

TEACHING MATERIALS: DESIGNING TEACHING TEXTS



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Creating Materials for Learning

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5.1 Position of the university textbook in multimedia educational environment

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Teaching materials: designing teaching texts

CREATING MATERIALS FOR LEARNING

Modern higher education can choose from an unbelievably wide scale of information resources and teaching materials that help teachers to deliver and students to comprehend instruction. They include print or online handouts, journal papers, websites, textbooks, dictionaries, visual aids, encyclopaedias, multimedia presentations, educational videos, podcasts, maps, etc.

Good teaching materials should have the potential to make knowledge accessible to students by assisting and supporting their learning, as well as encouraging them to study further.

But accessibility is also an important trait of teaching materials (or learning resources). It is then desirable that teaching materials are accessible both physically (via libraries, internet, bookshops, e-shops, etc.) and mentally (students do not need to struggle to use the sources and comprehend their meaning).

Nowadays students can enjoy countless benefits of both **multimedia and virtual educational environment**. New developments and attractive forms of learning are reported every day. Current trends are towards e-learning and m-learning (a form of learning that enables learners to be “mobile” as a result of the use of MP3 players, smartphones, tablets, and portable notebooks). Still, according to many researches (they will be mentioned further in the text) university textbooks have remained the key teaching materials for majority of students and universities.

Higher education textbooks are still understood as a special kind of books, absolutely indispensable for the study at a higher education institution (henceforth as HEI). Their unique feature is that they are not always published by international or national publishing houses. They are rather published by individual universities and HEI's for the needs of their students. In Slovakia, for example, university textbooks are usually authored by professional guarantors of individual disciplines, the evaluation activities are carried out within a narrow community of experts in a given field, and the approval process for the publication of a HEI textbook is usually restricted to the environment of the publishing HEI. This procedure has many advantages (e.g. fast approval), but also contains an increased risk from the aspect of pedagogical characteristics of the published texts. We hope that this chapter will provide useful information, ideas and inspiration mainly to those readers who plan to author academic textbooks and study materials, or those who are interested in increasing their pedagogical activity.

INTRODUCTION

University textbooks, like textbooks for other levels of education, may be perceived in three ways:

a) as curricular projects, through which a society or an educational institution somehow regulates the aims and content of educational processes at a higher educational

institution, reflects the relation to education and learning, directs the interaction between the teacher and the student, as well as other aspects of education.

b) as sources of the educational content for students, because textbooks determine the ways of processing of the content defined by the study programme (c.f. Petlák, 1996, p. 52) and are the basic, often most available, information source for students.

c) as basic material devices for the teacher, since the textbook is, at the same time, a teaching aid used by teachers, not only directly in the educational process, but during its planning and evaluation.

The issues, falling to the pedagogical theory of creation and evaluation of textbooks, have received much attention at a national and international level (Baláž, 1986; Blašková, 1983; Cunningsworth, 1995; Dvořák, Dvořáková & Stará, 2008; Gagné, Briggs, & Wager, 1988; Gavora, 1984, 1992; Grajek, 2013; Greger, 2006; Janík, 2006; Janík & Knecht et al., 2006; Maňák & Klapko, 2007; Mikk, 2000; Najvarová, Janík & Knecht, 2008; Pavlovkin & Macková, 1989; Pingel, 2010; Pluskal, 1996; Průcha, 1985, 1987, 1989, 1997, 1998, 2006 and others). Specifically, the creation and evaluation of the quality of university textbooks in Slovakia, the Czech Republic and abroad were dealt with by Dyer (1996), Huba & Orbánová (2001), Mareš (1987), Mills & Brown (2001), Petřková (1986), and by works of Pokrivčáková (2004, 2005).

University textbooks are rightly expected to fulfil all the requirements put on textbooks in general, even though the measure of their fulfilment differs. An efficient textbook should fulfil the following pedagogical functions: *educational* (textbook is, first of all, a means of education), *transformational* (it pedagogically transforms recent scientific knowledge from a given field of science), *informational* (university textbook summarises some set of information, knowledge and activities which should be acquired by students), *motivational* (it evokes and preserves students' interest and, at the same time, evokes a feeling that the information contained in it is important), *systemic* (providing logical succession of the content and representing it as a system), *communicational and regulating* (textbook is a means of pedagogical communication and, in a sense, regulates students' activity), *fixating and self-controlling* (providing students with a possibility of fixating the knowledge and a feedback), *self-educational* (developing students' ability of self-study), *integrating* (being a unifying factor for the study from various sources), *coordinating* (allowing for simultaneous efficient use of other educational means), *application* (allowing the use of theoretical knowledge in practice), *developmental and educational* (aiding in the development of a student's personality), c.f. Maňák, 2008; Petlák, 1996; Turek, 1997; Zujev, 1986.

University textbooks must fulfil all general requirements put on textbooks: they must fulfil conditions necessary to meet general educational objectives as well as concrete objectives specific for a given subject; their content must correspond with the content of the particular study subject, and they contain all structural components of textbooks in an adequate proportional ratio.

A good university textbook should be a means of the so-called deep learning, characterised by the fact that it:

- is based on student's inner motivation;
- is aimed at important information, not details;

- puts into relation older and new knowledge;
- looks for relations between several disciplines or courses;
- is based on proofs and arguments, not on impressions and faith, knowledge has a form of coherent structured whole (c.f. Atherton, 2003; Mills & Brown, 2001; Pingel, 2010; Ramsden, 1992 and others).

5.1 POSITION OF THE UNIVERSITY TEXTBOOK IN MULTI-MEDIA EDUCATIONAL ENVIRONMENT

While in the past the teacher had only his/her voice, textbook, several wall maps and pictures, nowadays teachers can choose from a whole set of both simple as well as complicated material means providing information through various information media and processes. Therefore, the present situation is referred to as teaching and learning in **multimedia educational environment**.

With regard to historical development and representation of modern technological procedures, it is possible to classify teaching aids into **four generations** (Bohony, 2003, p. 47):

1. **“No-tech”** (the aids which do not require any machines)
 - original objects
2. **“Hardly-tech”** (the aids without technologies)
 - paper
 - pen and pencil
 - chalk
 - board
 - books and printed material
3. **“Low-Tech”** (simple technologies)
 - overhead projector
 - audiocassettes
 - music CD carriers
 - videocassettes
4. **“New-Tech”** (new technologies)
 - Projections on PC´s
 - Multimedia CD-ROMs
 - web pages
 - e-mail
 - videoconferences, etc.

Development of technologies has been reflected in the development of university textbooks, of which the following types can be recognised:

- a) **Printed university textbooks (p-books)** introduce a discipline (a subject) as a complex from all known aspects in a linear sequence. The modern textbook should

contain not only explanation text, but also a rich study-organising and self-evaluation apparatus.

- b) **Temporary teaching texts (scripta)** do not need to be as complex and global as textbooks. Scripta often cover only selected areas or the most relevant topics of the discipline. However, temporariness and selectiveness in content organisation of a scriptum should not be equal to its poor pedagogical organisation. Scripta should also offer study-organising apparatus, tasks and exercises, as well as instruments for the self-evaluation of students.
- c) **Digital textbooks (e-textbooks)** transmit teaching content via digital media. There are many ways how to do it: while some e-textbooks just “reproduce the print experience” (Denoyelles, Raible & Seilhamer, 2015), others incorporate also multimedia tools and interactive capabilities such as animations, simulations, pollings, discussions, and learning analytics (for more see Baek & Monaghan, 2013; Bossaller & Kammer, 2014; Cassidy et al., 2011; Denoyelles, Raible & Seilhamer, 2015; Hamer & Kellner, 2001; Grajek, 2013; McFall, 2005; McGowan, Stephens, & West, 2009; Paxia, 2011; Ravid, Kalman, & Rafaeli, 2008; Weisberg, 2011 and others).

The main advantages of print textbooks, which may be also perceived as possible reasons of their enduring popularity, include:

- (1) **Pedagogical universality** and (2) **relative economic unpretentiousness**.

Further advantages of print textbooks are formulated according to the classification by Ur (1999) who claims that the textbook:

- (3) provides a **clear framework**: the teacher and students know where they are going and what will come, thus they have a feeling of structure, system and progress;
- (4) presents a **course curriculum**, and if it is used systematically, it ensures a systematic coverage of the content;
- (5) is **the cheapest way** to provide the same teaching material for all learners (constant production of photocopies or the use of software is more expensive);
- (6) is **comfortable**, because it is light enough and small enough to be carried wherever by the teacher and students. Its use does not depend on the connection to hardware or on electric power;
- (7) is a kind of **methodological guide** for beginning teachers, providing them with not only information, but psychical support as well;
- (8) gives the student a feeling of relative autonomy, because in case of need (e.g. a long-term absence from school) he/she can study at home as well. The student without the textbook is more dependent on the teacher.

In addition, the importance and need of university textbooks does not decrease so quickly as may have expected, paradoxically also due to the freely available internet and other modern information technologies. Current students have access to a great amount of information, available in a few seconds, which is an advantage our parents could only dream about. Quite frequently, however, the information and facts are questionable and contradictory. There are also many pages with intentional misinformation. In such case, the information entropy may easily lead to chaos and lack of system. Students have access to lots of individual information, but without a developed critical thinking and

guidance they can only rarely process and properly acquire the information. In the absence of the teacher (as in the case of distance education), it is often the textbook which can function as a skeleton, basic scheme to which one can further add more information.

The fundamental disadvantage of the textbook is, however, a reduced possibility to update the content, and, at the same time, the fact that it offers the same possibilities to all users, irrespective of their individual requirements and needs.

If compared with textbooks, the advantages of the new 4th generation teaching aids include:

- (1) primary **focus on student activity**, not on the content of education,
- (2) creation of **interactive systems** allowing students to actively enter the educational process,
- (3) **multimedia and hypertext processing** of educational content,
- (4) possibility of **constant updating** of the content,
- (5) support to **cooperative teaching**,
- a (6) origin of the **open system of education**.

However, their disadvantages include technical demandingness, dependence on electric power telecommunication network. Further risks were summarised by Sacher (1990, qtd. in Petlák, 2000, p. 114) as the “pseudo-activity”, “pseudo-independence” of students, “pseudo-individualisation” of education, “pseudo-dialogue” between students and computer, etc.

5.2 COMPONENTS AND QUALITIES OF THE MODERN UNIVERSITY TEXTBOOK

“Modern is what is in agreement with recent knowledge (here about teaching), what reflects current knowledge and aims for the future” (Petlák & Komora, 2003, p. 23). In this sense the concept of **modern university textbook** is understood as well.

The modern university textbook should contain two basic components: a) the text and b) extra-textual element (c.f. Zujev, 1986; Turek, 1997; Pokrivčáková, 2004, 2005).

A. Textual components:

- make up approx. 57% of the textbook and integrate 3 elements:
- **basic text**: the teaching content any student must know as a basic condition for further study (concepts, terms, facts, theories, definitions, skills, etc.),
- **additional text**: helps students to comprehend and remember the basic text (tables, charts, registers, lists, documents, etc.),
- **explanatory text**: facilitates self-study (annotations, notes, footnotes, endnotes, list of abbreviations, etc.).

B. extra-textual components:

- **apparatus for organising learning:** stimulates and directs learning processes, facilitates various learning strategies, serves as learning “scenario” (questions, tasks, exercises, colour coding, etc.),
- **illustrating material:** demonstrates the teaching content visually or audibly (pictures, illustrations, drawings, photographs, graphs, schemas, recordings, podcasts, etc.),
- **orientation apparatus:** helps students to get orientation in teaching contents and in the textbook (introductions, conclusions, registers, indexes, glossaries, bibliography marginalia, various fonts, icons, etc.).

Naturally, there are only few (if any) ideal textbooks that contain all of the above mentioned components. More often, mostly due to economic reasons, authors incorporate only the most necessary components (with the dominance of orientation apparatus elements).

The recommended structure of the university textbook

1 Introduction

In Introduction the author usually defines the subject of the textbook, names the expected recipients, states the objectives of the textbook and describes the strategy of its composition.

2 Basic text

Basic text is divided into chapters, subchapters and paragraphs and includes also visuals, pictures, tables, graphs, schemas, etc.

Structure of the chapter

- 2.a Objectives*
- 2.b Text (divided into subchapters)*
- 2.c Questions and tasks*
- 2.d Self-check (autotest)*
- 2.e Sources recommended for further study*

3 Conclusion

In Conclusion the author most often evaluates whether the textbook objectives have been fulfilled and what else should or could be done to develop the discipline and specific knowledge.

4 Appendices

Here the author puts any self-contained materials which would make the text less concise if inserted into the basic text.

5 Bibliography

Contains the list of quoted sources.

TABLE 5.1 The recommended structure of the university textbook (Pokrivčáková, 2003b)

5.2.1 Readability and comprehensibility of a university textbook

The authors of university textbooks should be aware of the fact that even the most complex and most detailed structure cannot ensure the qualities which are crucial for its pedagogical effectivity: readability and comprehensibility. Both qualities support the ability of the textbook to transmit the teaching content from the textbook to students' knowledge (or at least attention) (c.f. Gilliland, 1972; Graham, 1978; Gavora, 1984, 1985, 1986, 1988; Hrabí, 2008; Laspina, 1998; Mikk, 2000, and others).

In this regard, several research studies pointed to the weaknesses of textbooks for higher education. One of such studies (Pokrivčáková, 2004b) measured comprehensibility of Slovak HE textbooks by means of 2 700 cloze tests and the resulting average comprehensibility was only 43.72%, which means that students were not able to understand and receive 66.28% of information presented in their university textbooks. Therefore, the university teachers who write textbooks for their students should – along with the necessary difficulty of academic discourse - consider also needs of their students (novice colleagues, future experts) and write textbooks which would be more appropriate.

During the last few decades, there were many methods and techniques created which have made it possible to measure and compare the difficulty of textbooks and other educational texts. The following part offers a survey of those that are either undemanding and may be used by anyone interested in the matter, or the methods which have a longer and developed tradition in our pedagogy.

1. Comprehension questions method

Having read study texts, students answer well prepared questions. The proportion of correct and incorrect answers determines the measure of text comprehension. This method is very laborious and time consuming, but since it is based on students' direct reception, its results have high evidentiary value.

2. Cloze test

Cloze test is when a random text of 250 words is selected (it has to be closed by a complete sentence). The 36th word of the text and then every 10th word (20 words in all) are chosen and substituted by a gap. Such text is given to a group of students whose aim is to fill in the missing word, drawing on their ability to understand the context. The teaching text is suitable if students fill in at least 10 words correctly.

3. In this country, the method of **measuring the level of difficulty of the teaching text** according to Nestler is used very often. The method was adapted by Průcha (1985) and Pluskal (1996) and in Slovak literature it is discussed in detail by, for example, Turek (1997, p. 217). The method is highly valid, since it takes into account as many as 10 textual parameters: e.g. average length of sentences, coefficient of the density of numeric data, coefficient of the density of professional, factual and numeric data, coefficient of the density of repeated concepts, etc.

4. **Methods derived from the measuring of the length of sentences and number of syllables**, e.g. Bjorsen test, 'FOG' test (Gunning, 1952), formula 'SMOG' (McLaughlin, 1969), Frye test (1977), Flesch Reading Ease.

5. **Psychological method**, e.g. Sentence Verification Technique (SVT test), Kemper model, the Rauding test (reading + auding test).

Readability and comprehensibility of the textbook may be of help as well, if it draws on and respects the educational needs of students. They are defined by, for example, Petty (1996, p. 20) as follows:

E – *explanation*

D – *doing*

U – *use*

C – *check and correct*

A – *Aide-mémoire*

R – *review*

E – *evaluation*

? – possibility to ask questions.

Very similar student needs (“requirements and activities students expect from a good teacher”) were formulated by Huba & Orbánová (2001, p. 139):

- Tell me clearly, what is our aim, what we want to learn.
- Explain so I could always understand, and if necessary, in several ways.
- Behave friendly and openly.
- Use comprehensible language.
- Use suitable examples and pictures.
- Give me as many examples from real life as possible.
- Give me a possibility to apply my own experience and ideas.
- Help me check my progress in the study.
- From time to time summarize preceding knowledge and facts.

It is suitable and desirable for the textbook structure to saturate these needs to the most possible extent.

5.3 PROCESS OF CREATING A TEXTBOOK

The teachers who decide to create a textbook for their students are recommended to proceed as follows:

1. Preparation phase:

- study of literature on the problem of textbook creation

2. Realisation phase:

- setting concrete aims drawing on general educational objectives, respecting the aims of a particular study programme and the profile of the graduate,
- defining educational needs of the student,
- selecting concrete content in agreement with the subject and its division into the basic and complementary content,
- classification of content into thematic units and chapters, their arrangement based on the requirements of higher education pedagogy and pedagogical psychology,
- writing itself,
- selecting and arrangement of extra textual components.

3. Closing phase:

- self-control,
- quality evaluation (e.g. through external evaluation or anonymous readers' questionnaire).

Naturally, the author must pay attention to all the three phases, but most time and effort is connected with the realisation phase within which the author must deal with several basic questions and avoid several stumbling blocks. Our experience and observation indicate that the most problematic part is the selection of concrete content and its arrangement into a logical succession.

5.3.1 Possibilities of the evaluation of quality of university textbooks

The most frequently used method in pedagogical practice is the **expert evaluation** which evaluates suitability, expertise and methodology of new textbooks. Some publishing institutions (including HEIs) provide the reviewers with their own form of reviewer's report. If such form is not available, the reviewer may use a detailed and systematically arranged set of evaluative questions as proposed by Kupisiewicz (1973; Appendix 1).

Statistical methods of textbook quality evaluation are used for a deeper analysis of the content and quality. Their essence lies in the measurement of individual qualities of the textbook (extent of the text, its difficulty, comprehensibility, etc.).

Experimental method is a very difficult method of verification and evaluation of the textbook's quality. It is carried out through pedagogical experiment in which the textbook is independent variable and the effectivity of its working in experimental group (groups) in comparison with the existing textbook is analysed. Other determinants and factors of educational process should remain unchanged. After the end of the cycle the study results of students in the control group and experimental groups are compared, drawing on the qualities of the new textbook.

On the other hand, a very simple method for the evaluation of quality of the university textbook is through the **questionnaire method** in which the users express their opinions concerning the textbook and propositions for its improvement.

For more on evaluating textbooks in general, see Maňák & Knecht, 2007; Maňák & Klapko, 2006; Nogová & Bálint, 2006; Pokrivčáková, 2005 and others.

CONCLUSION

The chapter discusses the position of university textbooks in modern educational environment which has been significantly affected by the development of digital media and digital teaching aids. After debating the position of the university textbook in multimedia educational environment, the components and qualities of the effective university textbook are characterised. In the last part, the recommended process of creating a textbook is introduced.

QUESTIONS

1. Select a university textbook for the subject you teach or from your study field.
 - a) Assess its structure (comparing to the list of textbooks components).
 - b) Assess its content and design using by the set of questions for the expert evaluation of textbooks (Appendix 1).

RECOMMENDED READING

- CUNNINGWORTH, A. (1995). *Choosing your Coursebook*. Oxford: Heinemann.
- DeNOYELLES, A., RAIBLE, J. & SEILHAMER, R. Exploring Students' E-Textbook Practices in Higher Education. *Journal of Information Fluency*, 3(1), 37-50.
- DVOŘÁK, D.; DVOŘÁKOVÁ, M. & STARÁ, J. (2008). Design based research – výzkum učebnic prováděný jejich tvůrci. In Knecht, P. & Janík, T. et al., *Učebnice z pohledu pedagogického výzkumu* (p. 81–89). Brno: Paido.
- RAMSDEN, P. (1992). *Learning to Teach in Higher Education* London: Routledge.

REFERENCES AND BIBLIOGRAPHY

- ATHERTON, J. S. (2003). *Learning and Teaching: Deep and Surface Learning*. Available at: <http://www.dmu.ac.uk/~jamesa/learning/deepsurf.htm>
- BAEK, E.-O. & MONAGHAN, J. (2013). Journey to Textbook Affordability: An Investigation of Students' Use of E-Textbooks at Multiple Campuses. *International Review of Research in Open and Distance Learning*, 14(3), 1–26.
- BALÁŽ, O. (1986). *Recepcia textu a literatúry v príprave čitateľov a používateľov informácií*. Bratislava: UK.
- BLÁŠKOVÁ, S. (1983). Žiakova selekcia najdôležitejších informácií z pedagogického textu. *Pedagogický výskum*, 2, 17-32.
- BOHONY, P. (2003). *Didaktická technológia*. Nitra: UKF.

- BOSSALLER, J. & KAMMER, J. (2014). Faculty Views on E-Textbooks: A Narrative Study. *College Teaching*, 62, 68–75.
- CASSIDY, E. D., BRITSCH, J., MANOLOVITZ, T., SHEN, L. & TURNEY, L. (2011). *Higher Education and Emerging Technologies: Student Usage, Preferences, and Lessons for Library Services*. *Reference & User Services Quarterly*, 50(4), 380-391.
- CUNNINGWORTH, A. (1995). *Choosing your Coursebook*. Oxford: Heinemann.
- DeNOYELLES, A., RAIBLE, J. & SEILHAMER, R. Exploring Students' E-Textbook Practices in Higher Education. *Journal of Information Fluency*, 3(1), 37-50.
- DVOŘÁK, D.; DVOŘÁKOVÁ, M. & STARÁ, J. (2008). Design based research – výzkum učebnic prováděný jejich tvůrci. In Knecht, P. & Janík, T. et al., *Učebnice z pohledu pedagogického výzkumu* (p. 81–89). Brno: Paido.
- DYER, E. (1996). Textbook selection in public higher education: A 'Third Freedom' derivative for whom? *West's Education Law Quarterly*, 1996, 5(3), 555-568.
- FRY, E. (1977). Fry's readability graph: clarifications, validity and extension to level 17. *Journal of Reading*, 21, 242 – 252.
- GAGNÉ, R. M., BRIGGS, L. J. & WAGER, W. W. (1988). *Principles of instructional design*. 3rd edition. New York: Holt, Rinehart and Winston.
- GAVORA, P. (1984). Výskum porozumenia textu žiakmi. *Pedagogický výskum*, 1, 86-98.
- GAVORA, P. (1985). Žiak a určovanie hlavných informácií textu. *Slovenský jazyk a literatúra v škole*, 32(3), 38-41.
- GAVORA, P. (1986). Žiak a porozumenie textu. *Pedagogika*, 36(3), 297-312.
- GAVORA, P. (1988). Stratégia žiaka pri práci s textom. *Slovenský jazyk a literatúra v škole*, 34(6), 164-167.
- GAVORA, P. (1992). *Žiak a text*. Bratislava: SPN.
- GAVORA, P. (2008). Model činnosti žiaka pre učenie sa z učebnice. In Knecht, P. & Janík, T. et al., *Učebnice z pohledu pedagogického výzkumu* (p. 121–135). Brno: Paido.
- GILLILAND, J. (1972). *Readability*. London: University of London Press.
- GRAHAM, W. (1978). Readability and science textbooks. *School Science Review*, 59, 545-550.
- GRAJEK, S. (2013). *Understanding what Higher Education Needs from E-textbooks: EDUCAUSE/Internet2 Pilot (Research report)*. Louisville: EDUCAUSE.
- GREGER, D. (2006). Přehled výzkumu učebnic v zahraničí. In Maňák, J. & Klapko, D. (Eds.), *Učebnice pod lupou* (p. 23-32). Brno: Paido.
- GUNNING, R. (1952). *The Technique of Clear Writing*. New York: McGraw-Hill.
- HAMER, R. & KELLNER, D. (2001). Multimedia Pedagogy and Multicultural Education for the New Millenium. *Reading Online*, 2001, 4. Available at:

- http://www.readingonline.org/newliteracies/lit_index.asp?HREF=/newliteracies/hammer/index.html.
- HRABÍ, L. (2008). K problematice obtížnosti učebnic. In Knecht, P. & Janík, T. et al., *Učebnice z pohledu pedagogického výzkumu* (p. 177–187). Brno: Paido.
- HUBA, M. & ORBÁNOVÁ, I. (2001). *Pružné vzdelávanie*. Bratislava: STU.
- JANÍK, T. (2006). Učebnice a teorie konceptuální změny. In Maňák, J. & Klapko, D. (Eds.). *Učebnice pod lupou* (p. 33-44). Brno: Paido.
- KNECHT, P. & JANÍK, T. et al. (2008). *Učebnice z pohledu pedagogického výzkumu*. Brno: Paido
- KUPISIEWICZ, C. (1973). *Metody programowania dydaktycznego a ich zastosowanie przy budowie podręczników*. Warszawa: Podręcznik akademicki. Państwowe Wydawnictwo Naukowe.
- LASPINA, J. A. (1998). *The Visual Turn and the Transformation of the Textbook*. Mahwah: Lawrence Erlbaum Associates.
- MAŇÁK, J. (2008). Funkce učebnice v moderní škole. In Knecht, P. & Janík, T. et al., *Učebnice z pohledu pedagogického výzkumu* (p. 19–26). Brno: Paido.
- MAŇÁK, J. & KNECHT, P. (Eds.). (2007). *Hodnocení učebnic*. Brno: Paido.
- MAŇÁK, J. & KLAPKO, D. (Eds.). (2006). *Učebnice pod lupou*. Brno: Paido.
- MAREŠ, J. (1987). Analýza obtížnosti učebnic lékařské fakulty. In: *Tvorba učebnic, Sborník 6* (p. 42-48). Praha: SPN.
- McFADDEN, C. (2012). Are textbooks dead? Making sense of the digital transition. *Publishing Research Quarterly*, 28, 93-99.
- McFALL, R. (2005). Electronic textbooks that transform how textbooks are used. *The Electronic Library*, 23(1), 72 – 81. DOI <http://dx.doi.org/10.1108/02640470510582754>
- McGOWAN, M., STEPHENS, P. & WEST, C. (2009). Students' Perceptions of Electronic Textbooks. *Issues in Information Systems*, 10(2), 459–465.
- McLAUGHLIN, H. (1969). SMOG grading - a new readability formula. *Journal of Reading*, 22, 639-646.
- MIKK, J. (2000). *Textbook: Research and Writing*. Frankfurt am Main: Peter Lang.
- MILLS, R. & BROWN, J. (2001). *Learning Technologies & the Academy*, 2001. Available at: <http://www.scu.edu.au/schools/hmcs/core/learning/COM00334/topic2a.html>.
- NAJVAROVÁ, V., JANÍK, T. & KNECHT, P. (Eds.) (2008). *Kurikulum a učebnice*. Brno: Paido.
- NOGOVÁ, M. & BÁLINT, L. (2006). Systém kritérií na hodnotenie kvality učebnic. *Pedagogická revue*, 58(4), 336–350.
- PAVLOVKIN, M. & MACKOVÁ, Z. (1989). *Žiak a učebnica*. Bratislava: SPN.
- PAXIA, S. (2011). The Challenges of Higher Education Digital Publishing. *Publishing Research Quarterly*, 27(4), 321-326.

- PETLÁK, E. (1996). *Všeobecná didaktika*. Bratislava: IRIS.
- PETLÁK, E. (2000). *Pedagogicko-didaktická práca učiteľa*. Bratislava: IRIS.
- PETLÁK, E. & KOMORA, J. (2003). *Vyučovanie v otázkach a odpovediach*. Bratislava: IRIS.
- PETŘKOVÁ, A. (1986). Experimentální výzkum samostatné práce vysokoškolských studentu s textem. *Acta Universitatis Palackianae Olomucensis*, 23.
- PETTY, G. (1996). *Moderní vyučování*. Praha: Portál.
- PINGEL, F. (2010). *UNESCO Guidebook on Textbook Research and Textbook Revision*. Available at: <https://books.google.sk/books?isbn=923104141X>
- PLUSKAL, M. (1996). *Teorie tvorby učebnic a metody jejich hodnocení*. Olomouc: PF UP.
- POKRIVČÁKOVÁ, S. (2004). *Vysokoškolská učebnica v multimedialnom edukačnom prostredí*. Habilitačná práca. Nitra: UKF.
- POKRIVČÁKOVÁ, S. (2005). *Komunikačné kompetencie vysokoškolského učiteľa*. Nitra: UKF.
- PRŮCHA, J. (1985). *Výzkum a teorie školní učebnice*. Praha: SPN.
- PRŮCHA, J. (1987). *Učení z textu a didaktická informace*. Praha: Academia.
- PRŮCHA, J. (1989). *Teorie, tvorba a hodnocení učebnic*. Praha: ÚÚVPP.
- PRŮCHA, J. (1997). *Moderní pedagogika*. Praha: Portál.
- PRŮCHA, J. (1998). *Učebnice: Teorie a analýzy edukačního média*. Brno: Paido.
- PRŮCHA, J. (2006). *Učebnice: Teorie, výzkum a potřeby praxe*. In Maňák, J. & Klapko, D. (Eds.), *Učebnice pod lupou* (p. 9-21). Brno: Paido.
- RAMSDEN, P. (1992). *Learning to Teach in Higher Education* London: Routledge.
- RAVID, G., KALMAN, Y. M., & RAFAELI, S. (2008). Wikibooks in higher education: Empowerment through online distributed collaboration. *Computers in Human Behavior*, 24(5), 1913–1928.
- SACHER, W.: *Computer und die Krise des Lernens*. Bad Heilbrunn: Verlag J. Klinkhardt, 1990.
- TUREK, I. (1997). *Zvyšovanie efektívnosti vyučovania*. Bratislava: Metodické centrum.
- UR, P. (1999). *A Course in Language Teaching: Practice and Theory*. Cambridge: Cambridge University Press.
- WEISBERG, M. (2011). Student Attitudes and Behaviors towards Digital Textbooks. *Publishing Research Quarterly*, 27(2), 188–196.
- ZUJEV, D. D. (1986). *Ako tvoríť učebnice*. Bratislava: SPN.

APPENDICES

Appendix 5.1: Set of questions for the expert evaluation of textbooks

Teaching objectives

1. Does the textbook have a clearly set and specified final objective to be achieved by a student?
2. Are there sufficiently clearly set stage and partial objectives in the textbook?
3. Is it possible to see the relations between the objectives and content, teaching methods and techniques?

Textbook's content

4. Does the content agree with the set objectives? Will it help to fulfil them?
5. Does the teaching text provide the latest knowledge from the research in a particular area?
6. Does the textbook, the teaching text, contain unnecessary information which is not logically related to the main topic?
7. Is there in the textbook a content which can already be found in a textbook for the same subject in other grades of study, potentially in textbooks for other disciplines?
8. Is the textbook too difficult for the students or unnecessarily easy, too extensive or too brief?

Principles of general pedagogy

9. How were the main principles of teaching observed during the creation of the teaching texts, especially those ensuring that the content is based on the latest research results, systematic, adequate, gradually introduced, active, illustrative, etc.?
10. Does the textbook provide enough space for an independent student work?

Methods of content processing

11. Do the teaching texts illustrate the applied generalisations, laws, rules, principles, regulations?
12. Are the concepts adequately chosen as far as the essence of the content and cognitive procedures are concerned?
13. Do the used text and pictures lead students to creative thinking, to the formation of the ability to address theoretical problems, as well as to implement the results in practice?

14. Can the student answer questions put by the text, based on the information acquired through the study of the textbook?
15. Are there questions in the textbook which the student can answer without thinking, mechanically?
16. Do the questions deal with the essential points of the textbook's content, or are they concerned also with secondary problems?
17. Is there provided a student's self-control, or, does the textbook allow the student to compare his/her own answers to the questions contained in the text with correct answers?
18. Does the textbook allow the student to correct his/her potential mistakes in answers?

Language correctness and adequacy

19. Does the textbook's language observe language norms, principles of literary language? Is it simple, clear, unequivocal, intelligible and precise?
20. Is the vocabulary (used words, concepts, terminology, etc.) adequate to the level of the addressee?
21. Is the language too complicated to work with the text, or, on the contrary, is it too simple and thus potentially discouraging for students?
22. Is the textbook's style educational? Is it straightforward, true, economical, without any excessive or already obsolete knowledge?

Appendix 5.2: User questionnaire for university students

Having interest in further improvement of the textbook ..., we would like to evaluate its level. Please use the scale 1, 2, 3, 4, 5 (1=excellent, 2=very good, 3=average, 4=sufficient, 5=entirely bad) to rate the below qualities and elements of the textbook. If a quality or element does not occur in the textbook, or you are not able to rate it, mark it by a cross (x).

- | | |
|-----------------------------------------|---------------------------------------|
| correct content | extent |
| attractiveness | clarity..... |
| simple language..... | visualisation..... |
| connection of theory with practice..... | adequacy..... |
| logical arrangement of content..... | student motivation..... |
| arrangement of content into system..... | interdisciplinarity..... |
| allowing self-study | development of creative thinking..... |
| graphical layout..... | using illustrations |
| methodology..... | language adequacy..... |
| | textbook total |

What do you like about this textbook?

.....

How would you improve the textbook (what would you add, leave out)?.....

Other comments:.....

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