

# Designing Dialogs Around Picture Book Apps



Elise Seip Tønnessen and Trude Hoel

**Abstract** In Norwegian kindergartens there is a strong emphasis on communication and language stimulation. In this educational context the reading of picture book apps offers an opportunity for extended dialogs, which have great didactic potential in that they integrate language knowledge with cultural knowledge. In this chapter we discuss what dimensions of the picture book text (words and pictures), medium (app on digital tablet) and situation (adult-child relations) that the teacher needs to take into consideration when designing dialogs to encourage early language and literacy development in kindergarten. This work represents the first phase of a major innovation project that will develop a research-based online assessment tool for picture book apps. The part of the project presented here focuses on how different semiotic affordances and technologies may affect dialogic reading. Theoretically, this project is rooted in New Literacy Studies, which sees reading and language as social practices where competence develops in interaction with others. One of the main objectives of our contribution is to present central dimensions within the text, the medium and the situation that preschool teachers need to take into consideration for reading in the digital age.

**Keywords** Picture book app · Dialogic reading · Shared reading · Digital reading · New literacy studies · Affordances · Language stimulation · Extended discourse

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Six 5-year-old boys and a kindergarten teacher lie on their stomachs in a circle around an iPad. They are about to read *Unni and Gunni travel* [Unni og Gunni reiser]. The app's recorded reading function is turned off, while hotspots that activate animations and accompanying sound effects are turned on. The teacher determines when a page is turned. Each boy has put forward a hand to quickly reach hotspots, as the boy who finds a hotspot first gets to tap on it. While reading, the boys activate the animations nonstop so that sounds of a compass, of whistling, of an engine, etc. accompany the session. The teacher comments on this once by stating "Has he whistled enough now?" The teacher invites to explorative dialogs during the reading, for instance, by stating "We should have had a flying carpet." "Yes" several of the boys respond. "Where would we travel if we had a flying carpet?" "To outer space!" responds one of the boys; "To lava!" answers another. "What are we going to do in space then?" the teacher asks, and the conversation continues.

In this chapter, we explore the potential of apps that perform picture books on tablets and discuss how they may encourage dialogs between children and teacher in an educational setting. The apps we focus on display literary texts that are mainly adaptations of picture books that have already been published in print by established publishing houses. In the process of remediation from print to digital technologies, new meaning resources are added, such as sound and animation, the minimum involving a voice performing the verbal text (Al-Yaqout and Nikolajva 2015). In some cases, there is also an element of gamification whereby the reader is invited to enable additional modes, such as sound effects, or to perform tasks to move the story forward.

Our aim is to discuss what is required to make good use of picture book apps in a kindergarten educational setting. This will serve as a starting point for innovative work that enables preschool teachers to make qualified decisions when preparing digital reading with children. We focus on educational contexts, and readings are envisioned as dialogical to support children's development of linguistic competence as well as literary understanding. We discuss which dimensions of the book (words and pictures), medium (book or app on tablet), and situation (adult-child relations) are essential for dialog based on literary texts to encourage early language and literacy development in kindergarten. After presenting an overview of our selection of picture books, we discuss how to analyze the affordances of the text, the medium and the reading situation designed by the teacher. Based on these dimensions we present a model for analysis, which is then illustrated by an example.

## 1 Background

When a new medium enters the public scene, it always takes time before it is adopted in educational institutions. This may be partly attributable to the fact that educators must familiarize themselves with a new medium, with how it can be used, and with the forms of texts it may convey to establish new and relevant literacy practices. When touchscreens and tablets were first introduced in January 2010 (in Norway, where this research is conducted, the iPad was first introduced in April 2010), their use spread quickly and particularly among families with children

(MedieNorge 2017). Tablets have introduced digital technologies to new groups of readers and opened new digital venues to very young children who were not already keen users of digital technologies that required the skills of reading and handling a computer mouse. This raises questions about the influence of the medium (see, for instance, Wong and Neuman [this volume](#)). The first picture book apps developed by Norwegian publishers appeared in 2011. However, neither tablets nor picture book apps were in common use in kindergartens and schools until around 2015 (Jacobsen et al. 2016, p. 25).

The discussion presented in this article represents the first phase of a major innovation project – “Books and apps: Developing an evaluation tool for e-books targeted towards children” (VEBB). The project aims at developing a research-based online assessment tool that determines whether selected digital picture book apps can facilitate children’s language learning during dialogic reading in kindergarten.<sup>1</sup> The project as a whole compares traditional book reading with digital reading. In this chapter, however, we focus solely on digital reading.

The part of the project presented in this chapter focuses on how the use of different semiotic modes and technologies may affect dialogical reading featuring digital media. One of our main objectives is to present central dimensions within the text, the medium, and the situation that kindergarten teachers need to consider when reading in the digital age.

Our discussion is rooted in theoretical perspectives of the fields of education, literature, and media studies and focuses on a selection of apps that we describe in the Methods section below. Our discussion forms the basis for testing the apps in empirical studies in kindergartens where reading sessions are videotaped for close analysis. In this chapter, however, the aim is to uncover relevant dimensions that a kindergarten teacher needs to be aware of in her planning of and practical work with digital reading.

## ***1.1 Literacy and Literature in Kindergarten***

Children’s participation in extended discourses – in combination with a rich vocabulary – is vital to their language learning and emerging literacy skills (Dickinson and Tabors 2001). Thus, children’s participation in dialog during shared reading is central to the use of such resources in educational settings in kindergarten.

In Norwegian kindergartens (Early childhood education care (ECEC) institutions for 1–5 years olds), there is a strong emphasis on communication, language, and text. Note that there are no individual outcomes linked to these educational goals. The national framework plan states that dialog and interaction are central to language stimulation in kindergarten, and that “all children shall be able to participate

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<sup>1</sup>The project is funded by the Research Council of Norway (2016–2019): <https://lesesenteret.uis.no/category.php?categoryID=19984>

in activities that promote communication and comprehensive language development” (Ministry of Education and Research 2017, p. 23).

When young children are introduced to narratives and picture books in various media forms, this can constitute part of the kindergarten’s work with children’s language learning, depending on the design of the dialog. Literature serves as a good starting point for dialog in that children can activate their own experiences and skills and construct new knowledge (Solstad 2016). Language used in such conversations - when children are active and creative throughout the reading process – tends to be more decentered and decontextualized than children’s everyday language. In this way, literature creates opportunities for children’s participation in what is referred to as extended discourse (Dickinson and Tabors 2001).

Traditionally, the print book has been used as the main basis of kindergarten reading activities, but with the development of digital technologies, other opportunities for the mediation of multimodal texts have emerged (e.g., apps downloadable on mobile phones and tablets). The tablet has other affordances than the print book, as we elaborate on below. These affordances are also discussed in Brueck, Lenhart, and Roskos’ chapter in this book in terms of interactivity, and in Bus, Sari, and Takacs chapter in terms of guiding children’s visual attention. In Courage’s chapter, she discusses how such features may affect learning and adult-child relations. In this chapter, our main focus is on features of narrative apps promoting children’s participation in dialogs.

## 2 Theoretical Perspectives and Applications

Cross-disciplinary perspectives must be employed when discussing dimensions that involve an understanding of how multimodal literary texts may work for educational purposes in a digital medium. As an outset, we find perspectives from New Literacy Studies (NLS) useful in regard to reading and language as social practices where competence develops in interaction with others. Such interaction takes place within culturally defined frames, which create a basis on which designs and patterns of meaning are made available and on which they are redesigned through active use, according to the interests of the reader (New London Group 1996; Barton 2007; Kress 2003).

### 2.1 Design

The New London Group (1996) seeks to describe literacy as dynamic processes of design. The term *available design* refers to resources available for design on many levels from socio-cultural conventions of (in our case) reading literature to the grammatical and systematic organization of semiotic modes involved (NLG 1996, p. 74). What is available for design varies through history and across orders of

discourse (Fairclough 1995). In our case picture book apps combine the traditional design of words and images in picture books with new interactive designs of the touch screen medium. Taken into the kindergarten this available design forms the basis for how the teacher can design the reading situation in ways that encourage dialogs. The result of design processes is referred to as ‘the re-designed,’ which is a new meaning. In the next instance, the re-designed turns into available design for further design processes.

This dynamic view of literacy processes implies that the outcome of any reading event must be understood in the context of immediate reading situations and of broader institutional and cultural contexts. In the case of reading picture book apps in kindergarten, both the conventions of literary reading, and the designs made available via the digital touchscreen medium must be understood within the traditions and contemporary practices of literacy and language stimulation in kindergartens.

## 2.2 *Affordances*

This view calls for analytical concepts that will help us study how the semiotic and technological resources of picture book apps can be put in play to inspire dialogs in Norwegian kindergartens. The potential for meaning making in the words and images of a picture book may be described in terms of semiotic affordances. The concept of affordances originates from J.J. Gibson’s (1979) theories on visual perception. In the field social semiotics, the term has come to be used in a manner similar to Michael Halliday’s (1978) description of language as a potential for meaning. According to Theo van Leeuwen (2005) semiotic affordances concern potential and actual uses of semiotic resources. This means that semiotic modes carry with them the results of ‘cultural work’ (Vygotsky 1978) over time and the potentials for new and creative ways of making meaning. Gunther Kress (2003) offers some clues as to how these theoretical affordances may be analyzed based on the materiality of various semiotic modes, which shape the ways that they are organized, such as verbal language in a linear stream and images as composition in space. Kress also points to technologies through which different media offer different affordances (Kress 2003).

## 2.3 *Research on Affordances of Text and Medium*

In her study of narrative pleasures across media Margaret Mackey’s (2011) emphasizes how meaning making from literature, films, and computer games is best understood as an active process. Referring to Wolfgang Iser’s (1978) reception aesthetics focusing on the specific reading event, she sees literary reading as “something we perform” (Mackey 2011, p. 1). This understanding of literary reading views the reader as active and as taking part in reading as a form of meaning making.

Ghada Al-Yaqout and Nikolajva (2015) examine which performed actions a picture book app features and distinguish between the performance which is built into the medium (e.g. the narrator's voice) and the performance the readers may conduct in interaction with the medium. In both print books and picture book apps, the text invites children to touch. In print books, this occurs, for instance, when readers explore illustrations. For picture book apps, tapping, touching and tracing (actions resulting in sound and movement of characters or objects) constitute the medium's affordances, which invite active participation in performing the story.

Within the discipline of language learning, several studies suggest that interaction between text (the affordances of the picture book) and medium (technological affordances) has consequences both for children's comprehension and learning of new words and for the adult – group interaction, which is essential for children's language learning.

Several empirical studies have examined the role of technologies in shared reading, e.g. Revelle, Strouse, Troseth, Rvachew, and Thompson Forrester's chapter in this book which discusses how technology may scaffold the adult's interaction strategies. Three meta-studies (Takacs et al. 2014, 2015; Bus et al. 2015) find that interactive affordances may support and deepen children's comprehension of a narrative in similar ways that an adult mediator may support children's comprehension. They also find that interactive affordances may hinder children's comprehension depending on whether interactive elements, animations, sound effects, games, etc. are consistent with a given narrative. In the review article "Children's interactions with iPad books: Research chapters still to be written" (2013), Natalia Kucirkova notes:

it seems to be the case that in comparison studies, iPad books fare less well than traditional books, but when studied in their own right [in qualitative studies], iPad books are reported to engage children and to have positive effects different from simple digital books. (p. 2)

Also, within the field of psychology, studies have compared the shared reading of print books and digital books. Yuill and Martin (2016) compare how paper and screen media might alter children's shared reading experiences and specifically examine interactions between cognitive, emotional and motor aspects by comparing "interaction warmth" and "postures" – the positioning of the body – of children and adults involved. The results show no differences in cognitive goals, but the authors find that levels of interaction warmth are lower when tablet reading is executed than when print books are read, and they find a marked decline in the time children spend reading from screens. They point out that "the way the device is held has implications for how easy the device is to share, and this can influence the closeness of the interaction" (Yuill and Martin 2016, p. 10).

A small-scale comparative project conducted in Norway in 2014 compared shared reading of picture books in kindergarten with reading of picture book apps (Solstad and Tønnessen 2014). The main findings of this study show both similarities and differences. In response to both media, participating children *negotiated* with the text by asking questions, making comments, and identifying relevant previous experiences. Another common feature involved *playing with the text* or with the

text as an outset. This was observed when children engaged with the text in a playful manner, for instance by acting out dialog, engaging bodily with the events shown in the images, or creating parodies of wording used. Finally, text co-creation, through which potential extensions of what was depicted through characters and events, was observed. In addition, the digital medium inspired children to negotiate on ways to use the medium and to take turns while playing with the medium. Differences were also observed across reading situations in that the digital medium appeared to be less flexible than the book. This applied more to certain apps than to others depending on options made available (e.g., to replace the prerecorded verbal text with an adult reader). Differences between reading from book and tablet mainly appeared as a result of different affordances of the medium, which in turn affected reading practices and relations between adult and child (or group of children).

## 2.4 *Designing the Dialogical Reading Situation*

When designing the reading situation, the teacher needs to take the affordances of text and medium into account, but also to consider how to make these available to the children. The teacher acts as a mediator who chooses a text, which offers potential for dialog (Alfheim and Fodstad 2014; Hoel et al. 2011; Mjør 2009). In fiction texts such as picture books, not all is told; there are gaps or openings (blanks) in the text. These openings provide the readers with opportunities for interpretation and they allow the readers to be active co-creators (Iser 1978). Dialogs may be encouraged through themes of the book, illustrations, or written text or through affordances enabled via the medium. Whether using print books or digital books, it is important to make “space” for dialog, and for digital books, such opportunities may be offered through the medium.

When designing the dialog, the mediator both initiates and maintains dialog whereby children contribute their thoughts and opinions (Burger 2015). Invitations to dialog can take several forms, such as open and closed questions, follow-up and clarification cues, questions that extend beyond the immediate context (Smith and Dickinson 1994) and exploratory questions related to the text (Gjems 2007). The mediator may pause to elaborate on a story through what Ingeborg Mjør (2013) refers to as “strategies of expansion.” The mediator may linger on illustrations and point to them, give names to objects or ask questions and thereby encourage the children to take part in the dialog and in meaning making. In participating in such dialogs, the children activate their own experiences and skills and thus develop their own knowledge of texts and their language skills. The mediation of text and dialog related to texts constitute key facets of the reading experience; thus, dialog based on literary texts offers great didactic potential in that it weaves linguistic and cultural knowledge together.

Still a larger context also influences the design of situations and dialogs, such as the kindergarten where shared reading is carried out. Several of the studies in this

field examine literary reading executed in dyads; mother – child or teacher – child. Group readings in a kindergarten setting represent other challenges, but also other opportunities.

While previous research seems to focus on educational settings or on literature reading as an aesthetic experience, the VEBB project seeks to combine the affordances of literary picture book texts with the educational value of dialog-based reading for language stimulation in kindergarten.

### 3 Methods

The VEBB project involves all together 12 kindergarten teachers in six kindergartens. Each teacher carried out four reading sessions, reading two titles both in print book version and app version, with the same group of children. These reading events were videotaped, making the total number of filmed sessions 48. In addition to the video data, the parents, the teachers, and the children have answered questionnaires regarding their interest and engagement in reading, the children's experiences with reading activities at home and in kindergarten, their motivation, access to digital technologies in kindergarten and at home, etc.

The picture book apps we apply were selected for empirical testing in dialogic readings in kindergartens (as noted in our description of the VEBB project above). The aim was to present stories ranging from apps that very closely reflect the books that they remediate, to apps that differ from the book in that they introduce additional modes and activities. This may render the reading experience very different from the experience of reading a paper book. Four stories available as both paper books and picture book apps were selected for a front list, for use in videotaped reading situations for further investigation. In addition, 12 picture book apps (most of them are also available in paper book format) were selected for a supplementary list, distributed to the participating kindergartens to establish a digital reading practice more generally.

Some assumptions were applied in designing these lists. For linguistic and cultural reasons, picture books and apps were selected from apps produced by Norwegian publishers.<sup>2</sup> We sought topics that would interest both boys and girls of ages 4–5 and texts (in an expanded sense) that we expected would generate good and varied dialogs on words and images. We also sought stories using a variety of verbal language from simple words and sentences to more complex language in which the wording might generate curiosity and invite readers to explore vocabulary, metaphors, etc.

The apps were selected based on four categories sorted from most book-like to more independent productions. This process was guided by categories established in previous studies (Tønnessen 2014): (1) visual audiobooks, where basically the

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<sup>2</sup>The app *What happened then?* developed by Finnish Tove Jansson is published in Norwegian by a Norwegian publisher in cooperation with the Finnish publisher and a game company.



app adds a performed reading of the verbal text; (2) picture books with additional effects whereby the reader is invited to activate sound effects, animations or other visual effects; (3) picture book apps offering a higher degree of gamification while inviting – and sometimes demanding – the reader to engage in interactivity via digital technologies; and finally (4) digital first productions. These categories come with fuzzy boundaries and were first and foremost designed to ensure variation in the selection of texts. The last category can be criticized for not being logically related, as its only defining characteristic is that the app is not based on a book. We have kept this category for our supplementary list because it demonstrates a time of transition where the new medium remediates traits from former media (Bolter and Grusin 1999). This independence from the book medium raises other principles of narrative organizing than the series of spreads we know from picture books. Hence, this category may include apps inspired by other media, such as computer games (organized into levels) or films (organized as sequences of scenes). Overall, however, there is no logical reason why digital first productions should be qualitatively different from apps of categories 1–3. The titles used are listed and briefly presented in Table 1.

## 4 Discussion of Relevant Dimensions

### 4.1 *Affordances of the Text*

A central feature of the text is the theme. Thus, in our selection of narratives we consider – among other things – how the theme of texts appeals to children’s (age-influenced) interests (Appleyard 1991). Interest serves as an important source of motivation and commitment (Hoel et al. 2011), and some themes are interesting to many children due to the way children are positioned in the world. For example, some texts address being small and vulnerable in a dangerous world. All of the texts included in our list present themes that children can relate to (e.g., emotions, different forms of togetherness and friendship). Some of the texts are humorous and some are exciting. When the children’s background knowledge and experiences – their pre-understanding (Hoel et al. 2011) – are linked to a text’s themes, this creates a solid springboard for meaning making and dialog. In addition, we consider gender orientations included in the texts. We include no texts that are exclusively targeted at girls or boys, as both boys and girls participate in the kindergarten reading groups, though some of the texts may appeal more to one of the groups.

Picture books are multimodal texts wherein verbal text does not normally describe details shown through illustrations. Instead, picture books combine two modes of telling and showing – one verbal and one visual. The actual meaning of such a book is realized through interactions between these two modes of storytelling. Thus, we consider verbal languages, illustrations and the interplay between verbal language and illustrations as basic features of the text. Verbal language

**Table 1** Overview of the front list picture book apps sorted from most interactive to most book-like

Title	Story	Iconotext + additional semiotic resources	Interactivity	Flexibility
What happened then? (Moomin) [Hvordan gikk det?]	Series of tableaux from a well-known storyworld (Moomin valley)	Verbal: Rhymes and rhythms	Tap for sound, animation and gaming (find the pearl)	Menu: Read or be read to
		Detailed images	Swipe to see through	Show/hide written text
		Colors illustrating moods	Make drawing	
		Soundscapes		
Movement				
Yesper and Noper [Jakob og Neikob]	Power and problems of saying yes and no	Stylized images	Tap for sound and small animations	Voice and sound effects on/off
		Sound effects		Record own reading and sound effects
		Theme song		Show/hide written text
		Movement: Small animations		
A fish for Luna [En fisk til Luna]	Philosophical story on language and communication with a flying fish	Detailed images	Last spread only: Tap for the narrator to read “moon” in different languages	Sound on/off (connected voice and soundscapes)
		Fixed soundscapes illustrating moods		Show/hide written text
		Electronic soundtrack designed for the app		
		Movement: Panning and colors		
The seed [Frøet]	On living with divorced parents and soliciting help from a horse to connect two worlds	Detailed images	None	Sound on/off (connected voice and soundscapes)
		Much verbal text		Show/hide written text
		Fixed sound effects		
		Animated transitions between spreads		
Movement				

should not be so advanced that it comes at the expense of children's comprehension. At the same time, verbal language may provide children with new and challenging ways of using language and of applying concrete, abstract and relational concepts. Some of the narratives included in our list contain little verbal text while others include more. Some texts use poetic language and provide access to rhyming elements and repetitive structures, inviting children to play with language, and some texts explore functions of verbal language such as pragmatics and communication. Some texts invite semantic reflections. One text *When everyone is asleep* [Når alle sover] (Houm and Markhus 2011) about a giant coming to town every night to destroy everything, opens with a definition of the word "vandal" as a starting point for understanding the narrative and as an invitation to discuss the meaning of a word. The verbal language of texts thus also provides a basis for dialog.

Images are a vital feature of the picture book text, and they serve as a basis for dialog perhaps especially for children who do not read the verbal text (Solstad 2016). Different illustration techniques and styles, uses of color, visual universes and levels of detail are fundamental to children's interpretation and understanding of – and involvement in – texts. Some of the texts included in our list provide less detailed illustrations while others include highly detailed illustrations. In some texts, pictures build on familiar visual universes while others present a completely new visual universe. In some texts, pictures are dark and mysterious, while in other texts illustrations are bright and spatial. In some texts, images are geometric and simple while in other texts images are detailed and expressive.

This variety of visual languages may create several paths toward dialog based on a picture book text. They may be found in the themes and motifs of the narrative or they may be related to dramatic structures that offer turning points to recognize or wonder about. Other keys may be found in the aesthetic form of images and words in the particular literary ways of showing and saying things. A key element in the design of dialogic reading is to identify openings in multimodal text. Openings can be found in verbal text, in illustrations and in interplays between these. In digital texts, they may also be found in digital affordances, in menu systems and in hotspots that activate elements of the narrative, contributing to the act of making meaning from the text (Zhao and Unsworth 2017). Thus, interactivity is not only a function of technology but also a resource for meaning making. Such actions may become embodied additions to reading and viewing that may again enhance the user's affective engagement. Whether these actions enhance a reader's engagement depends, according to Al-Yaqout and Nikolajva (2015), on whether a picture book app encourages "meaningless shaking and jumping of various static elements" or "cleverly emulates the intricate layout of the book". The latter adapt narratives to the digital medium and add interactive elements that contribute to narratives and that encourage the reader to not only explore but also to become a co-creator of meanings.

## 4.2 *Affordances of the Medium*

Technologies shape texts, and in apps, more features are made available than in print books in terms of narrative voices, music, content, and sound effects, motion (animation and camera movements) and interactivity. The apps included in our list represent a range of possible audiovisual and interactive affordances, of which we can assume that some will support children's comprehension while others may not. These affordances also represent gaps in the text - opportunities for interpretation – and may serve as a starting point for extended language and dialog relating to the performance of verbal text or to music's cultural references.

The ways in which we handle this technology also affect the reading. When reading a print book, the mediator following the verbal text with his or her finger may determine the reading direction. Pointing to pictures may also help the reader emphasize actions, identify characters and explore details of illustrations. In an app the touch screen may turn the screen into a semiotic space, defined through programming, e.g. of hotspots. For some picture book apps, a finger touching the verbal text can make the written text invisible, in others this function is accessible from a menu. In some apps, pointing or tapping initiates sound, animations or page turning. The touchscreen's media-specific affordances include finger movements like tapping, holding and panning – adding a tactile process to the continuous interplay between reading, watching, listening and talking. Such finger gestures play a dual-role: navigating on a macro level and activating games and animations on micro level. According to Ture Schweps (2014), “the physical reader-screen interaction may stimulate a sort of excitement or ‘liveliness’ as the text comes to life in response to the fingers of the reader” (p. 9). This tactility can be associated with a sensuous experience with the materiality of the screen medium, where the screen experience differs from that with a book and may empower a potential for meaning making.

Another important feature of the medium lies in its flexibility; thus, we have assessed flexibility levels in our selection of apps (see Table 1). Can one determine independently whether to use recorded readings, music, contentum and sound effects, or motion (animation and camera) and interactive elements? Are all sounds removed when one chooses to read oneself rather than using the recorded reading? Such elements of flexibility could have a major impact on the space for and the design of dialogs.

## 4.3 *Designing the Reading Situation to Facilitate Dialog*

The design of the reading situation constitutes a crucial facet of designing dialog. Based on their knowledge of children's interests, language skills and relational conditions, kindergarten teachers create reading groups. These reading groups are revised and changed depending on each child's participation, commitment and mastery. Due to staffing standards of Norwegian kindergartens, shared readings are

conducted in groups and often with at least six children in each group. This has an important influence on the design of dialogic reading, because when six children are involved not everyone can see the text as well or from the same perspective, and not everyone can touch the paper or screen to the same degree. The teacher must take this into consideration.

The teacher selects the time and place for reading – away from noise and distractions from surrounding areas – and considers where his or her children should sit to optimize their view of the text and access to the medium. When the text presented is digital, the mediator must also determine whether or to what degree she or he will use menu settings offered in the app.

Shared reading in kindergartens offer certain advantages, such as the opportunities to provide all children – with different backgrounds and experiences – with vital language experiences in taking part in extended discourse. Still, literary text, which for a tablet is designed to be used by one person at a time, may not be used to its fullest potential. In groups, the kindergarten teacher can choose to address this by not using selectable narrative units like narrative voice or animations. In turn, the children cannot take advantage of fundamental affordances of the app, but they can still participate in shared reading activities.

Underlying the design of dialog is the aim to promote children's participation in extended discourse. It is the teacher's responsibility to involve the children in a dialog by encouraging the examination of illustrations, by asking questions about the story told or about prominent words in the verbal text and by allowing the children to recall their own experiences and to draw connections on what is being read. The teacher can prepare for this task by familiarizing him or herself with the book being read (themes, language used, illustrations, openings in the text) or by even preparing (exploratory) questions to extend the dialog beyond the immediate context. It is equally important to remain responsive to the children's own inputs and questions during the reading. Child readers often notice and value other things than adult readers (Hoel 2015). In this way, the design of dialogs with picture book apps deals extensively with being responsive and open to children's interests and associations and with improvising when the dialog embarks in new and perhaps unforeseen directions.

## **5 A Model for Analyzing Picture Book Apps as Available Design for Dialog-Based Reading**

In summing up this discussion, we conclude that a model for assessing picture book apps for use in dialog-based reading for language and literacy development in kindergarten must account for three main dimensions:

1. *The affordances of the multimodal text.* Analytical questions that may apply first and foremost concern the narrative: do motifs in the story seem relevant to the child readers, and will themes create an interesting starting point for dialog?

Does the dramaturgy offer surprises and excitement? Furthermore, what are affordances of the verbal language used: Does it offer new vocabulary, specific forms of poetic language, or wording to wonder about? Are there gaps and missing or unclear pieces to talk about in the verbal or visual mode or between modes?

2. *Affordances of the medium.* How is the digital picture book app different from the picture book it remediates? What modes and tasks are added, and how are they integrated into the plotline and into storytelling? What bodily engagements with the tablet are afforded? Does the medium offer alternative means of reading a story (e.g., following a story line, independent play cued through a story, or more subversive ways of reading)?
3. *The reading situation.* How does the design of reading situation, (e.g., group size and organization) affect the instantiation of semiotic and technological affordances of an app? Rather, what may be missed when (some) children do not have access to the screen? Is the picture book app format suited to repeated reading, and what influence may previous knowledge of apps and/or books and of the story world have on the dialogs in the reading situation?

## 6 Case Study: Yesper and Noper in the VEBB Project

The app entitled *Yesper and Noper* [Jakob og Neikob] (Stai 2011) is based on a picture book written by Norwegian author and illustrator Kari Stai. Through the story, readers become familiar with Yesper and Noper who live together and are friends. Yesper always says ‘yes’, and Noper always says no. However, when Yesper fills the house with lamps and drums, he must build his own house, and eventually he must move. Yesper grows bored and tries to get Noper to join him to do something nice. He succeeds, and the friends embark on a road trip on which they experience strange things.

### 6.1 Affordances of the Text

Friendship and friendship conflicts are highly relevant motifs among child readers. Children can draw on their own experiences with friendship and quarrels when talking about the motifs in *Yesper and Noper*. The dramatic nature of the story may also lead to excitement. Tensions rise when it appears that Yesper is unable to stop a thief (Fig. 1), and they are eaten by a crocodile they meet on their road trip. The story comes to a climax when it turns out that their problems are solved by Noper’s capacity to say ‘no!’ The story is characterized by its exploration of language (double-negatives), and the plot is built around the dichotomy of Yesper’s “YES”, and Noper’s “NO”. This is what gets them both in and out of trouble. In this way, the story invites dialogs on language and language use.

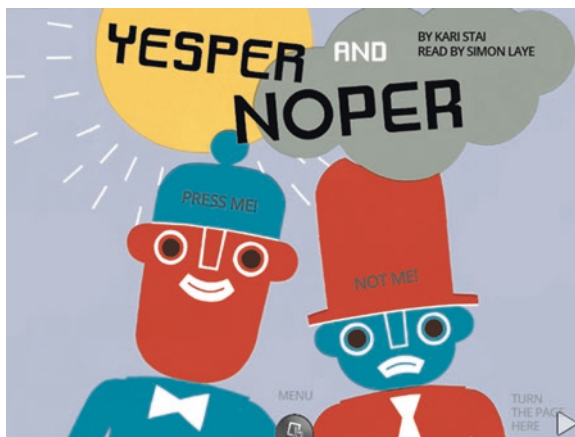


**Fig. 1** Spread number 15 in *Yesper and Noper*. The written text says: “They see a hitchhiker by the side of the road. Noper thinks that he looks suspicious. The hitchhiker asks if he can hitch a ride to another country. ‘YES,’ Yesper says.” (Screenshot reproduced with permissions from Kari Stai and Samlaget)

## 6.2 *Affordances of the Medium*

Through the app, one can determine whether to see the written text (yes/no) and activate sound effects (yes/no) and whether to have the text read aloud (yes/no). One can also record one’s own voice and play a game with illustrations from the book. Illustrations shown in the app are the same as those of the paper book, but they are sometimes customized for digital formats through the use of close-ups and camera movement. In using the app, the reader can tap to turn the page. In addition to verbal text, illustrations, a little melody (that characterizes Yesper and Noper) and the possibility for read aloud, the app also offers simple additional effects. Tapping things initiates sounds (drums, car driving), simple animations (lights on and off, buns that are eaten) and expressions/sounds from the characters (“Do you want to buy a lamp?”). With the exception of the inscription on Yesper’s hat saying “Press me!” and on Noper’s saying “Not me!” (see Fig. 2), no visual markers of the many hotspots are included. This invites readers to explore the illustrations with their fingers while searching for sounds and movements, although it is questionable to what extent these activities are well integrated or contribute to the narration of the story. In the VEBB project, the teachers were free to choose how they wanted to facilitate the children’s interaction with the medium. Some teachers explored the hotspots in the text together with the children, while others made the device available for the children to tap one at a time.

**Fig. 2** Opening page of the app *Yesper and Noper*. (Screenshot reproduced with permissions from Kari Stai and Samlaget)



### 6.3 The Design of the Reading Situation

Six children are sitting on a low bench and opposite to them, the teacher sits and shows up the tablet. They are reading *Yesper and Noper*, which they know from an earlier reading of the print book version. The app's prerecorded reading function is on and while the professional narrator reads, the teacher emphasizes with her facial expression that Jakob is sad. The teacher has selected some hotspots that are closely linked to the story, and when the narrator's voice is finished, she invites the children to press these, one child at a time. Afterwards, she asks questions. Sometimes the children retell what is happening in the story, and sometimes the dialog becomes more associative, like when she asks "What would you do to make friends again?"

The *Yesper and Noper* app – to a greater degree than its paper book counterpart – invites bodily interaction with the medium (to press Yesper and Noper and make them say "Yes" or "No" and to search for hotspots on the screen). When facilitating kindergarten reading groups, a teacher can organize his or her group of children differently. One option is to encourage all children to tap on the screen and to explore the affordances of the medium. We present an example of this approach in the beginning of this chapter: six boys and a teacher lies in a circle around an iPad reading a picture book app, and the child that finds a hotspot first gets to tap it. This scenario also invites participation in conversations even though the children are very keen to explore the medium and to maximize their chances of touching the screen. Another option is to allow the children to take turns exploring and tapping on the hotspots. This calls for a stricter regime whereby the teacher is responsible for initiating and maintaining a dialog and for allowing the children to take turns in ways that they perceive to be fair. It is also possible for the teacher herself to interact with the screen, and let the children watch, or for no screen interaction to occur during a particular reading. In such cases, children will miss out on some affordances of the medium, but their participation in extended discourse may benefit from this.



*Yesper and Noper* can be read in different ways. The visual simplicity of the app and its use of contrasts, drama and humor with complex linguistic points might make it easier to find subjects for conversation once children have found where all of the hot spots are hidden. Eventually, it may also contribute to the ‘liveness’ of the reading experience to have Yesper and Noper answer “yes” or “no” at the exact point where it fits in the story. In this way, the children’s interaction with the medium can create engagement and help move the story forward.

## 7 Conclusion

One of the main objectives of this study has been to present central dimensions of texts, media and situations that kindergarten teachers need to take into consideration for reading in the digital age. As the example analyzed above shows, a nuanced assessment of how a picture book app may be suited for dialog-based reading in kindergarten needs to cater to a variety of stories, literary forms and performative options through the reading situation. A few dimensions stand out across our example:

- A story told through words and images must be relevant to children’s life experiences. This connection to lived experiences does not need to be realistic to spur recognition, but at some level, transferable features of characters and events are vital to inspire child readers’ interest and engagement. The interest may also be connected to the aesthetic forms of words and images, where gaps and indeterminacies offer openings to be filled through the dialog around the reading.
- Picture book apps on touchscreen tablets create opportunities to take part in and perform text by activating semiotic resources (e.g. sound and movement). A central feature to assess concerns to what extent this activity is well integrated into the narration of the story, and whether it closes or opens reading experiences to further exploration and dialog. This is also a question of flexibility as related to options available through an app menu.
- Touchscreen tablets used in kindergartens enter an institutional practice where group reading, at least in Norway, is the only practical option, as opposed to use in private homes where tablets are normally used as media for single users. The teacher needs to assess whether the picture book app will work well in all its functions in an institutional setting. This involves assessing how well the app may work without activating interactive features, or how the reading situation may be designed for one child to engage in interactive options on behalf of the group, or for children to take turns. It is also essential to consider how the reading of a specific picture book app might differ through multiple readings, as children’s attention may be drawn to different affordances of the text and medium as they are offered opportunities to explore, discuss and become acquainted with the app.

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