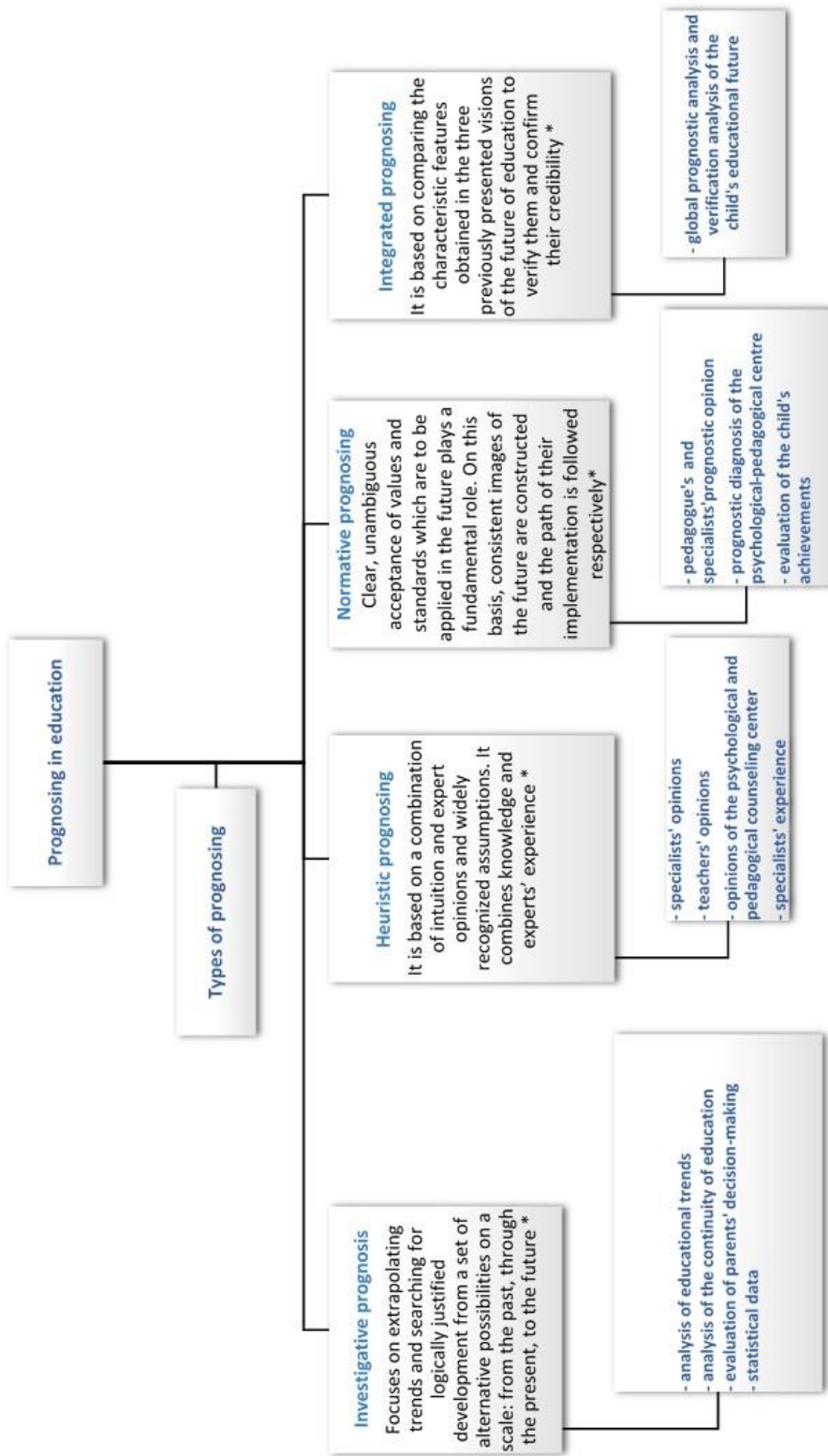
³⁰ B. M. Agboola, J. Kola Adeyemi, *Projecting Enrollment for Effective Academic Staff Planning in Nigerian Universities*, „Educational

Planing" (The Journal of the International Society for Educational Planning), 2013, Vol. 21 No. 1, pp. 7-8.

³¹ Quoted after: Kaku M.: *Wizje, czyli jak nauka zmieni świat w XXI wieku*, Warszawa 2000.

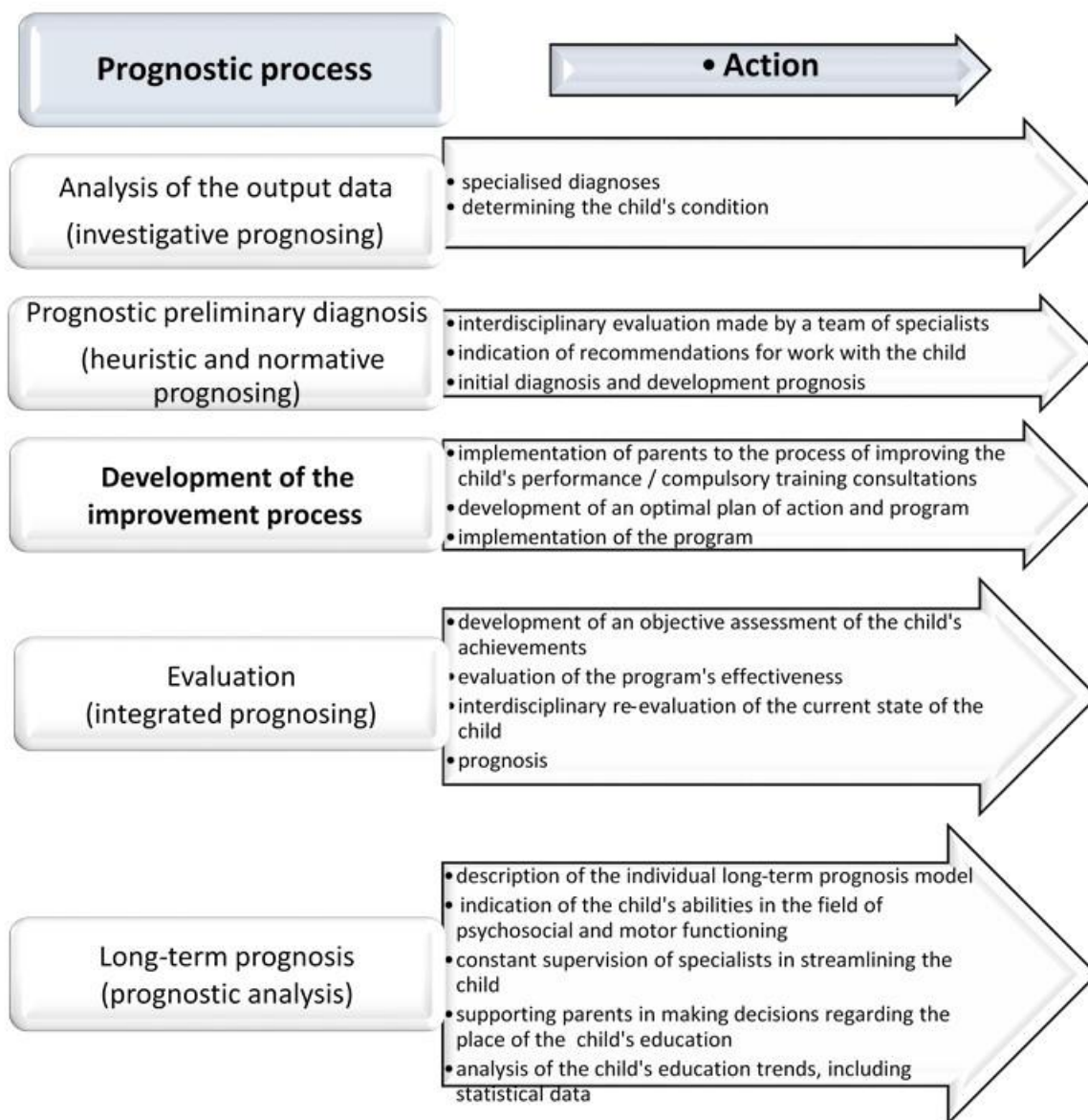
³² C. Banach: *Polska w XXI wieku*, (in:) *Szkoła w rozwoju*, J. Kropiwnicki (red.), Jelenia Góra 2000. s.34, za: Denek K.. (2006): *Tocząca się reforma edukacji*. „Nauczyciel i Szkoła” Nr 3-4 (32-33), 21-42. s. 32.

Fig. 3 Prognosing in education



Source: own elaboration based on: K. Denek: *Tocząca się reforma edukacji. „Nauczyciel i Szkoła”* Nr 3-4 (32-33), 21-42. 2006, s. 33.

Fig. 4 Prognostic process in education – general approach



Source: own elaboration based on K. Denek: *Tocząca się reforma edukacji. „Nauczyciel i Szkoła” 2006, Nr 3-4 (32-33), 21-42.*

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