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The Assessment of Reading Competence (Including Sample Items For Grade 5 and 9)
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The Assessment of Reading Competence

One of the key objectives of the National Educational Panel Study (NEPS) is the assessment of competencies that are considered to be of particular importance for educational pathways and participation in society. As part of the broader construct of German-language competencies (cf. Berendes, Weinert, Zimmermann, & Artelt, submitted), reading competence is one of several educationally relevant competence domains that NEPS intends to measure coherently across the life span. Based on the detailed description of the framework in Gehrer, Zimmermann, Artelt, and Weinert (submitted), this paper presents a summary of the main framework features and sample items for the reading competence tests of students in grade 5 and 9. The construct principles and specific aspects of the framework are outlined with reference to the released sample items.

1 Characteristics of the Framework for the Assessment of Reading Competence

The ability to understand and use written texts is an important precondition for further developing personal knowledge and personal skills, and a prerequisite for participating in cultural and social life. Manifold areas of knowledge and life are made accessible through reading. The range of reading occasions is very wide, and reading fulfills many different functions (cf. Groeben & Hurrelmann, 2004). These may include reading to expand knowledge, which is crucial to further education and lifelong learning, and literary-aesthetic reading. Not only do texts convey information and facts, but they also transport ideas, moral concepts, and cultural contents. Accordingly, the concept of reading competence in the National Education Panel Study takes functional understanding as a basis for reading competence, as is also reflected in the Anglo-Saxon Literacy Concept (also see OECD, 2009), with the focus on competent handling of written texts in different and typical everyday situations.

In order to implement the concept of reading competence over the life span as coherently as possible, three characteristic features have been specified in the framework concepts for the NEPS reading competence tests. They are considered in all stage-adapted test forms:

1. Text functions or text types respectively,
2. Cognitive requirements,
3. Task formats (Item formats).

By systematically considering different text functions, which are implemented in different age groups in realistic and age-specific texts, text themes, and different cognitive requirements of the related tasks, it is possible to operationalize reading competence as a comprehensive ability construct.

1.1 Text Functions/Text Types

The NEPS reading tests distinguish between five text functions and associated text types which are represented in each version of the test: a) informational texts, b) commenting or argumenting texts, c) literary texts, d) instructional texts, and e) advertising texts (see in detail Gehrer & Artelt, in press). This selection is based on the assumption that these five text functions are of practical relevance to the study participants of various ages. The text functions and/or text types can be characterized as follows:

Texts with an information function represent basic texts for learning, fundamental acquisition of knowledge, and extraction of information; examples are: articles, reports, reportages, and announcements. Texts with a *commenting or argumenting function* are texts in which a stand is taken or a controversial question is discussed and in which a reflecting level is integrated. In the student cohorts, for example, the attractions and drawbacks of smoking could be discussed in grade 9. In grade 5, for instance, the pros and cons of communication in social networks were discussed. The *literary-aesthetic function* of texts was included in the third category; here, short stories and extracts from novels or stories can be found. As a result of their specific reception, which is probably also strongly dependent on educational track and curriculum, specific literary text types such as stage plays, satires, or poems had been excluded. The fourth category of *instructions* comprises functional text types conveying product inserts such as engineering and operating instructions, package inserts for medication, work instructions, cooking recipes, etc. The fifth category (*appeals, advertising*) includes text types such as job advertisements, recreational programs, etc. The five selected text functions and, thus, the associated text types are implemented as a longitudinal concept in each test booklet over the life span, which means that each test/each test booklet used for measuring reading competence contains a total of five texts corresponding to the five different text functions.

Unlike the PISA studies, NEPS concentrates on continuous texts and does not include discontinuous texts such as graphics, tables, road maps, etc. Discontinuous texts are not contained in the NEPS concept (cf. Gehrer et al., submitted) as they require different types of reading and comprehension processes (Schnotz & Duthke, 2004; see also Artelt, Stanat, Schneider, Schiefele, & Lehmann, 2004 for an empirical study).

Age-specific selection (text complexity, topic selection):

For each age cohort, texts have been selected according to thematic orientation and lexical, semantic, and grammatical properties that are required to be appropriate for the respective group of readers. By increasing text complexity (larger vocabulary, longer words, foreign words, and increased complexity of the sentence structures) as well as the basic length of texts, the test design takes into account the increasing reading competence from childhood to early adulthood. In addition, texts are selected in order to ensure that topics correspond to the environment of the respective age group. This covers a wide spectrum of topics ranging, for example, from animals and other motivating themes for children to sport

activities, communication technology, and leisure themes for adolescents. Additionally, the test material is adjusted to the respective age group through age-adapted phrasing of the questions and the answering options.

1.2 Cognitive requirements / task types

From the literature on reading competence and text comprehension (e.g., Kintsch, 1998; Richter & Christmann, 2002), it is possible to derive different types of cognitive requirements reflected in the NEPS concept in three specific requirement types of the tasks (task types). The variants are called *types* as no explicit assumption is made suggesting that tasks of one type were, by necessity, more difficult or easier than tasks of another type.

For tasks of the first type (*finding information in text*), detailed information must be identified at sentence level, in other words deciphering and recognizing statements or propositions. For tasks in this requirement cluster, the information needed to solve the respective tasks is, in terms of the wording, either contained in the text and identical with the task itself, or its phrasing varies slightly.

In the case of the second task type (*drawing text-related conclusions*), conclusions have to be drawn from several sentences to be related to each other in order to construct local or global coherence. In some cases, this takes place between sentences located closely together; in others, several sentences are spread over entire sections. In another version of this type, the task is to understand the thoughts expressed in the entire text, which requires the comprehension and integration of larger and more complex text portions.

For the third type, the requirements of *reflecting and assessing* are in the foreground, which in the literature is often linked to the mental representation of the text in the form of a situation model. In one version of this task type, the task is to understand the central idea, the main events, or the core message of text, whereas in another version, the purpose and intention of a text has to be recognized and the readers are asked to assess the credibility of a text.

The different cognitive requirements occur in all text functions and are considered in the respective test versions in a well-proportioned ratio. (cf. Figure 1).
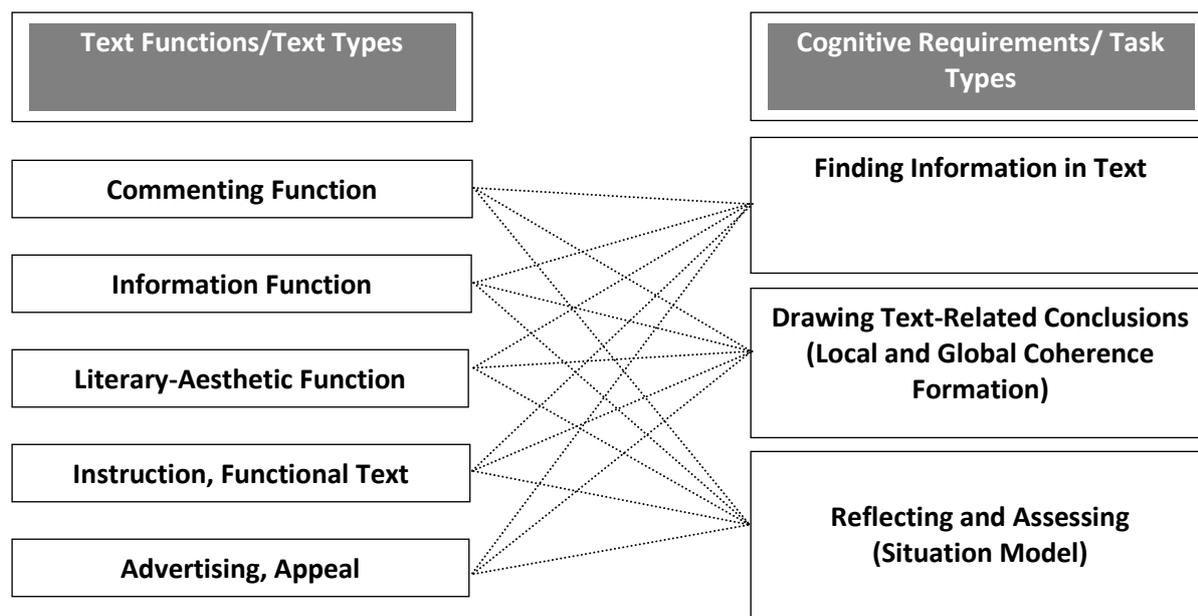
Text Functions/Text Types	Cognitive Requirements/ Task Types
Commenting Function	Finding Information in Text
Information Function	
Literary-Aesthetic Function	Drawing Text-Related Conclusions (Local and Global Coherence Formation)
Instruction, Functional Text	
Advertising, Appeal	Reflecting and Assessing (Situation Model)

Figure 1. Text functions and cognitive requirements in the reading competence test.

The three cognitive requirements of the reading process are distributed as evenly as possible throughout the test booklet.

1.3 Item Formats

The majority of tasks match the multiple-choice format. Tasks of this type consist of a question/assignment on a text for which four different answers are offered, one of which is the correct answer. As another item format, decision-making tasks are used where individual statements have to be judged on whether they are right or wrong according to the text. The so-called matching tasks represent a third format where, for example, a partial title must be chosen and assigned to different sections of a text. For tasks of the second and third type, summaries are made, if necessary, thus creating answers with partly correct solutions (partial credit items). These complex patterns, which could be partially correct, are coded and scaled using a partial credit approach (for scaling, see Pohl & Carstensen, 2012). All three item formats are applied in each test booklet.

1.4 Assessment Conditions and General Remarks

The reading competence test in the student cohorts takes 28 minutes to complete per measurement time point. In line with the framework over the life span, the final instrument developed in NEPS has five texts with the aforementioned five text functions and five to seven items for each text tapping local, deductive, and global comprehension. The three cognitive requirements of the reading process are balanced as far as possible in the test booklet. The students first read one of the five stimulus texts and answer a number of questions referring to said text. They are allowed to go back to the stimulus text and read it

again, either completely or partially. Subsequently, the students read and solve the following stimulus texts with its corresponding tasks. Thus, each booklet contains shorter, medium, and longer stimulus texts, the lengths of which vary depending on the student's age. Table 1 shows the variety in length over all five stimulus texts in grade 5 (A25 main study). None of the texts is longer than one page.

Table 1 Number of Words for Different Text Types in the Reading Test for Grade 5

Text Types/Functions	Words
Instruction	160
Literary	227
Commenting	270
Advertising	274
Information	307
Number of words of stimulus texts	1238

Table 2 shows the variety in length over all the five stimulus texts in grade 9 (A47 main study). In this cohort, the text with the literary-aesthetic function is the longest; the shortest is the text with commenting function. Please note that the total sum of words in this cohort is considerably higher than in grade 5. Yet, none of the texts are longer than one page.

Table 2 Number of Words for Different Text Types in the Reading Test for Grade 9

Text Types/Functions	Words
Commenting	204
Advertising	238
Instruction	393
Information	429
Literary	537
Number of words of stimulus texts	1801

2 Sample Items in Grade 5

The depicted stimulus text of the text type informational text (see example in Figure 2) is taken from a pilot study in grade 5. It was eliminated after the pretests because another informational text had been selected to be used in the main study. The length of this example text is 228 words, which is in accordance with the mean length of the selected texts for grade 5.

The theme of the text is the description of a nation (Egypt) with an ancient civilization, referring to its ascension and decline, its places, persons, and objects of historical interest. The first paragraph introduces the geographical area of Egypt, the second episode deals with political and religious aspects, the third refers to the pyramids and their treasures, the fourth

section describes historical tools, and the last part refers, inter alia, to Cleopatra and the decline of the old dynasty.

ÄGYPTEN - PYRAMIDEN AM NIL

(1) Entlang des Nils zieht sich ein schmaler Streifen fruchtbaren Landes. Der Rest von Ägypten ist Wüste. Doch dieser grüne Streifen war genug, um dort eine der ersten großen Kulturen der Menschheit entstehen zu lassen: Das Alte Ägypten.

(2) Den ägyptischen Staat führten die Pharaonen. Sie waren aber nicht nur Könige, sie wurden von den Ägyptern sogar als Götter verehrt. Sie wurden verehrt und nach ihrem Tode höchst prunkvoll beerdigt. Die Ägypter glaubten an ein Leben nach dem Tode und sie glaubten, dass der tote Mensch seinen Körper noch einmal benötigen würde.

(3) In den berühmtesten Gräbern, den Pyramiden, wurden keine Mumien gefunden. Wahrscheinlich waren sie, mitsamt ihren Schätzen, Opfer von Grabräubern geworden.

(4) Die Pyramiden von Gizeh sind die berühmtesten Überbleibsel des Pharaonenreiches. Fast unglaublich: Denn die alten Ägypter hatten damals noch nicht einmal Werkzeuge aus Eisen, mit denen sie die Steinblöcke hätten bearbeiten können. Ihre Beile, Hämmer und Meißel waren aus Kupfer oder Stein.

(5) Ägypten war sehr lange Zeit das mächtigste und reichste Land der Erde. Es überstand zahlreiche Eroberungen, Kriege und Fremdherrschaften, verlor aber doch nach und nach an Macht und Einfluss.
Nachdem die letzte ägyptische Herrscherin Cleopatra 30 vor Christus, also 3.000 Jahre nach der ersten Pharaonendynastie, an einem Schlangenbiss gestorben war, machte der römische Kaiser Augustus Ägypten zu einem Teil seines Reiches.
Damit war die Geschichte des Alten Ägypten endgültig zu Ende.

Figure 2. Informational text (Grade 5).

In the following, sample items exemplifying the three types of cognitive requirements (see Figure 1) are shown as well as different response formats.

Sample item 1, a multiple-choice item, (Figure 3) is an example of the cognitive requirement of drawing text-related conclusions. In order to find the correct solution, the student must remember or read again the first paragraph of the text. In the third sentence she or he will find the reason for the development of the culture of Old Egypt: the green zone along the river Nile. In addition, the student has to establish local coherence in order to comprehend that this zone is the same one as in the first sentence of the question. Afterward, the student must infer that the second sentence marks nonfertile land – the desert – to select the right answer, option 4 in this case.

Figure 3. Example of a multiple-choice item reflecting the requirement of drawing text-related conclusions (Grade 5).

The next example item (Figure 4) refers to the last paragraph of the Egypt text. It represents an item of the requirement finding information. The question is asked why Cleopatra died; the student has to choose between the following four answers: a) She died at the hands of Julius Caesar, b) due to old age, c) a viper bit her, or d) she died in a battle. The fifth part of the informational text starts with the portrayal of wars and conquests, hence, distractor d) could be plausible. However, with precise reading, the student will be able to find the correct marker in the third subset of the following compound sentence: snakebite.

Frage 3	Im Text erfährt man, auf welche Weise Cleopatra gestorben ist.
	Was war die Ursache ihres Todes?
	Bitte kreuze die richtige Antwort an! Bitte kreuze nur ein Kästchen an!

☐ Sie starb durch die Hand Julius Cäsars.

☐ Cleopatras Leben endete aufgrund ihres hohen Alters.

☐ Sie wurde von einer giftigen Schlange gebissen.

☐ In einem Krieg verlor Cleopatra das Leben.

Figure 4. Example of a multiple-choice item reflecting the requirement of information finding (Grade 5).

The third item presented in relation to this text is a complex item of the matching-response format (see example in Figure 5). It belongs to the task type/cognitive requirement of reflecting and assessing.

In this matching format, a subtitle must be chosen and assigned to the different sections of the presented text. The test taker has to comprehend the main idea of each paragraph and allocate the correct heading to each section of the text. If two headings fit roughly to the same paragraph, there will always be one that is still more appropriate with regard to the content of the question.

As these tasks refer to more than one section of the text, the main idea of each paragraph must be understood in relation to those of the other paragraphs. Thus, partial understanding of just one part of the text does not suffice to solve these kinds of tasks. From a theoretical point of view, it is assumed that a mental representation of the individual sections and the whole text (situation model) has to be constructed. Building up a coherent and suitable situation model allows the reader to summarize important aspects. Partially correct response patterns are considered by applying a partial credit model as described in the section "Item formats".

Frage 7   Welche Teilüberschrift passt am besten zu welchem Textabschnitt?

Ordne die Buchstaben von A bis F den Textabschnitten zu!

Trage die passenden Buchstaben in die Tabelle ein! Ein Buchstabe bleibt übrig.

Abschnitt	Teilüberschrift		
1	⊔	A	Fruchtbares Land
2	⊔	B	Gräber und Schätze
3	⊔	C	Werkzeuge für Pyramiden
4	⊔	D	Wichtige Mumienfunde
5	⊔	E	Cleopatra
		F	Götter und Könige

Figure 5. Example of a complex matching item; cognitive requirement of reflecting and assessing (Grade 5).

As another item format, decision-making tasks are used where individual statements have to be judged on whether they are right or wrong according to the text. For the unit "Egypt", no item with this response format was constructed. This format is introduced with the sample items of grade 9.

3 Sample Items in Grade 9

The depicted stimulus text of the text type literary-aesthetic function (see example in Figure 6) is taken from a pilot study conducted in grade 9. It was eliminated after the pretest since another text of this text function had been selected for the main study. The length of this example text is 417 words.

The text deals with an older, lonesome person named Willi who is regarded as a fool by the other residents of the village. Every day he sits in the market square near a well and feeds the pigeons. The narrator recounts how she had made friends with the tight-lipped Willi. A boy passing by threw a stone at the pigeons and shouted: "King of the pigeons!" causing the pigeons to fly away, leaving behind a wren. Afterwards, Willi compared the biased villagers to pigeons, as they move about together causing a racket, all the while avoiding the silent Willi.

Der Taubenkönig

Willi lebt schon ewig hier. Manche meinen, er wäre so alt, wie das Dorf selbst. Tag für Tag sitzt er am alten Marktplatz auf einer Bank vor dem Brunnen und füttert die Tauben. Er redet selten und lacht nie. Die Leute hier im Dorf halten ihn für verrückt. Sie nehmen ihre Kinder an die Hand und laufen schneller, sobald sie in die Nähe des Brunnens – in Willis Nähe – kommen. Ich beobachte das, seitdem ich denken kann. Schon als Kind habe ich einen kleineren Bogen um den alten Mann gemacht als die anderen und heute, mit meinen 30 Jahren, setze ich mich manchmal sogar zu ihm. Dann reicht er mir schweigend seine Tüte mit dem Vogelfutter und schweigend beobachtet er die kreischenden Tauben. Auch ich bleibe stumm, streue wortlos die Krumen. Gemeinsam sitzen wir da und genießen das Schweigen. In meinem Rücken spüre ich die bösen Blicke der Dörfler. „Warum treibt sich Conny mit diesem Sonderling herum?", fragen sie. Ich höre ihr Getuschel, aber es stört mich nicht, es stört ja auch den alten Willi nicht. Ich weiß, dass ich auf seiner Bank willkommen bin, auch wenn er nie mit mir spricht. In seinem Schweigen finde ich Zuflucht. Auch heute. Wieder sitzen wir gemeinsam da und füttern die Tauben. Ein Junge läuft vorbei, ich bemerke ihn kaum. Er hat uns gesehen. Ehe ich verstehe, was er da tut, hat er sich schon nach einem Stein gebückt und ihn mitten zwischen die Tauben geworfen. Schreckhaft kreischend fliegen sie davon. „Taubenkönig, Taubenkönig!", ruft der Junge und rennt lachend weg. „Warum tut er das?", frage ich, ohne eine Antwort zu erwarten. Willi überrascht mich. „Schau, da, Conny! Der Vogel.", sagt er. Seine Stimme ist etwas brüchig vom langen Schweigen, aber sanft und melodiös. Ich folge verwundert seinem Blick. Die kreischenden Tauben sind weg, aber dort – graubraun und unscheinbar – sitzt nun ein Zaunkönig. „Sie sind wie die Tauben.", sagt der Alte, „Sie kommen und gehen gemeinsam, und immer machen sie Lärm. Die Schweigsamen, die sich aus dem Schwarm entfernen, bleiben allein." Er lächelt mich an. Nie habe ich ein ehrlicheres Lächeln gesehen. Dann steht er auf und geht. Schweigsam und allein. Ich beobachte den graubraunen Vogel, der dort immer noch sitzt. Mir kommt es vor, als würde er mich ansehen. Einen Moment noch verharrt er, dann fliegt er davon, schraubt sich schweigsam und allein in den Himmel. Da verstehe ich es. Ich muss lachen. Der kleine Junge, der die Vögel aufgescheucht hat, hatte also Recht – Willi ist der Taubenkönig.

Figure 6. Example of a text with a literary-aesthetic function (Grade 9).

The first depicted example item (see Figure 7) is a decision-making task where individual statements have to be judged as correct or incorrect according to the text. In the lines provided, four reasons are given why the villagers think of Willi as odd. The reader then has to evaluate each statement: a) The villagers think he behaves as if he were insane, b) They think that his clothes are strange, c) They think it is strange that he speaks with pigeons, d) They judge him by his reticence. The correct statements are to be found in line one and line four. Partially correct response patterns are considered by applying a partial credit model as described in the section "Item formats".

Figure 7. Example of a decision-making item referring to the cognitive requirement of information finding (Grade 9).

Figure 8. Example of a multiple-choice item referring to the cognitive requirement of reflecting and assessing (Grade 9).

The next example item (shown in Figure 8) referring to the cognitive requirement of reflecting and assessing taps the comprehension of the main idea of the text. The reader has to decide whether the main issue in the text is a) a successful integration into society, b) the ruthlessness of juveniles, c) tolerance toward otherness, or d) the wrong attitude in dealing with the environment. In this case, the third option is the correct answer as the main point in the story is that the villagers do not accept the tight-lipped outsider. To solve this task, the

student has to reflect about the message or morality of the tale beyond the line of action, the description of the characters, and the specific scenes. All of the offered distractors are thematically anchored in the stimulus text, though their plausibility is based on their relationship to a single episode. However, the integration of the whole text reveals that all scenes deal with Willi as an outsider. For example, as mentioned in Distractor B, the stone-throwing boy behaves ruthlessly in one of the middle scenes, but this does not suffice to assess B as the correct answer for the main statement of the complete text.

| Frage 7 | Texte werden mit bestimmten Absichten verfasst. |
| | Welche Absicht verfolgt der Autor hier wahrscheinlich in erster Linie? |

☐ Der Autor möchte mit dem Text zum Nachdenken anregen.

☐ Er hat vor, den Leser über einen Sachverhalt zu informieren.

☐ Der Autor möchte die Leser auffordern, keine Tiere zu quälen.

☐ Der Schreiber zielt darauf ab, den Lesern etwas zu beizubringen.

Figure 9. Example of an item with the cognitive requirement of reflecting and assessing (Grade 9).

The last example item (see Figure 9) requires the reader to evaluate the whole text within a broader context to recall the intentions of the author. Therefore, he or she has to decide whether the text intends a) to activate critical thinking, b) to inform the reader about an actual situation, c) to appeal to the reader not to harm animals, or d) to convey knowledge to the reader. The right answer is option 1 recognizing the parable in the story.

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