The comparative evaluation of the neurosurgery books used in Poland - theoretical foundation and study results

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Abstract

• Background: The aim of the study was to carry out comparative evaluation of the books used in Poland for teaching neurosurgery to undergraduates, and find the most valuable one. Comparative textbook evaluation has not been of great scientific interest in the country yet.

• Methods: Based on the textbook functions theory and textbook evaluation forms created by other researchers, an entirely new textbook evaluation tool was created. The form checks if the desired functions are performed in a textbook. The tool was used to evaluate the books selected for the study. Altogether, there were 9 neurosurgery books and 3 reference books of different fields. Then, the study results were compared with the list of the books found valuable by several neurosurgery-teaching institutions in the world.

• Results: It turned out that the best textbook amongst the studied ones was ‘Handbook of Neurosurgery’ by Greenberg. Schirmer’s ‘Neurochirurgie’ came second. ‘Zarys Neurochirurgii’ by Ząbek, which was the third best book, proved to be the most valuable textbook amongst the ones written by Polish authors.

• Conclusions: Although Greenberg’s book scored the highest in the evaluation process and is the textbook that institutions choose and recommend the most often, there is still a lot to be done in order to make it serve all the desired textbook functions well. If the Polish neurosurgery textbooks were re-issued and modernised, they could compete with the most valued foreign books.

Background

Could you imagine a school without textbooks? It is a tough task since learning, teachers and textbooks are so closely intertwined that removing one of these elements results in the feeling of disharmony. It is so as textbooks, despite their various forms, have always been present in the learning/teaching process. Okoń even suggests that in some cases textbooks were made a fetish of, i.e. there occur situations in which textbooks virtually replace live teachers [1]. It seems fascinating that despite the rapid civilizational and technical development, which makes almost everything around us transform and change, everyday objects included, textbooks have remained fairly unchanged for decades and at the same time they have been the basic, best learning tool that has
ever been created. As Guilloteaux says, ‘textbooks continue to be a central feature of (...) classrooms worldwide’ [2].

Probably it is so because a textbook is a very convenient tool. Its user does not need any additional, complicated gear or equipment, maybe apart from a pair of glasses and the knowledge of the language the textbook was written in. A textbook is an item that is so light and handy that you can take it with you and read it wherever you please. At the same time, the user establishes a peculiar, personal relation between them and the book. You can touch it, feel it and smell it. The book’s pages can be turned, flipped through – or even written upon. A moment later you can just put the book back into your bag [3]. Furthermore, a textbook is a self-contained, complete tool that usually needs no supplementing. Although textbooks, depending on their use, are to be found in many versions, varieties, formats and volumes, they remain harmonious as regards their contents and form [4]. Undoubtedly, textbooks play a significant or even fundamental role in the whole educational process. However, this subject has been quite neglected in Polish research and literature so far. A well-known methodologist Skrzypczak believes so little attention is paid to this subject that it seems ‘amazing’ [3]. Tomlinson reminds that almost to this day the research into textbooks was perceived as merely a sub-field of methodology. The materials evaluation is called a new phenomenon, in turn [5]. Although thousands of pupils, students and teachers open their textbooks every day, not much is being said about what really makes a textbook be bad, good or excellent. Choosing the right textbook is even more difficult as the subject literature in Poland does not provide teachers and pedagogues with many guidelines. Likewise, comparative evaluation of textbooks has so far amounted to a few occasional experiments. Luckily, textbooks have been evaluated in greater detail abroad. Depending on the scientific field, there have been many evaluation forms created that compare various aspects of textbooks – contents, format or even the colour of paper. On the other hand, in Poland the criteria for textbook evaluation were described in the subject literature in the fifties and seventies. Since then not much has been said about it – and if the subject was mentioned, it was usually based on those old criteria. Thus, there is some serious concern to be had, because as Fuchs, A. Bock indicate, ‘a look at the current work in the field and its disciplinary, theoretical, and methodological diversity should
suffice to convince us that these assertions, as accurate as they may have been at the time of their publication, are now recognisably out of date’ [6]. This has inspired us to carry out comparative textbook evaluation in a contemporary setting, using more modern methods. The theories of textbook roles and functions have become the starting point of the deliberations.

**Roles of textbooks**

Kupisiewicz calls a textbook one of the basic didactic tools. He explains that the didactic functions of a textbook depend on its level, the way its content is organised and on the selection of materials such as illustrations, tables, exercises, etc. The ability to use those materials greatly influences the final outcome of the didactic/educational process [7]. However, Kupisiewicz warns against treating textbooks as the sole instrument of labour. The knowledge gained in such a way would be merely verbal, impermanent and not very operative. One can avoid this kind of a situation by giving textbooks the task of supplementing the ‘live teaching’; i.e. the task of being just one of the many didactic tools.

Therefore, a textbook becomes the tool used for:
- mastering, arranging and preserving new pieces of information in a given field,
- developing new skills and forming habits, including the ability to self-study and revise previously learnt material,
- approaching scientific problems both in general and particular way,
- using the previously gained knowledge in a rational way, in order to gain new pieces of information and skills,
- acquiring the habits of controlling, evaluating and correcting the results of the learning process,
- understanding the texts one reads.

One can tell a student ‘cooperates’ with a textbook well if they are able to recall the most important pieces of information from their memory, recognise the designates of the described concepts amongst the designates of synonymous concepts, to explain the relations among occurrences, happenings and things the textbook characterises, or exemplify the main theses of the chapter or a fragment by giving accurate examples [7].

Thus, the primary goal of a textbook is to ‘familiarise students with new pieces of information in a given field, arrange and preserve this knowledge; form some particular skills, habits and
attitudes; train students to practice what they have learnt’, but also to ‘master the ability to notice and solve problems in such a way that students do not necessarily have to write anything down or summarise it in an automatic, thoughtless way’ [7]. Another trump card of a textbook is that it enables teachers and students to quickly check whether they have properly understood the contents of the lesson. Finally, it makes giving and evaluating homework easier [8].

**Textbook functions**

However, when it comes to the functions a textbook serves, didactics are no longer unanimous and formulate various concepts. Kupisiewicz believes a textbook fulfils three roles:

- exercising,

- informative,

- and motivational one [7].

He believes the motivational function should be of particular interest, as it is related to the forming of the motivational and emotional spheres of the learner. In other words, it makes the student more motivated and interested in learning and also more favourable to the subject itself. Then, there is the informative function. It allows learners to extend their knowledge using all the means textbooks offer – texts, illustrations, photographs, references to other sources or methods of obtaining information, such as by exercises, experiments or observation [1]. Lastly, the exercising function consists in forming the desirable skills and habits that learners need in the teaching-learning process of the given subject as well as other subjects. It is performed through control, evaluation and correcting the process and results of one’s work. The exercising function makes it easier to remember information and then to understand and practice it [8].

The way the aforementioned functions are fulfilled is in fact modified by factors such as learners’ age, the characteristics of the given subject or if it is stationary or extramural course. Anyway, according to Kupisiewicz, every textbook should perform the aforementioned functions, no matter if it is a school or an academic book. They are equal to the basic elements of the teaching process: the motivational function makes learners realise the aim and tasks of teaching, the informative one –
makes learners familiar with the new material, and the exercising function helps preserve the knowledge and evaluates the results of the teaching/learning process [7].

Skrzypczak agrees with the functions proposed by Kupisiewicz, but he adds three more:

- self-study,
- self-evaluating,
- and the self-correcting one.

The first one is performed when a textbook, through its contents, makes the reader interested and motivates them to engage in some kind of desirable activity. This is achieved by the textbook having rich contents, by linking theory and practice and showing ‘open’ problems – the ones which make one curious, motivate to undertaking own research and reflection, and bring satisfaction. It is also desirable for a textbook to contain methodical tips on how to study [1]. Self-evaluation means checking the extent and quality of one’s knowledge, as well as assessing the results of applying it. The self-correcting function enables identifying and filling the gaps in the reader’s knowledge [3].

Other scientists propose different sets of textbook functions. For example, Okoń thinks the most general, basic function of a textbook is to supplement ‘live teaching’, i.e. teacher’s work. This role leads to four particular functions: informative, research, practical and self-study ones [1]. The functions proposed by contemporary researchers do not differ much from Okoń’s, Skrzypczak’s and Kupisiewicz’s concepts. Průcha [9] suggests there are three functions: informative, exercising and organising. Veverková [10] divides functions into two subgroups: didactic and organising functions. The former group consists of informative, transformative and methodological functions, the latter – of the planning, motivational, research, exercising and self-correcting ones.

Gąsiorek, Krzyżyk and Synowiec, in the most contemporary paper of all the ones mentioned before, state textbooks perform informative, motivational, research, operative-transformative, self-study and controlling-evaluating functions. They claim another important function is the research one. It is fulfilled poorly if a textbook presents students with the ‘ready-made’ scientific knowledge, the end product of the scientific work and when they may believe they are given the knowledge only to learn it by heart, without any deeper reflection. However, even descriptions and explanations may help
perform the function, if they are of problem-solving kind. An ideal textbook should encourage students to perform their own research activity [1].

The operative-transformative function, also called the practical function, consists in preparing students to use their theoretical knowledge gained from textbooks in practice. This function is mostly fulfilled by all kinds of exercises and tasks that shape students’ skills and motivate them to practice their knowledge [1].

The prevalence of particular functions depends mostly on the level of the target user. Initially, at the beginning of education process, the emphasis is put on the informative and self-study functions; in the later years the research and practical functions increase in value, as they help prepare and form a future scientist or researcher. However, all the functions complement and support one another, and thus it would be hard to separate them. Altogether, they increase the didactic and educational value of a given textbook [1].

As Gąsiorek, Krzyżyk and Synowiec's outlook on textbook functions is the most up-to-date one, the aforementioned set of six functions will be the basis for further deliberations in this paper.

The authors suggest checking if the functions are fulfilled by a textbook through the application of the following guidelines:

- informative function is performed if the information in the book has been properly selected and divided into the basic and complementary parts. It is fulfilled when the textbook is communicative, i.e. its message is concise and simple and the terms are chosen quality- and quantity-wise. The text should be dynamic, rich, easy to read, linguistically correct and semantically and structurally cohesive. It is desirable for the authors to use various colours and font types to make the new, important material stand out. This function is also carried out effectively if the textbook content is presented starting from the less complicated issues and ending with the most difficult ones, and using various means of presentation, such as text, images, etc. [8] An ideal textbook would present complicated problems in the simplest and most understandable way possible [1].

- motivational function is performed well if the text is readable and properly saturated with abstract vocabulary and professional terms. The ways the tasks, questions and the main text address the
reader matter, too. They should all be student-oriented and treat them as individuals. Finally, all the tasks and questions have to be varied; monotony and making students repeat the information only are to be avoided,

- a textbook serves the research function if it is concise, understandable, precise and unambiguous.

All the tasks and research problems must be formulated properly and applied in suitable proportion,

- operative-transformative function is performed if the tasks and questions are arranged according to their difficulty. They should also link theory and practice to the greatest extent possible,

- self-study function is fulfilled when the elements such as tables of contents, glossaries, indexes etc. are carefully prepared, clear, logical and well described. All the chapter titles should be unambiguous and not confusing. Definitions, syntheses and summaries should be as precise and concise as possible. The references and bibliographies, when designed meticulously, help as well,

- control-evaluating function is performed by the questions and tasks being clear, unambiguous and precise. The ways questions are asked are important, too. Model answers must be correct and comprehensible.

When the textbook performs all the functions, it means it is good. But how can we find the best textbook of all?

**Textbook selection and evaluation process**

In an ideal world, a teacher despite being a very busy person would find the time to evaluate all the textbooks available to them, compare them and choose and adapt the one that would prove most suitable for their students. In reality however, teachers are often forced to use a particular textbook, or even criticised, e.g. for not assigning their students with the tasks they did not find appropriate, useful or relevant. Sometimes teachers are forced to work with the book ‘from cover to cover’ or use it in a particular, specified manner.

In Poland, when it comes to primary and secondary schools, teachers have the right to choose the most appropriate textbook providing it is on the list of textbooks approved by the Ministry of National Education and they are able to justify their choice before the principal and the teaching staff [11].
Choosing the right textbook is an extremely important task, as teachers will have to spend a great deal of time with the particular book [12]. Careful evaluation is so significant, because it ‘intends to ensure that the materials provided are relevant, of the required quality, suitable and would enhance learning efficiency and effectiveness’ [13]. The selection is a process that requires much attention and carefulness, and should not be performed carelessly, spontaneously or in a rush. It should be done as integrally and fully as possible, taking into account as many factors as possible, as well as be ‘open, transparent, accountable, participatory, informed and rigorous’ [14]. When choosing a textbook, one should take into account the teaching/learning process as well as its far-reaching effects in the future. Garinger indicates that they might be professional, financial or even political effects [15].

The results of textbook evaluation also let one determine if there is the need for supplementing the textbooks with didactic materials of any kind. Conscious textbook supplementation will broaden and complement its contents, co-working with it in an excellent way, or help correct any defects found in the evaluation process. Textbook evaluation often helps to determine if there exists the need for supplementing the book at all [3].

It must be stressed that marketing strategies are present in the textbook market nowadays, too. Thus, advertisements and advertising campaigns do not necessarily reflect the actual worth of the book. The wide selection of textbooks may suggest that teachers are given an almost unlimited choice. In spite of that, teachers must remember that a textbook that appears satisfactory and decent may in fact turn out to be of no didactic value [15].

That is why Brown suggests ignoring the cover when evaluating textbooks. Even if it says the book is perfect for students of a particular level, has the best selection of contents, will teach everything, is easy and pleasant to use or was chosen by thousands of students and teachers, it does not mean teachers can skip the evaluation process [16]. Garinger adds that if the book were difficult to comprehend, unclear and not suitable for the given group, or simply too expensive, its worth would not be appreciated, no matter how pedagogically sound it were [15]. Byrd emphasises the fact that the teacher who wishes to evaluate a textbook must be aware that it is a complex process that may
take several different courses [17].

Although some teachers claim that it is possible to evaluate a textbook based solely on its contents, dozens of researchers have developed several approaches to doing it more deeply. The choice of methods depends on teacher’s individual needs, the target learners’ group or the specific features of the environment the textbook is going to be applied in. Daoud and Celce-Murcia believe that the teacher, before evaluating the textbook, should determine factors such as the target group’s age, their gender, level of education as well as their reasons and motivations for undertaking the particular course, the number of people in the group, how many hours of the subject they study monthly or yearly, or even what appliances the classroom is equipped in [18].

Grant calls textbook evaluation an ongoing process and divides it into three stages:
- the initial evaluation,
- the detailed evaluation,
- the in-use evaluation [19].

**Initial textbook evaluation**

The initial evaluation begins with the first contact with the textbook, with its preface, main text and summary. At this stage the teacher is to decide if the book is worth paying attention to at all, i.e. if it is suitable for the target group. Grant suggest using the ‘CATALYST’ method, the acronym standing for:

- Communicative,
- Aims,
- Teachable,
- Available,
- Level,
- Your impression,
- Students interest,
- Tried and tested? [19]

In addition, Haynes suggests checking if the textbook is authoritative, comprehensive, pitched at the right level, clear, organised and up-to-date [20].

It is also crucial to remember that first impression matters. Does the textbook interest you; do you wish to read more of it? Sasson encourages teachers to trust their instincts and listen to what their
voices tell them [12].

Byrd suggests that the initial evaluation begins with determining if the textbook is fit for students, teachers and the curriculum. In other words, the primary function of initial evaluation is to give the teacher an overview of features of the course book [17].

Brown believes that a teacher should answer the following questions:

1. Does the book meet the teacher’s teaching objectives?
2. Does it contain sufficient depth and breadth of material?
3. Will the textbook need to be supplemented? [15]

Finally, the teacher who evaluates the textbook must be aware of the fact that the textbook’s price is a very significant evaluation factor, too. Many popular textbooks are very expensive. It would be irresponsible to force financially constrained students to purchase textbooks that will not be used to their maximum benefit during the courses [15].

To sum it up, Jeremy Harmer explains that actually there are nine main areas that the teachers could wish to consider in the book they are looking at, namely:

- Its price – can the students afford it? Will they be forced to buy accompanying workbooks or other materials? etc.
- Its availability – are the course and supplementary materials widely available in shops at the moment?
- And its layout and design – is the book attractive enough to make the learners and the teacher like it and feel comfortable with it? Is the textbook user-friendly? Does the layout support and enhance the methodological content of the book or does it get in its way?

As well as:

- Methodology – what kind of teaching/learning does the course book offer?
- Skills – does the book cover the skills adequately and in a balanced way?
- Syllabus – is it appropriate for the given group of students? Are the activities in the right order and increase in difficulty?
Topic – does the book contain a wide range of relevant topics? Are they likely to engage the students’ attention and interest? Are they not too childish or too adult?

Stereotyping – does the book represent situations in an equal or fair way? Are different categories of people treated equally? Is there any stereotyping concerning genders, age groups or nationalities?

Does the book display sexism or racism? If yes, is it conscious or unconscious?

Teacher’s guide – is there a teacher’s guide? Is it comprehensive, easy to use? Does it provide the teachers with the answers to all the questions the teacher may ask? Does give any suggestions or alternatives?

The author of these nine criteria emphasises they are not in any significant order and should be modified to the needs of the teacher and their class. He also remarks that although the initial evaluation of a textbook is a crucial step, it is what a teacher can do and ‘does with such a book once it has been selected that really matters’ [21].

Detailed textbook evaluation

Having considered all the aspects of initial evaluation, a teacher could run the risk of choosing the textbook at this stage, which obviously would not be advisable. That is why Grant calls the next step the detailed textbook evaluation. Owing to it, a person is able to evaluate textbook’s contents. Harmer describes this stage as an out-of-class judgement at checking how well a new book might perform in class [22].

At this stage, various ready-made textbook evaluation tools prove useful. They assure the final choice will be made consciously and knowingly, to the learner’s benefit. If a teacher wished to create a tool themselves, they would learn that creating a comprehensive yet reasonable textbook evaluation form seems to be ‘an enormous challenge that requires different lists for different types of courses in different settings’ [17]. Luckily, several researchers have developed their textbook evaluation forms that may be freely used in the process of choosing the best textbook.

Existing textbook evaluation forms

The term ‘textbook evaluation form’ does not mean one thing. Researchers, especially the
foreign ones, have created dozens of various questionnaires/forms. However, there is no perfect evaluation form – as each of them has some individual features dependent on their author’s opinions, their values or the significance they attach to them. The need for various evaluation forms is also the result of the teachers having different needs and expectations. Finally, if the person who wishes to evaluate a textbook finds a form not suitable for them, they might choose another, in order to evaluate the book fully and as objectively as possible.

Some of the popular textbook evaluation forms are:

Dawn Garinger’s form, used for evaluating language textbooks,
Kutztown University’s Rohrbach Library textbook evaluation form – comprising of 33 yes/no questions,
Marian Giermakowski’s universal textbook evaluation form, of 30 questions divided into 4 sections,
Daoud and Celce-Murcia’s textbook evaluation form – an older, but very comprehensive tool,
Byrd and Celce-Murcia’s – a three-aspect evaluation form, assessing the fit of the book to students, teachers and the curriculum,
Joshua Miekley’s textbook evaluation form – the author claims that his form was inspired by 22 other tools,
James B. Brown’s textbook evaluation form – the shortest (10 questions) of all the forms; rather a set of instructions than a questionnaire as such; a very powerful tool,
Parnowski’s academic textbook evaluation form – the only form that concerns academic textbooks, one of a few Polish forms,
Other textbook evaluation forms, concerning e.g. particular skills, cultural input, or even checking if a textbook – despite its subject – promotes healthy nutrition.

It must be emphasized that there are other means of evaluation that some researchers suggest using, like simply talking to another, more experienced teacher or conducting a series of in-use experiments [3]. Those methods are uncomplicated but lack precise criteria and systematization. On the other hand, there exist elaborate and detailed tools, like the matrix graph-based system by Siemak-Tylikowska. However, all the alternative methods are far from being teacher-friendly. Thus, the evaluation form will become the main tool of evaluation in this paper.

It must be stated that even the most suitable textbook evaluation forms must be treated as models, the aim of which is to present all the criteria that have to be taken into account when choosing a textbook. Applying a particular form must be considered carefully; the teacher should adapt it so that it fits the situation and context the course book is going to be used in.

Harmer stresses that however well prepared and comprehensive a checklist is, it may fail to predict the results and outcomes of using the textbook in practice [22].
In-use textbook evaluation

The last stage of textbook evaluation is the so-called in-use evaluation. Grant says that every evaluation form, however evaluate, ‘is not likely to give a conclusive answer to the final test: “does it work in the classroom”’[19]? It is crucial to place the major emphasis upon conducting a constant assessment through in-use evaluation, even if the textbook is already adopted. As Cunningsworth adds, only ‘by constant evaluation one can ensure that the teacher is the master and not the slave of the textbook’ [23]. Cowles states that the in-use evaluation is very important, as ‘no text or set of materials has all the answers, and no reviewer can foresee all the situations in which the textbook might be used’ [24]. Daoud and Celce-Murcia add that the ultimate and final evaluation of a textbook will come with actual classroom use. This process, sometimes called re-evaluation, can help a person to decide if the adopted text is worth continuing or if it would be better to look for a new one. It is also vital, that even if a teacher is satisfied with the textbook, they should always be aware that no existing textbook is perfect and thus, be always on the lookout for new, better course books [18].

It addition to those, it must be noted that at all the three stages of textbook assessment and evaluation the teacher should do their best to include the opinion of students. It would be very helpful if the teacher’s pre-use assessment, as well as their post-course evaluation were supported by pupils’ views of content, layout and design of the course book or just the information if they enjoyed the book they have just been working with. At times, it would be informative enough to simply ask the students what their favourite/least favourite lesson in the book was – and why, or what their favourite/least favourite activities were [22].

It is fascinating, that some researchers believe that this kind of analysis is still not enough, and the proper textbook evaluation would require going ‘beyond textbook analysis, textbook comparison and textbook use to a new paradigm of research that employs more empirically based, and particularly experimental, methods [25].’ Most of them agree the three-stage textbook evaluation is the best way of choosing the best and most suitable material, though.

Methods
This is why we made a decision to carry out such an evaluation using modern criteria and resources. The choice was made to study a specific type of textbook – namely, academic textbooks, i.e. the books used by students and teachers of universities, and sometimes – by university candidates. Still, there are so many academic textbooks in Poland that it would be impossible to group them together and evaluate them all. Thus, this paper deals with neurosurgery books – the books used in Polish medical colleges and universities at neurosurgery courses. The textbooks selected for evaluation are the ones used at present and in the recent past, most of them recommended by the Medical Centre of Postgraduate Training (CMKP) that designs the neurosurgery curriculum in Poland. The first and primary goal was to find which textbook is the best. Undoubtedly, neurosurgery is a field of medicine that develops constantly and dynamically. It seems logical it would need to develop and adapt its teaching materials in such a dynamic way too. Hence, another aim of this study was to check whether it is so in fact. Finally, the books on the list were written by Polish authors, translated from English into Polish or written by foreign authors. The last objective was to check if the language the book was written in contributes to the overall evaluation score.

An entirely new textbook evaluation form was created for this paper’s sake. The authors decided to do so, as other available tools lacked sets of questions that would encompass all the desired information. Furthermore, several of the forms seem to be not up-to-date enough, even despite being still used nowadays. Also, there are no forms that assess if a textbook performs all its functions and to what extent.

The tool was created based on the Academic textbook evaluation form by Parnowski [26] and supplemented by the 6 questions about the six functions performed by a valuable textbook, by Gąsiorek, Krzyżyk and Synowiec. The questions were arranged in such a way that based on answers to them, one would be able to compare the evaluated textbooks in many respects, depending on the researcher’s needs. Moreover, the features found desirable by the scientists in the field receive additional points in the tool. The points are summed up according to each subsection of the evaluation form, which makes it possible to both get the overall idea of the book and the detailed scores assessing the performance of a given function.
Table 1. Textbook evaluation form. [to be found at the end of the manuscript]

The evaluation form opens with some basic, general textbook information, such as the title, date of publication, publishing house, etc. There is also a question concerning the type of a book – is it a traditional, printed book, an e-book or a digital book. It is a new question, absent from older evaluation forms. Another important issue is if the book was included in the curriculum. It is particularly important for those people who are forced to apply only the books approved by the Ministry or a relevant institution. Additionally, if the book is featured in the curriculum, it is a kind of guarantee of its reliability and lets one suppose the book had been checked and approved by experts in the field. One of the following questions checks if the textbook was written by a Polish author, is a foreign book or if it has been translated into Polish. Although it does not influence the quality of the book, it may so happen that the Polish book would reflect the reality Polish readers know better. Answering this question would also let one check if the best book in the following study were the one written by a Polish or a foreign author. There is also a question about textbook’s availability on the market and in libraries. It is significant as many good textbooks have not been reissued so far, and even second-hand copies are hard to obtain nowadays. On the other hand, the newest publications may be unavailable in libraries yet. If the person evaluating the book knows its availability, they are able to decide whether their students will be able to get the book. The presence of various supplementing materials, such as CDs and DVDs, has also been looked upon in the evaluation form and awarded additional points. Finally, the age of the book is determined. If the book is old, it loses one point.

The next part of the form checks if the book fulfils the informational function. At first, the person evaluating the book checks whether its contents match the curriculum, to what extent and if the content is presented in the same order as in the curriculum. If they do match and, additionally, the order is similar, the teacher will have to do less additional work in order to supplement the book. Plus, it will probably be enough for the readers to buy only one book. Further points evaluate the language the book is written in, that is if it is clear, unambiguous and easy to grasp. Even if the person who evaluates the book may be an expert in the field, they must bear the target readers in mind. A good
textbook should also present up-to-date, true information, ideally - free from mistakes. Some following questions concern font types and other typographic elements, and their purpose. If they are present and serve some functions, then the informative function is performed as well.

A valuable modern textbook usually contains some illustrations. In most cases it is helpful and desirable. There is no universal answer to the question of the quantity of illustration material, as it should supplement the contents, co-work with it and illustrate the information. The person who evaluates the book should assess if illustrations in the book play their roles, or maybe they are aimed at covering some content deficiencies. The kind of illustration material may influence the clarity of the conveyed message, so it is worth considering how it works in case of the given book. Also, the greater variety of material is, the better, as it appeals to more learners of different learning and memorising styles. The illustrations should also have been prepared meticulously, be free from mistakes and pleasing to the eye, all of the features contributing to the greater reliability of the book. Finally, the illustrations in a good book ought to be in harmony with the contents - the more accurately, the better. Ideally, the illustrations should be placed close to the in-text references - preferably at the same page.

The next part of the form concerns the motivational function. The initial questions concern the main text - how its layout contributes to the information being clear. The preferred layout for textbook is the one-column one. Ideally, the margins of the book let one take some notes or highlight the significant pieces of information. Also, the ‘friendliness’, i.e. the first impression is being evaluated. Finally, the researcher has to imagine they are a student and decide if the book encourages them to study the subject. If the book presents the subject in an interesting, inspiring way and respects its readers, they may become interested in its contents. ‘The best textbooks are not, need not, and should not be ‘soulless and bland’ ‘[27]. Finally, a book must not treat the subject in a careless way or be too difficult for the target reader to comprehend.

The next part checks whether the research function is performed in the book, mainly by the use of exercises and tasks. In a perfect textbook, every new skill should be accompanied with a proper exercise, hence the more of them, the better. Similarly, the greater number of tasks of any
kind, the more value the content has. The evaluation form also asks questions about the message of the book, i.e. if it is mostly lecture-like or problem solving, with the dominance of the latter being the preferred one.

The fulfilling of the operative-transformative function is checked by asking questions about tasks and exercises. Precisely, they ought to refer to the various ways of intellectual and language activity. Again, it means they should be as varied as possible. Another question deals with the order textbook content is presented - if it is arranged from the simplest and most general pieces of information to the most difficult or the most detailed ones. Finally, the function is also performed by linking theory and practice – if there are the examples of the practical use of knowledge, the book gains more points.

Another subsection deals with the self-study function. Firstly, it is fulfilled by the presence of the introduction written by the author, where they explain their intents and ideas behind the book, especially if they give clear instructions or tips on how to use the book [28]. The person evaluating the book has then to decide whether it is possible for the readers to learn the subject by themselves without the help of a teacher, just by using the book. A course book of value should enable this, at least to some extent. A modern textbook may refer to www sites – it is an efficient and inexpensive way of giving additional information to students, making presentations, showing movies or giving students exercises. Actually, every element that makes the studying easier is a desired one – that is why they are given additional points.

Then, the table of contents is being evaluated. Its presence itself is an asset, but its placement and contents are significant, too. It should be placed at the beginning of the book [1] and ideally, apart from chapter titles, contain concise information on the chapter’s contents. Next, the length and number of chapters is being discussed. It is worth noting if the chapters, especially the longer ones, are divided into subchapters, etc. as logical division of contents helps understand and remember the pieces of information, as well as find them again, if necessary. The chapter titles should also inform the reader of their contents as precisely as possible. Next, a good textbook should contain various supplementing materials, such as glossaries, appendices, etc. that might make the understanding
easier. Generally speaking, the more of them, the better. However, one must bear their quality in mind, especially if they are in great abundance. Then, the form checks if any expert/specialist terms are being explained - and if they are - how. Finally, the presence of references is checked. A comprehensive bibliography is particularly important in academic textbooks, as it often doubles up as a ready-made list of supplementary readings. Sometimes the authors themselves suggest some further reading materials and it indicates the textbook was carefully prepared and thought of.

The control-evaluating function subsection opens with the question about summaries, of both the whole book and particular chapters. Then, the presence of control questions and points to consider is checked. It is also important to find out if the reader needs to have some subject knowledge in order to use and understand the particular book. The person who evaluates the book should determine if the target group demonstrates this kind of knowledge. Even if the textbook is excellent content-wise, it restricts and limits its target readers group when it refers to too much knowledge outside it.

The last subsection deals with the physical features of the textbook that directly affect the way it fulfils its functions. For instance, if the book is large and heavy, or comes in several volumes, it is impossible to carry it in a bag and use it when one pleases. Thus, the performing of both the motivational and self-study functions is disturbed. Then, the evaluation form asks questions about the paper the book was printed on - whether it is smooth, white and pleasant to touch. It may seem insignificant at first, but actually lets one determine if it is possible to take notes directly in the book - and thus help fulfil the self-study function - and then erase the writings without damaging the pages. Some modern books have been printed on beautiful, luxurious glossy paper. It is really pleasant to touch and look at, but writing on it damages it irreversibly. The questions on paper kind also allow determining whether the text is well contrasted and easily readable (informative function, again) and if the book will prove durable and sturdy. Another question concerns the price - if the book is expensive, its availability becomes limited. [29]

The evaluation form closes with an open question - what makes the book stand out among all the other studied books? What makes it unique? If there are two books that achieved similar scores, this question may help make the final decision.
At the end of the form there is a table that summarises all the additional points gained in every subsection. In most of them there is no maximal number of points, as in some questions the number of points depends on the number of elements. One may thus assume that the greater the number of points, the better. The table also allows comparing the way the functions are fulfilled in several books at once.

The course of the study

Altogether, 9 neurosurgery text/course books were selected for the study:

1. Zarys Neurochirurgii, Ząbek M.
2. Chirurgia podstawy czaszki i zastosowanie minimalnie inwazyjnych technik w neurochirurgii. Imieliński, B.M., Słoniewski, P.
3. Neurochirurgia w Zarysie, Maksymowicz, W.
4. Handbook of Neurosurgery, Greenberg, M.
5. Neurosurgery, Wilkins, R.H.
6. Neurochirurgie / Neurochirurgia, Schirmer, M.
7. Neurochirurgia, Bidziński, J.
8. Neurology and Neurosurgery Illustrated/ Neurologia i Neurochirurgia, Lindsay, K.W.
9. Neurochirurgia czynnościowa, Harat, M.

The first criterion for choosing the book was if they were present on the suggested reading list for the specialization in neurosurgery, published by the Medical Centre of Postgraduate Studies. The second criterion was the advice given by experienced neurosurgeons, who suggested removing from the list a few books which were rarely used or hardly possible to obtain, and adding two books which are typical textbooks (Schirmer, Lindsay), a historically significant book (Bidziński) or a book which is not a textbook but its content is valuable (the book by Harat).

Additionally, in order to test the textbook evaluation form, three additional reference books were
evaluated. They are textbooks of different fields, but commonly considered to be of value:

1. Understanding business, Nickels.
2. Behavioral science, Wiener.
3. Lifespan development, Bee.

Results

Based on the data achieved from the evaluation form, it may be concluded which textbook functions the studied books serve:

When it comes to general features, such as the availability and additional materials, amongst the studied books Greenberg’s book (Book 4) stands out, gaining almost twice as many points as model reference books (Books A-C). The features that contribute to the overall score are the availability of the book, its being up-to-date and the presence of additional, supplementing materials. The lowest score was given to Bidziński’s book (Book 7), mostly owing to its age and the lack of reissues.

All the studied course books fulfil informative function, with Ząbek’s (Book 1) and Schirmer’s (Book 6) books gaining the most additional points. Lindsay’s (Book 8) and Greenberg’s (Book 4) books scored slightly lower. Wilkins’ (Book 5) book scored the lowest, however its score was not significantly lower than the rest.

Amongst neurosurgery books, Imieliński and Słoniewski’s (Book 2) and Schirmer’s (Book 6) book fulfil the motivational function the best. Ząbek’s (Book 1), Greenberg’s (Book 4) and Lindsay’s (Book 8) books scored slightly lower. All the other books gained an even lower number of points. However, the model books performed the function in a significantly better way, as Nickels’ (Book A) and Bee’s (Book C) books scored half the score more than the best books of neurosurgery.

When it comes to the fulfilling of the research function, there has been a huge disproportion to be observed. None of the neurosurgery books received additional points in this area. Amongst the
model books, Nickel’s book (Book 1) proved the best, however Wiener (Book 2) and Bee (Book 3) received a large number of points, too.

The studied neurosurgery books did not score highly as far as the fulfilling of the operative-transformative function is concerned. Maksymowicz’s, Wilkins’, Greenberg’s and Bidziński’s books (Book 3, 4, 5 and 7) each received two points. The rest of the books each got one point. Model books scored significantly higher, and Nickels’ and Bee’s books (Books A and C) received one point more than Wiener’s book (Book B).

Greenberg’s book (Book 4) performs the self-study function the best. Maksymowicz’s book (Book 3) had the second best score. However, its score was significantly lower than Greenberg’s. Ząbek’s, Imieliński’s and Schirmer’s books (Books 1, 2 and 6) received one point fewer each. Model books had similar scores to Greenberg’s book – Nickels and Bee (Books 1 and 3) a point more and Wiener (Book 2) – 3 points fewer.

There are some distinct disproportions to be observed as far as the performing of the control-evaluation function is concerned. Only Ząbek’s, Imieliński’s and Bidziński’s books (Books 1, 2 and 7) received any points in the field. The remaining neurosurgery books scored no points. On the other hand, Wiener’s and Nickels’ model books (Books B and A) received several points more.

The ‘Other features’ criterion reflects mostly how ‘friendly’ the books is, that is if the format makes it easier to use the book, if the covers are durable and sturdy, if there is the possibility of taking notes in the book, etc. Schirmer’s, Bidziński’s, Lindsay’s and Harat’s books (Books 6-9) achieved the highest scores – equal to the model books’. The remaining books scored slightly lower.

All the studied neurosurgery books fulfil the informative function in a good or very good way, comparable to model books. The differences are to be seen in all the other functions, with the research and control-evaluating function being the most ‘neglected’ by the book authors.
In addition, one may notice that when it comes to the performing of motivational, operative-transformative and self-study functions, the books that call themselves ‘textbooks’ score higher. It proves that their authors made deliberate attempts to fulfil the functions. It also indicates that the authors of the non-textbook publications did not have to worry about those functions.

If all the additional points are summed up, Greenberg’s book scores the highest. Schirmer’s book comes second, just before the books by Ząbek and Lindsay. It may thus been said that those four books, amongst the studied nine, perform the neurosurgery textbook functions the best. It is worth noticing, that all the four books call themselves a textbook. Model books scored significantly higher than the average neurosurgery book; Nickels’ and Bee’s books scored much higher than Greenberg’s book. Wiener’s book scored a couple of points more than Greenberg’s.

**In-use evaluation**

Apart from the textbook evaluation tool study, there was the in-use part conducted. It consisted in asking several neurosurgery-teaching institutions about the textbooks they use or recommend. Some institutions replied to e-mails, some of them talked with the authors on the phone and some information was retrieved from the institutions’ websites. The findings were as follows:

Universität Heidelberg (Germany) recommends Michaela Schirmer’s ‘Neurochirurgie’ to their students. In addition, when studying for tests, students use ‘BASICS Neurochirurgie’ by Stephan Dützmann. Universitätsklinikum Köln (Germany) uses ‘Handbook of Neurosurgery’ by Greenberg. Latvijas Universitāte (Latvia) recommends Latvian ‘Neiroķirurgija’, Gārša I., and then the textbooks by Lindsay and Greenberg. Medizinische Universität Wien (Austria) uses ‘Principles of Neurosurgery’ edited by Rengachary and Wilkins. Baba Farid University of Health Sciences, Faridkot (Punjab, India), besides Indian books, suggests using ‘Neurosurgery’ by Wilkins and Rengachary. Maharashtra University of Health Sciences, Nashik (India) recommends the book by Wilkins and Rengachary, Youmans’ book and then – Indian books. Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum (India) uses the books by Greenberg, Youmans, Wilkins and Rengachary. Kentucky Neuroscience Institute uses ‘Handbook of Neurosurgery’, The supplementary readings – ‘Neurological Surgery’, Youmans, ‘Brain Surgery’, Apuzzo and ‘Neurosurgery’ by Wilkins and Rengachary. University of Mississippi recommends ‘Handbook of Neurosurgery’ by Greenberg. Ohio University recommends Greenberg’s book only, too. University of California, San Diego – Greenberg’s book.
It may be thus concluded that institutions either use Greenberg’s book only or apply native books, supplementing them with publications such as ‘Handbook of Neurosurgery’ by Greenberg, ‘Neurosurgery’ by Wilkins or ‘Neurology and Neurosurgery Illustrated’; the latter situation takes place in Poland, too.

Conclusions

Based on the study results, it may be concluded that the most valuable neurosurgery textbook is the ‘Handbook of Neurosurgery’ by Greenberg. The book that achieved the second best score was Schirmer’s ‘Neurochirurgie’, and the third - ‘Zarys Neurochirurgii’ by Ząbek, the best Polish book in the set. ‘Neurology and Neurosurgery Illustrated’ by Lindsay and Bone scored the fourth.

Greenberg’s book received significantly more points than any other neurosurgery textbook. It proves that it is a book which was meticulously, carefully designed and is thus worth recommending the most among all the other studied books. In addition to this, Greenberg’s book is the most popular and recommended course book in numerous European, American and Indian institutions. Nevertheless, other studied books have a number of unusual features that Greenberg’s book lacks, e.g. good-quality colourful illustrations, paper type which enables one to take notes, case studies, etc.

Although Greenberg’s book achieved the highest score amongst the studied neurosurgery books, its score is still much lower than those of model books. It proves that it still is not a perfect textbook and shows how much may be improved to make it a paradigm for neurosurgery textbooks.

It is worth noting that e-books/digital books have slowly been coming on the market. At the moment, it is one book and one set of tests, but this tendency will most probably be growing. It is all the more promising, as long ago as in 1988 Bidziński explained that in his book he discussed the operating techniques briefly, as ‘it is not the skill that can be learnt from a textbook’. Digital books containing movies or multimedia presentations will most probably be of greater value than regular textbooks, due to them presenting authentic, ‘live’ practical material. Greenberg, in the introduction to the fourth issue of his book, says that the nature of the presented material calls for the electronic version.

Having compared the study results, one notices one major difference between Polish and
foreign books. The Polish books strive for being up-to-date, reliable and authentic, by presenting very professional, expert material. However, they lack didactic elements such as exercises, tasks and points to consider. Some of them try to make memorising the material easier by using boxes, underlining pieces of relevant information, applying various font types, etc. The studied foreign books take care of the didactic aspect to a greater extent. However, it happens at the expense of, e.g. illustrations, which may thus seem overly simplified.

All in all, as most studied Polish books were published at least a decade ago, it may be assumed that if they were published today, in a modern form, with the didactic elements present, they could easily compete with the valued foreign books.

Declarations
Ethics approval and consent to participate:
Not applicable
Consent for publication:
Not applicable
Availability of data and material:
The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.
Competing interests:
The authors declare that they have no competing interests.
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Authors' contributions
AP collected, analysed and interpreted data and was a major contributor in writing the manuscript.
WS collected data, gave advice and was a minor contributor in writing the manuscript.
MŚ gave expert advice, provided reference books and was a minor contributor in writing the manuscript.
RT gave the pedagogue/educational input, gave expert advice and was a minor contributor in writing the manuscript.
All authors read and approved the final manuscript
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Tables

Table 1.

Textbook evaluation form

| GENERAL INFORMATION |
|---------------------|
| Title:              |
| Author/authors:     |
| Date of publication, which issue: |
| Publishing house:   |
| The number of volumes: |
| Textbook type:      | printd/paper | e-book | digital book | other - what kind? |
|                     |              |        |              |                   |
| If it is an e-book/digital book, does it contain additional materials? | yes +1 |
| It is a textbook which is: | the only one in the field | there are other similar textbooks |
| Question                                                                 | Yes (+1) | No |
|-------------------------------------------------------------------------|----------|----|
| Is it on the list of suggested books?                                  | yes      | no |
| Polish author                                                           | yes      | no |
| If not, is it:                                                          |          |    |
| a book translated into Polish?                                          |          |    |
| an original version?                                                    |          |    |
| The type of education the textbook is intended for:                    |          |    |
| systematic                                                             |          |    |
| extramural courses                                                     |          |    |
| not specified                                                           |          |    |
| The textbook is aimed at:                                              |          |    |
| pupils                                                                 |          |    |
| students                                                               |          |    |
| Others – whom?                                                         |          |    |
| Is there the introduction where the author indicates the target reader?| yes (+1) | no |
| Easily available in Poland?                                            | yes (+1) | no |
| Available in libraries?                                                | yes (+1) | no |
| Are there any supplementary materials for the textbook?                | yes (+1) | no |
| If there are some, do they come with the textbook?                     | yes (+1) | no |
| W atlases+1 guidebooks         | CDs +1 DVDs Other – what? |
| Question                                                                 | New (1-5 years old) | Quite old (5-15 years) | Old (More than 15 y.o.) | Points |
|-------------------------------------------------------------------------|----------------------|-------------------------|-------------------------|--------|
| If the textbook comes with additional materials, does it make it more expensive? | yes                  |                         | no                      | +1     |
| Is there a so-called teacher's book?                                   | yes                  |                         |                         | +1     |
| Textbook's age:                                                        |                      |                         |                         |        |
| New (1-5 years old)                                                    | +1                   |                         |                         |        |
| Quite old (5-15 years)                                                 | +1                   |                         |                         |        |
| Old (More than 15 y.o.)                                                | -1                   |                         |                         |        |

**Informative function**

| Question                                                                 | Points |
|-------------------------------------------------------------------------|--------|
| Is the textbook content consistent with the curriculum?                | yes    |
| If yes, is the way the contents is organised in the same order as in the curriculum? | yes    |
| If yes, to what extent does the contents cover the curriculum?         | to some extent | to great extent | entirely | Textbook contents exceed curriculum |
| The language the textbook was written in is:                           | understandable for everyone | fairly complicated | specialist |        |
| Most sentences are:                                                    | simple | compound |        |
| Is the content clear, unambiguous and understandable?                  | yes    |
| Is the content clear and understandable for the target user?           | yes    |
| The content is:                                                        | up-to date and true | out of date, obsolete | false |        |
| Is the textbook free from mistakes?                                    | yes    |
| If not, is the number of mistakes:                                     | small-1 | medium-2 | large-3 |
| Does the text contain various font styles (italics, bold, etc.?)       | yes    |
| If yes, of what kind?                                                   | bold+1 | italics+1 | caps+1 | Other (what?) |
| What functions                                                          | Separating chapters and sub-chapters | Drawing attention to the most significant pieces of information | They serve other functions - what |
| Does the author emphasize the most significant information themselves, by using underlining, boxes, etc.? | yes +1 | no |
|---|---|---|
| If yes, how? | +1 for every element |
| Illustrations: | present +1 | absent |
| The number of illustrations: | | |
| Small (fewer than one illustration per 10 pages) | +1 | |
| Average (at least one illustration per 5-10 pages) | +2 | |
| Large (at least one illustration per 1-5 pages) | +3 | |
| Type of illustrations: | black and white +1 | colour +1 |
| Photographs | +1 | |
| Schemes | +1 | |
| Tables | +1 | |
| Charts | +1 | |
| Drawings | +1 | |
| Other – what? | +1 for every element |
| Kind of illustrations: | | |
| The quality of illustrations: | poor -1 | decent | good +1 | very good +2 | excellent |
| Do illustrations harmonise with the contents: | Yes, they are an integral part of the contents +1 | | | | Illustrations not connected with the contents -1 |
| Are the illustrations placed close to the reference in textbook’s contents: | yes +1 | no |
### Motivational function

| What is the layout of the pages like? | clear and easy to read +2 | quite clear +1 | unreadable -1 |
|--------------------------------------|---------------------------|----------------|--------------|
| What is the layout of each page?     | one-column +1             | two-column     | other – what kind? |
| Do the margins let one write something down? | yes +1                      | no             |
| Are there various fonts used?        | yes +1                    | no             |
| Font size:                           | small (up to 10)          | average (10-14) | large (greater than... |
| First aesthetic impression:          | positive +2               | neutral +1     | negative -1   |

**Why?**

| Does the book encourage one to study the subject? | yes +1 | no |
|---------------------------------------------------|--------|---|
| If yes, how?                                      | by presenting the contents in an interesting way +1 | |
|                                                   | by inspiring one to reflect on their own (by using descriptions, tasks etc.) +1 | |
|                                                   | by encouraging one to expand the knowledge using some other sources than the textbook +1 | |
|                                                   | by showing the advantages of studying the subject +1 | |
|                                                   | by giving some curious details / trivia +1 | |

### Research function

| Are there any exercises: | yes +1 | no |
|--------------------------|--------|---|
| If yes, how many of them are there? | not many (fewer than one exercise per 15 pages) +1 | |
|                          | some (at least one exercise per 5 - 15 pages) +2 | |
|                          | many (at least one exercise per 15 pages) +3 | |

| Are there any tasks: | yes +1 | no |
|----------------------|--------|---|
| If yes, how many of them are there? | not many (fewer than one task per 15 pages) +1 | |
|                          | some (at least one task per 5 - 15 pages) +2 | |
|                          | many (at least one task per 1-5 pages) +3 | |

The textbook’s message is mostly: Lecture-like

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| Operative-transformative function |
|-----------------------------------|
| Do exercises and tasks, if there are any, refer to the various types of intellectual activity (indicating similarities/differences, drawing conclusions, synthesizing, comparison, etc.)? | yes+1 | no |
| Do exercises and tasks, if there are any, refer to the various kinds of language activity (speaking writing, reading, etc.) | yes+1 | no |
| Is the content of the book organised from the easiest to the most difficult pieces of information? | yes+1 | no |
| Are there any examples of using the theory in practice? (case studies, the examples of application, etc.?) | yes+1 | no |
| Question                                                                 | Yes | No |
|-------------------------------------------------------------------------|-----|----|
| Is there an introduction to the textbook in which the author explains the intended way of using the book, etc.? | yes | no |
| Does the reader, using the book by themselves, is able to gain new knowledge in the field? | yes+1 | no |
| Does the book refer to WWW sites?                                      | yes+1 | no |
| Are there any other elements that make the studying easier?             | yes+1 | no |
| If yes, what?                                                           | +1 for each element |
| Is there a table of contents?                                           | yes | no |
| If yes, where?                                                          | at the beginning+1 | at the end | somewhere else: |
| If there is a table of contents, is it?                                | simple (chapter titles and page numbers) | complex (presenting the skills practiced in a chapter, the scope of material, etc.)+1 |
| The number of chapters:                                                 | short (1-10 pages) | medium-length (10-25 pages) | long (over 25 pages) |
| Are the chapters divided into subchapters, etc.?                       | yes+1 | no |
| Do chapter titles inform of their contents?                             | yes+1 | no |
| The material in each chapter is presented:                             | briefly | accordingly to the learners’ level+1 | in an overly detailed manner |
| Supporting elements (glossaries, appendices, suggested reading, etc.):  | present+1 | absent |
| If yes, of what kind?                                                   | +1 for every element |
| What is their number?                                                   | small (fewer than one element per 15 pages)+1 | average (at least one element every 5 to 15 pages) +2 | large (at least one element every 1-5 pages)+3 |
| Are the specialist/technical terms explained?                           | yes+1 | no |
| If yes, how?                                                            | explained in the main text | footnote | endnote | Other – how?: |
| Is there a bibliography?                                                | yes+1 | no |
| If yes, what is its function:                                           | the sources used by the authors+1 | a suggested reading list that may help increase one’s knowledge and understanding+1 | Other – what? +1 |
| Controlling-evaluating function | Are there content summaries at the beginnings or ends of chapters? | yes+1 | no |
|-------------------------------|-------------------------------------------------|-------|----|
| Are there any control questions? | yes+1 | no |
| If yes, how many? | a few (fewer than one question per 15 pages) +1 | average number (at least one question per 5-15 pages) +2 | a lot (at least one question per 1-5 page) +3 |
| In order to use the book, does the reader need to have some knowledge of the subject? | yes | no |
| If so, to what extent? | small (1-2 references to own knowledge per chapter) | average (3-5 references to own knowledge per chapter) | great (more than 5 references to own knowledge per chapter) |
## PHYSICAL FEATURES OF THE BOOK

| Number of pages: |  |
|------------------|---|
| Format: |  |
| Weight: |  |
| Kind of paper: | rough | quite smooth | smooth glossy paper | thin | quite thick | thick |
| | white | greyish | pleasant to touch+1 | unpleasant to touch |
| Can it be written on with a pencil and erased with no harm?: | yes+1 | no |
| Covers: | thin | thick | soft | hard | laminated | glossy |
| Cover binding: | glued | bound | sturdy+1 | quite delicate |
| The price: |  |

Table 2. The sum of additional points.

| Subsection | Additional points |
|------------|-------------------|
| General features |  |
| Informative function |  |
| Motivational function |  |
| Research function |  |
| Operative-transformative function |  |
| Self-study function |  |
| Control-evaluating function |  |
| Other: |  |

Table 3. The functions performed by the studied textbooks, point score.
| Title                                                                 | Gener al featur es | Infor mative functi on | Motiv ational functi on | Resear ch functi on | Operative-transformati ve functi on | Self-study functi on | Control- evaluati ng functi on | O t h e r |
|----------------------------------------------------------------------|---------------------|------------------------|-------------------------|--------------------|-------------------------------------|---------------------|---------------------------------|---------|
| Zarys neurochirurgii, Ząbek, M.                                      | 2                   | 33                     | 8                       | 0                  | 1                                  | 14                  | 1                              | 2       |
| Chirurgia podstawy... Imieliński, B.L., Słoniewski, P.               | 2                   | 26                     | 9                       | 0                  | 1                                  | 14                  | 1                              | 2       |
| Neurochirurgia w zarysie, Maksymowicz, W.                            | 2                   | 27                     | 7                       | 0                  | 2                                  | 15                  | 0                              | 2       |
| Handbook of Neurosurgery, Greenberg, M.                               | 7                   | 30                     | 8                       | 0                  | 2                                  | 20                  | 0                              | 2       |
| Neurosurgery, Wilkins, R., Rengachary, S.                             | 2                   | 25                     | 7                       | 0                  | 2                                  | 10                  | 0                              | 2       |
| Neurochirurgia, Schirmer, M.                                         | 3                   | 33                     | 9                       | 0                  | 1                                  | 14                  | 0                              | 3       |
| Neurochirurgia, Bidzinski, J.                                        | 1                   | 28                     | 5                       | 0                  | 2                                  | 13                  | 1                              | 3       |
| Neurologia i Neurochirurgia, Lindsay, K, Bone, I.                     | 3                   | 33                     | 8                       | 0                  | 1                                  | 13                  | 0                              | 3       |
| Neurochirurgia czynnościowa, Harat, M.                               | 4                   | 27                     | 6                       | 0                  | 1                                  | 9                   | 0                              | 3       |
| Understanding business, Nickels, W.                                   | 4                   | 32                     | 13                      | 6                  | 4                                  | 21                  | 4                              | 3       |
| Behavioral science, Wiener, J.                                       | 4                   | 26                     | 5                       | 4                  | 3                                  | 17                  | 5                              | 3       |
| Lifespan development, Bee H.                                         | 4                   | 31                     | 13                      | 4                  | 4                                  | 21                  | 1                              | 3       |
Table 4. The total amount of additional points achieved by the studied books.

| Book no. | Book Title                                                                 | Additional points |
|----------|-----------------------------------------------------------------------------|-------------------|
| 1.       | Zarys neurochirurgii, Ząbek, M.                                             | 61                |
| 2.       | Chirurgia podstawy... Imieliński, B.L., Słoniewski, P.                      | 55                |
| 3.       | Neurochirurgia w zarysie, Maksymowicz, W.                                   | 56                |
| 4.       | Handbook of Neurosurgery, Greenberg, M.                                     | 69                |
| 5.       | Neurosurgery, Wilkins, R., Rengachary, S.                                   | 48                |
| 6.       | Neurochirurgia, Schirmer, M.                                                | 63                |
| 7.       | Neurochirurgia, Bidziński, J.                                               | 53                |
| 8.       | Neurologia i Neurochirurgia, Lindsay, K, Bone, J.                           | 60                |
| 9.       | Neurochirurgia czynnościowa, Harat, M.                                      | 50                |
| A        | Understanding business, Nickels, W.                                         | 87                |
| B        | Behavioral science, Wiener, J.                                              | 67                |
| C        | Lifespan development, Bee H.                                                | 81                |

Figures

Figure 1

The comparison of the functions performed by the studied books, point score
Figure 2
General features

Figure 3
Informative function
Figure 4

Motivational function

Figure 5

Research function
Figure 6
Operative-transformative function

Figure 7
Self-study function
Figure 8
Control-evaluation function

Figure 9
Other features