2.1 Barns bruk av digital teknologi i pedagogisk praksis

Forskningsgjennomganger

Navn, tittel, type publikasjon	*Forskningsfokus og hensikt*	*Problemstilling*	*Metode*	*Teori*	*Funn*
(Burnett, 2010) Technology and Literacy in Early Childhood Educational Settings: A Review of Research. Journal of Early Childhood Literacy, 10, 247-270.	his literature review provides an overview of research into technology and literacy for children aged 0—8 in educational settings from 2003—2009.	The article begins by exploring the different assumptions about the role of digital texts that underpin the studies considered, identifying three loose categories of studies which position technology as: deliverer of literacy; site for interaction around texts; and medium for meaning-making. network theory may offer a way of conceptualizing young children's engagement with digital texts in new ways.	Forskningsgjennomgang	Following this, aspects of **actor-network theory** (Latour, 2005) are used to consider other ways that technology and children may be 'acting upon' literacy in educational settings through recontexualizing meanings from other domains.	The article concludes by arguing that there is a need for more extensive exploratory research in this field, which considers how digital practices within educational settings relate to other dimensions of children's literacy learning, in order to better understand how new technologies are and could be contributing to children's literacy within educational settings. It suggests that actor-
(McCarrick & Li, 2007) Buried Treasure: The Impact of Computer Use on Young Children's Social, Cognitive, Language Development and Motivation	This study examines the existing empirical studies from 1985-2004 on the impact of computer use on preschooler's social, cognitive, language development and motivation			Findings are discussed within the framework of social and cognitive theories by Erikson, Piaget, and Vygotsky.	Increasingly, young children are being exposed to computers at home and at school despite disagreement regarding the appropriateness and potential impact of technology on young children's development.

					Many views that predominant the debates lack empirical support and are too broad in their scope.

Overordnet syn på hvordan forskningen bør rette seg inn har Anne Mangen skrevet artikkelen ”Point and Click: theoretical and phenomenological reflections on the digitization of early childhood education (Mangen, 2010). Her argumenterer hun for …

Lærerutdanningene

Navn, tittel, type publikasjon	*Forskningsfokus og hensikt*	*Problemstilling*	*Metode*	*Teori*	*Funn*
Yuksel Goktas **Zahide Yildirim** **Soner Yildirim** (Goktas, Yildirim, & Yildirim, 2008)	Denne studien undersøkte lærerutdannere og potensielle lærere, og K-12 læreres meninger om effektiviteten av IKT-relaterte kurs og måter å forbedre kurs i Tyrkias lærerutdanning.	1) How do teacher educators, prospective teachers, and K-12 teachers perceive the effectiveness of ICT related courses? 2) What are the perceptions of teacher educators, prospective teachers, and K-12 teachers on ways to improve the effectiveness of ICT related courses?	Deskriptive forskningsmetoder I denne prosessen, brukte forskerne både kvantitative og kvalitative forskningsmetoder under både datainnsamling og analyseprosessene. De kvantitative dataene ble samlet inn gjennom tre spørreskjemaer og kvalitative data ble samlet inn gjennom åpne i spørreskjemaer og semi-strukturerte intervjuer med deltakerne.		Funnene tydet på at både lærerutdannere og potensielle lærere, oppfattet IKT-relaterte kurs som effektiv. Selv om alle K-12 lærere var nøytral på effekten av IKT relaterte kurs, K-12 lærere som var de nyutdannede gjennom den nye læreplanen indikerte en svak grad av tilfredshet med IKT-relaterte kurs. Resultatene av denne studie viste også at et flertall av de potensielle lærere og K-12 lærere oppfattet "ITMD 'kurs for å være mer effektive enn " Computer " kurs. Mens lærerutdannerne, mente at "Computer" kurset var mer effektiv enn "ITMD ' for å møte de nødvendige behovene til fremtidige lærere i IKT-opplæring. Dette kan for eksempel være fremstilling av undervisningsmateriell i lærernes fagområdet.

Personalets syn på og kompetanse knyttet til bruk av teknologi i barnehagen 12 artikler Hvorav 1 er norske

Navn, tittel, type publikasjon	*Forskningsfokus og hensikt*	*Problemstilling*	*Metode*	*Teori*	*Funn*
Tove Lafton (Lafton, 2012) *"How Early Childhood Practitioners Build, Shape, and Construct Their Digital Practices: The Search for an Analytical Space."* Vitenskapelig Artikkel i temautgave i Nordic Journal of Digital Literacy	Fokuset ligger med dette på pedagogenes konstruksjon og forming av egen praksis med tanke på bruk av digitale verktøy Denne studien undersøker digital praksis blant *barnehagelærere*. Hvordan bygger, former og vedlikeholder barnehagelærere sin digitale praksis gjennom samtale og handling forutsatt at de utvikler og deler kunnskapen	Hun ser på digital praksis slik den kommer til syne i barnehagens praksis.	Etnografisk inspirert feltarbeid i to norske barnehager. Som forsker ser hun ikke på etnografi som en metode for innsamling av data men mer som en metodologi hvor forskningen er siktet mot å forstå sosial praksis	Diskursanalyse med sosiokulturell og sosialsemiotisk tilnærming Diskusjonene er både teoretisk og empirisk drevet og forsøker å skape et dynamisk kontekstmodell som en representasjon av et praksisfelt	I denne artikkelen identifiserer hun kontekstuelle representasjoner som er viktige for utviklingen av det digitale feltet i barnehagen i dag. • Individuell kunnskap, • diskurser • materialitet vil bli foreslått både som vitale kontekstuelle faktorer og linser som kan fremskaffe nye perspektiver om digital praksis. I noen settinger vil disse konseptene være vanskelig å skille og oppdage når man ser på praksisen fordi feltet selv er veldig kompleks
Vasilis Gialamas **Kleopatra Nikolopoulou** (Gialamas & Nikolopoulou, 2010) *In-Service and Pre-*	Denne artikkelen omhandler en sammenlignende studie som undersøker greske barnehagelærere og barnehagelærerstudenter	To confirm the one-factor structure of the questionnaire, for the in-service and pre-service early childhood teachers. 2. To compare the above	spørreskjema administrert til 240 etter-og 428 pre-tjeneste barnehagelærer.		Studien viser at hvordan man ser på egen kompetanse knyttet til PCen influerer egne holdninger knyttet til integrering av PC i barnehagen både hos lærerne og studentene. Barnehagelærerstudentene viser høyere selvtillit og tro på bruk av PC

Service Early Childhood Teachers' Views and Intentions about ICT Use in Early Childhood Settings: A Comparative Study Vitenskapelig artikkel i tidsskriftet Computers & Education	synspunkter og intensjoner om å integrere og bruke datamaskiner i barnehagen.	two populations with regard to: (i) the degree of adopting positive views and intentions about integrating and using computers in early childhood settings and (ii) the level of computer self-efficacy. 3. To investigate the extent to which computer self-efficacy influences views and intentions, for each population.			enn barnehagelærere. Til tross for dette, uttrykte lærerne mer positive holdninger til integrering selv om studenter rapportert høyere self-efficacy i forhold til datamaskin. Implikasjoner for lærerutdanning blir diskutert. Med bakgrunn i dette viser det seg at kompetanse alene vil ikke føre til høyere integrering av digitale verktøy
Mats Gunnar Lindahl **Anne-Mari Folkesson** (Lindahl & Folkesson, 2012) *ICT in Preschool: Friend or Foe? The Significance of Norms in a Changing Practice.* Vitenskapelig artikkel i International Journal of Early Years Education.	Målet er å analysere hvordan normer brukes som argument for eller mot bruk av PC i barnehagepraksis	What norms do educators draw on when discussing computer use in preschool Practice? How do norms in preschool practice sustain or prevent change in preschool practice?	Data består av naturalistiske tekster fra 31 Barnehagelærerstudenter som forteller om deres erfaring med å forsøke å implementere pc i praksis.	Giddens' theory of structuration as theoretical perspective to analyze how pre-service preschool teachers, contribute to this societal discussion	Societal change and prescriptions in curricula demand a change in educational practice. This can create conflicts between practitioners' usual practices (norms) and those prescribed by curricula. One example is the introduction of Information and Communication Technology (ICT) into preschool practice. Hence, Results show ambivalence to computer use. Two lines of arguments emerged: 1 embracing the new technology, 2 rejecting this new technology. The following arguments were made to justify ICT in preschool: the child as a citizen, the competent child and the active child. Concern was expressed between the teacher's need for control and the child's need for independence and guidance.
Joshi, Arti; **Pan, Alex;** **Murakami, Masaru;** **Narayanan, Shankar.** **(Joshi, Pan, Murakami, & Narayanan, 2010)** *Role of Computers in Educating Young Children: U.S. and Japanese Teachers' Perspectives*	This study was conducted with kindergarten teachers in the United States and Japan with respect to their beliefs about the role of computers in educating young children.	1. What are United States and Japanese educators' beliefs about the role of computers in educating young children in the classroom? 2. What are the perceptions of educators in the United States and Japan about issues/challenges of integrating computers in the classroom? 3. What is the relationship	Spørreundersøkelse The study was conducted with kindergarten teachers/educators in the United States and Japan. A list of all public schools from the 50 states in the United States was compiled from each of the state's department of education Web sites. Four schools in each state having kindergarten classes were systematicallysampled from the list. A letter explaining the purpose of the research was sent to each of the four schools and their participation		Overall findings indicated significant differences in responses of teachers in the two countries. Generally, U.S. teachers had a more positive attitude toward computers in educating young children, while the Japanese teachers had more concerns. The teachers' own sense of competence with

Vitenskaplig artikkel i Computers in the Schools		between the educators' perceived level of self-competence with computers and their beliefs about the role of computers in educating young children in the United States and Japan? 4. What relationship, if any, exists between the teaching experience of the educators and their beliefs about the role of computers in the U.S. and Japan?	was sought. Four hundred questionnaires were sent to these schools. One hundred and eight valid questionnaires were returned, yielding a response rate of 27%. However, since the focus of the paper was on kindergarten teachers' beliefs and perceptions, only 97 responses out of the 108 were utilized (staff and administrators filled the remaining 3% of the questionnaires). In terms of experience, 42% of the U.S. sample had 10 or less years of teaching experience, 33% had between 11 and 20 years of experience, while approximately 25% had more than 20 years of experience.		computers was not related to their beliefs about computers and young children in either country. Respondents from both countries identified a lack of resources and clear guidelines for integrating computers in the classroom as challenges. These findings highlighted the need for training of early childhood teachers in integrating and using computers in the classroom.
SATOMI IZUMI-TAYLOR, YOKO ITO, ANDREW GIBBONS (Izumi-Taylor, Ito, & Gibbons, 2010) *Early Childhood Pre-Service Teachers' Perceptions of Teaching Technology to Children in Japan and the United States* Vitenskaplig artikkel i Research in Comparative and International Education	The purpose of the study was to examine early childhood education pre-service teachers' perceptions of the increasing role of new technologies in classroom environments. Given the growth in interest in a teacher's technological literacy, the research focused on similarities in and differences between pre-service teachers' concepts of technology use in Japan and the United States.		The participants consisted of 41 female pre-service teachers in the southeastern United States and 41 pre-service teachers (seven males and 34 females) on the main island of Japan. Qualitative analysis of the data yielded five major themes regarding conceptions of technologies: competence; communication; pros and cons of technology; the importance of external and internal assessments; and the media.		The results contrasted American and Japanese pre-service teachers' notions of the role of technology in teaching. American and Japanese pre-service teachers mostly agreed on the importance of child, parent, and community involvement in implementing technology in the early childhood centre.
Kol, Suat (Kol, 2012) *Evaluating the Opinions*	The aim of this study is to set down the opinions of teachers about the use of CAE (Computer Assisted	(i) what is the general opinion of preschool teachers about the use of CAE in preschool	Semistrukturert intervju This research is a qualitative research that aims to determine the opinions of preschool teachers about	Dette er forslagene basert på funnen i undersøkelsen (i) valg av softvare må være gjort bevis og	One of the most important points of preschool education is child's interest. Children interact

of the Preschool Teachers on Computer Assisted Education Vitenskaplig artikkel i Educational Sciences: Yheory & Practice	Education) in preschool education.	teaching? (ii) What is the general opinion of preschool teachers about the sft ware designed for CAE? (iii) How often preschool teachers use CAE sftware and in which activities they use the sftware? (iv) If preschool teachers do not use computer software, why they don't use?	computer assisted education. In this research, content analysis, which eases generalization of data, is used for determining conceptual and inter-conceptual relationships beyond data on the basis of qualitative coding	softvare med praktiske innholdet bør foretrekkes (ii) manglende utstyr bør gjøres noe med (iii) tiden barna tilbringer ved PC-en bør være velorganisert og en lærer må være tilstede. (iv) barna må få veiledning når de trenger det, og det må være gode strukturer rundt hvor og hvor lenge barna kan sitte (v) det må utvikles programvare som støtter opp om barnas læring og utvikling (vi) Det må tas hensyn til fysisk plassering av de digital verktøyenen.	more with the devices they are interested in. Definitely, computers are leading devices that children get interested in. "e following of mouse and monitor and using of them will contribute in hand-eye coordination of children. "e eye-hand coordination of children which aimed to be developing by art activities will develop automatically with limitless trial of computer hardware. "is situation and development was accepted and observed by teachers.
Eric Worch (Worch, Li, & Herman, 2012) *Preservice Early Childhood Teachers' Self-efficacy and Outcome Expectancy for ICT Integration in Science Instruction* Vitenskaplig artikkel i Education Research and Perspectives	This study focused on self-efficacy and outcome expectancy Denne studien fokuserer på hvordan selvforståelse og bruk av digital teknologi er avhengig av ikke bare digital kompetanse men også erfaring med bruk av digitale verktøy i de situasjoner som vil være aktuell i bruk sammen med barn.	Har deltakelsen i to to-timers instruksjonsvideoøkter innvirkning på barnehagelærerstudenters self-efficacy og holdninger knyttet til å integrere teknologi i egne naturfaglige instruksjon?	Før og etter tes med kontrollgruppe Denne studien benyttet en kvasi-eksperimentell design for å måle barnehagelærerstudenters holdninger (self-efficacy og utfallet forventet) mot integrering av teknologi i sin naturfaglige utøvelse før og etter intervensjon under sin naturfaglige metodekurs.		Det faktum at i denne studien, med selv beskjedne instruksjoner med intervensjon integrering av teknologi i naturfag, skapte en betydelig positiv endring i lærernes holdninger til teknologi i praksis. Dette gjør at forfatterne foreslår en systemiske tilnærminger til teknologi integrering i naturfagklassene ved utdanningen kan føre til hyppigere og mer effektiv integrering av teknologi i barnehagen.
Justine Howard **Gareth E. Miles**	Undersøker lærerens erfaring med	(1)What are teachers' views on the integration	Intervju av lærerne We interviewed class teachers from		Previous research, however, has described that teachers feel

Laura Rees-Davies (Howard, Miles, & Rees-Davies, 2012) *Computer Use within a Play-Based Early Years Curriculum.* Vitenskaplig artikkel i International Journal of Early Years Education	implementering av PC-bruk i barnehagens praksis, samt barnas engasjement med pc aktiviteter og hvor lekorientert barna mener at bruk av PC er. Til tross for at de voksne ikke ser på bruk av IKT som lek gjør barna det.	of computer use within a playbased curriculum? (2) In what ways are computers used within a play-based curriculum? (3) Do certain types of computer use lead to higher levels of engagement? (4) Do children see computing activities where an adult is present as less like play?	each of the 12 study sites individually to explore their experiences of computer use within the play-based Foundation Phase curriculum. The interviews were semi-structured addressing particular issues pertaining to the study but enabling interviewees to introduce related topics that might be important to them. All interviews took place in a quiet location within the school setting and were approximately 30 minutes long. Interviews were recorded using a Diasonic Linear PCM voice recorder (DDR-5300), and from this interviews were transcribed in preparation for qualitative analysis using the ATLAS/ti system following theprinciples of thematic analysis outlined by Braun and Clarke (2006). Observasjon av barna exploring children's levels of engagement with the identified types of computing practice To explore whether different types of computer use impacted on children's level of engagement, children's computer use at each of the 12 settings was video recorded for one full day. Teachers were asked to conduct their planned classroom activities without regard to the presence of the researcher as far as was possible. We endeavoured to collect footage of episodes of computer use in each sample classroom that represented the pre-identified characteristics which emerged as a result of the teacher interview analyses. Intervju av barna 103 barn (aged 4_6 years) across each of the 12 sample sites participated in small focus groups that used a game like procedure to rate the playfulness		unprepared to integrate Information and Communication Technology (ICT) and play. Also, whereas research has suggested that effective mcomputer use in the early years is associated with adult direction, further research suggests adult presence can inhibit play and reduce children's engagement. Teachers confidently delivered a variety of computing experiences. Children consistently rated these activities as play regardless of adult presence and demonstrated moderate to high levels of engagement. Findings and the features of observed practice are discussed in relation to the teachers' role as a play partner and the successful co-construction of the play-based curriculum. Results and discussion Across all 45 clips, the mean Leuven score was 3.6 (SD _1.05), indicating medium to high levels of engagement in computing activity. Only seven observations had low engagement scores of '1' or '2', whilst eight child observations showed very high levels and were scored as '5'. For analysis, the clips were grouped according to the pre-identified characteristics resulting from teacher interview analysis, and the means and standard deviations for these grouped comparisons are shown in Table 3.

			of computing practice according to teacher presence. Twelve pairs of video clips were selected for presentation. Each pair portrayed the same type of computer use but differed in that a teacher was either present or not present. Children were asked to become 'special agents', and using a secret ballot card they were asked to rate how much like play they thought each activity was (0 being not like play and 5 being a lot like play). To facilitate children's understanding of the measure, the secret agent ballot card pictured Lego towers of various heights which he children could tick or circle (see Figure 1). Actual Lego towers were placed in the centre of the table and the researcher explained that less bricks indicated 'not much like play' and more bricks indicated 'a lot like play'. This reminder was repeated for each clip. Children posted each response into a brightly coloured ballot box. Sharing of responses at this stage was minimised by presenting the activity as a 'secret mission'. One clip was rated before moving on to the next.		
(Sheridan, Williams, Sandberg, & Vuorinen, 2011) *Preschool teaching in Sweden – a profession in change* Vitenskapelig artikkel i tidsskriftet Educational Research	The aim of this study is to investigate the meaning given to preschool teacher competence by Swedish preschool teachers. Focus is directed towards teachers' descriptions of their approach and their communication and interaction with children in relation to the overall goals of the preschool curriculum	Undersøker hvordan førskolelæererne skaper sin kompetanse, denne går ikke spesifikt på IKT så den er kanskje ikke veldig aktuell	To study teacher competence, the method chosen was individual, and semi-structured interviews that lasted 60–120 minutes were recorded and transcribed *verbatim*. The analysis is qualitative and focuses on key questions that were asked of all participants. The analyses aimed to discern similarities and differences, and distinguished between competences teachers said that they have and competences they wanted to develop, such as knowledge, skills and attitudes and whether these competences were understood as static, situational and/or dynamic. *Sample:* The study was carried out in Sweden and the sample consist of 15 preschools in the country's two major cities, Stockholm and Gothenburg, and 15 preschools from the rural area of Mälardalen in mid-Sweden. Both of the urban regions and the rural area are stratified to represent districts that differ geographically, demographically, ethnically, and which include varied socio-economic structures. From each of the 30 preschools, one preschool class/group and one preschool teacher were recruited as participants. All except one of the teachers were women.	The study is based on interactionist perspectives and draws on Bronfenbrenner's ecological systems theory and a critical ecology of the early childhood profession.	*Result:* Three intertwined dimensions of teacher competences emerged. These dimensions are Mutually interdependent, Inseparable Constitute the meaning given by the teachers to teacher competence as a whole. These are: *Competence of knowing what and why,* *Competence of know-how*, and *Interactive,* *Relational and transactional competence*. These dimensions highlight teacher competence as a complex, multidimensional and relational phenomenon, constituted from interacting abilities. The participating teachers have a broad multidisciplinary knowledge, which needs to be deepened within specific areas such as, mathematics, ICT, science etc. *Conclusion:* Being a part of complex ecological system with increasingly global dimensions, preschool teaching is a profession in change. Preschool teacher competence is constituted in the intersection of values, knowledge and ideologies on different system levels. In line with changing policy and curriculum intentions teachers create

					shared understandings of the meaning of teacher competence both for today and tomorrow. Based on these beliefs teachers create conditions for children's learning in preschool practice.

http://www.wwwords.co.uk/rss/abstract.asp?j=ciec&aid=4824

Kartlegging av teknologienbruk og refleksjoner knyttet til dette 9 Artikler til sammen 4 hentet fra Eric, 2 fra Nordic journal of digital literacy og 3 fra artikkelsamlingen medialisert barndom

Navn, tittel, type publikasjon	*Forskningsfokus og hensikt*	*Problemstilling*	*Metode*	*Teori*	*Funn*
Gréta Björk Guðmundsdóttir, & Barbro Hardersen, (Guðmundsdóttir & Hardersen, 2012) Småbarns digitale univers – 0–6-åringers tilgang til og bruk av digitale enheter på fritiden. Publisert i Temautgave i Nordic Journal of digital literasy	Senter for IKT i utdanningen Panelundersøkelse utført høsten 2011. Dette er den første rapporten av senter for IKT i utdanningen som er gjort med tanke på barn under skolealder	Hvordan er tilgangen til ulike digitale enheter i småbarns hjem? Hvilke av disse har barnet anledning til selv å bruke på fritiden? Hvor gamle er barn når de først bruker digitale enheter? Hvor lenge bruker småbarn de ulike digitale enhetene? Hva bruker barn de ulike digitale enhetene til? Hvilke erfaringer har barn med innhold? Sammen med hvem bruker barn digitale enheter? I hvilken grad er foreldre tilstede i barns bruk av	Spørreundersøkelse rapporten er basert på svar fra 1277 foreldre med barn i alderen 0–6 år. Foreldrene i utvalget kommer fra hele landet, men Østlandet er noe overrepresentert.		Hovedfunnene vise store forskjeller i tilgjengelighet til IKT i mediaerfaring og digital kompetanse som barn fra 0 til 6 får hjemme. I denne analysen undersøker forfatterne hvordan bilde av barns daglige liv kan hjelpe og styrke den digitale kompetansen hos barnehageansatte og i barnehagelærerutdanningen. Som et neste steg kan dette hjelpe til å styrke innholdet i barnehagen i fremtiden. Å kunne inkludere et digitalt kompetanseperspektiv i hvert enkelt barns danning, gjennom gode danningsprosesser. Ved å ha oppdatert kunnskap om barnas egen

		IKT? Hvilke meninger har foreldre om barnets bruk av digitale enheter?			kultur, der det digitale perspektivet er inkludert kan personalet tidlig nyttiggjøre denne kunnskapen relatert til barnets videre danningsprosesser og dermed legge et godt grunnlag for allsidig utvikling. Disse danningsprosessene inkluderer et perspektiv hvor også digital danning har betydning både for barnets meningsdanning og hvordan det håndterer det digitale livet, men også som kritiske og demokratiske medlemmer av et større felleskap.
Knut Steinar Engelsen **Margrethe Jernes** **Lars Malvin Kvinge** **Vigdis Vangsnes,** **Nils Tore Gram Økland** (Engelsen, Jernes, Kvinge, Vangsnes, & Økland, 2012) *Bruk av dataspill i norske barnehager: utbredelse og holdninger blant personalet.* Vitenskapelig artikkel i artikkelsamlingen Medialisert barndom	Bruk av dataspill i norske barnehager	1) Hvordan og i hvilken grad brukes dataspill i norske barnehager? 2) Hvordan ser styrerne og de pedagogiske lederne på bruk av dataspill i barnehagen	Mixed method" Med hovedtyngden på kvantitative data. Samlet inn gjennom e-post basert på en spørreundersøkelse blant totalt 2697 norske barnehagestyrere, svar fra 1081 (svarprosent på 40%) De kvalitative data blir brukt til å gi ord, bilder og narrativer til de statistiske dataene Intervju av åtte ansatte fra fire barnehager		1) De fleste barnehager har tatt i bruk dataspill som en del av barnehagens aktivitetstilbud, enten gjennom organisert aktivitet eller i frilek, og det er kommersielle norske spill med pedagogisk profil som synes å dominere. Spillaktivitetene er i stor grad regulert med egne regler, og det er først og fremst barn over tre år som spiller. 2) Styrerne opplever at spillaktivitetene er en sosial lek og at det er små forskjeller mellom kjønnene når det gjelder interesse for å spille. Både styrerne og pedagogene har generelt sett et konstruktivt og kritisk blikk på bruken av dataspill i barnehagens pedagogiske aktivitet. Man ser på et læringspotensialet i dataspillene, og samtidig mener respondentene i stor grad at det er viktig at barnehagen også har en rolle år det gjelder å forberede barna på den digitale hverdagen som vil møte dem senere i livet. Hovedskepsisen synes ikke å være knyttet til at spillene i seg selv er negative og skadelige, men at de kan ta for mye oppmerksomhet og skygge for annen positiv aktivitet. Samtidig fremheves pedagogens rolle i denne aktiviteten til tider oppleves uklar og problematisk. Pedagogene beskrives mer som en kontrollør enn som en aktiv deltagende pedagogisk agent.
Elisabeth Staksrud (Staksrud, 2012) *"Mamma - hvorfor er TV så kjedelig?" Internett i barnehagen: om muligheter, risiko*		Hva er risiko når det gjelder barns bruk av digital medier generelt og internett spesielt?	Intervjustudie, intervjuer av 1+19 norske barn med en av deres foreldre til stede. Barna var mellom 9-16 år	Den teoretiske tilnærmingen springer ut fra en forskningstradisjonen "the new sociology of childhood" I denne forståelsen ligger også en	Staksrud presenterer ulike typer risiko knyttet til barn og internett dette er • Kommersiell risiko • Aggresjonsrelatert risiko • Seksuelt relatert risiko • Holdninger og verdier

moralsk panikk og digital lek Vitenskapelig artikkel i artikkelsamlingen Medialisert barndom				anerkjennelse av at barn – som voksne – ikke representerer noen homogen gruppe og ikke er endimensjonale.	Under disse behandler hun variabler som barnet som mottaker Barnet som deltaker, Barnet som utøver
Kvinge, Lars M. R. Engelsen, Knut Steinar Jernes, Margrethe Sinnerud, Marta Økland, Nils Tore Gram Vangsnes, Vigdis *(Kvinge et al., 2010) Utberieing, bruk og haldningar til digitale verktøy og spel i norske barnehager*					
Mark O'Hara (O'Hara, 2008) Denne er gitt ut før 2008, men den faller selvfølgelig ikke under felttet til Burnett, og er derfor ikke med der. Den faller egentlig ikke under mitt felt heller så jeg vet ikke riktig om den skal med.	Fokuset for denne artikkelen er på potensialet og de pedagogiske fordelene i henhold til bruk av IKT i barnehagen	belyse aspekter av teknologi og små barns samspill med IKT i barnehagen.	Kasusstudie med et potensiale for å generere naturalistiske forslag eller kvalitative generaliseringer kan produsere troverdighet og ekthet og i en mer tilgjengelig form Observasjon 32 dager halve dagen ble tilbragt sammen med 3 og 4 åringer og halve dagen 4- og 5-year-olds in reception (FS2) classes. Observasjonene ble samlet inn ved bruk av naturalistiske notes and fot og dataene ble anonymisert. Både inne og ute. Materialet inneholder både utforsknings- og fantasi-lek Intervju på slutten av året for å la pedagogene få diskutere sitt syn på IKT Utvalg typisk i forhold til resten av landet 2 barnehager		Data ble kategorisert i følgende kategorier • Learning about ICT; • Schema; • Problem-solving, perseverance and motivation; • Social skills and peer tutoring; • Creativity. The degree to which ICT is appropriate or not in the foundation stage depends on how it is used; as Loveless (2003) points out, the issues involved are as much about teaching and learning as they are about the technology.

Trudy Sweeney **Ruth Geer** (Sweeney & Geer, 2010) *Student capabilities and attitudes towards ICT in the early years* vitenskapelig artikkel i Australian Educational Computing	Denne studien undersøkte bruk av IKT i to ulike barnehager(R-3). Barna ble kartlagt for å undersøke deres bruk av IKT hjemme og i barnehagen. Digitale skiller tar elevene med seg inn i undervisningen		Barna som er med i undersøkelsen er 5-8 år To skoler og tolv klasser deltok i studien. Lærerne gjennomførte undersøkelsen Elevene responderte deres svar på kvantitative spørsmål via en håndsopprekning. Læreren fungerte som en skriftlærd til kvalitative svar. Spørsmålene i undersøkelsen ble utformet for å samle grunnleggende informasjon om barns bruk av IKT hjemme og på skolen.	Denne studien har vist at selv om elevene kan beskrives som "Millennials", er deres forhold til teknologien langt mer kompleks enn en enkel karakterisering av denne generasjonen. Klare, sosioøkonomiske faktorer og begrenset tilgang begrenser unge elevenes evner, holdninger og erfaringer med bruk av IKT. Det å forstå elevenes levde erfaringer med IKT i deres hjemme er en viktig faktor for lærernes forberedelse i å tilby effektive instruksjoner. Styrking av båndene mellom hjem og skole kan utdype elevenes læring med IKT og aktivere ferdigheter skal overføres mellom disse to miljøene.	Funnene er presentert, med et fokus på barnas egen vurdert evner og holdninger i bruk av IKT og utforsker forskjeller mellom svarene fra de to barnehagene. I den ene skolen hadde elevene høyere kompetanse enn i den andre skolen Denne skolen viste de de visste hvordan du: • Slår på en datamaskin og finne ting av seg selv • Finn informasjon av seg selv på Internett • Bruk e-post • Bruk en mobiltelefon • Bruk SMS • Bruk et digitalt kamera Når det gjelder elevenes holdninger, viser resultatene at en større andel av elevene i skole A bruker datamaskinen i forhold til skole enn på skole B. Elevene i skole A mener at å bruke datamaskiner på skolen gjør læring mer moro og de sier at det er mer sannsynlig å spørre en familiemedlem om hjelp til å søke etter informasjon på Internett. Totalt sett antyder resultatene at elevene i skole A har en høyere grad av eierskap og bruker IKT mer hjemme, de har mer kunnskap og ferdigheter, bruker det mer hjemme i støtte i deres læring, noe som fører til en mer positiv holdning til bruk av IKT i skolen.
Alex Morgan, (Morgan, 2010) *Interactive Whiteboards, Interactivity and Play in the Classroom with Children Aged Three to Seven Years* Vitenskaplig artikkel i European Early Childhood Education Research Journal	This paper examines the current use of interactive whiteboards in the teaching and learning of children aged three to seven years in Wales, UK. It considers both teachers' and children's reflections regarding the use of this "novel" technology.	(1) How is the IWB used as a tool in the classroom? (What pedagogical approaches are being used?) (2) To what extent is the IWB made use of or available for use in pupils' planned or spontaneous play activities? (3) To what extent do activities for pupils using the IWB promote use of higherorder thinking skills such as reflection on learning or encourage	Observations in 30 classrooms with interactive whiteboards (IWB) and interviews with teachers and children from these classroom settings are analysed to develop an understanding of current practice regarding the use of IWBs and the thinking behind this.	Sosiokulturelle læringsteorier. These theories (Vygotsky 1978; Rogoff 1998) highlight the influence of the contexts in which children are learning and the key role of peers and Downloaded by adults as mediators of learning. This approach views teachers and children as coconstructors of knowledge.	Findings reveal that the teachers value and promote "playful" and "interactive" experiences as vehicles for learning. Evidence of the use of the IWB technology to support learning experiences, which were either "playful or interactive", were however limited. This study suggests that IWB are routinely being used to support a more instructionist form of pedagogy than would be supported by the socio-cultural principles held by the majority of teachers interviewed or of the new

		them to develop their meta-cognitive ability? (4) What affordances do teachers feel that IWB technology might provide within the foundation phase?			foundation phase currently being implemented in Wales. Affordances, identified by practitioners, of IWB technology to support a "pedagogy of play" are discussed.
David Millera, Derek Robertsonb, Alison Hudsona & Jill Shimia (Miller, Robertson, Hudson, & Shimi, 2012) *Signature Pedagogy in Early Years Education: A Role for COTS Game-Based Learning* Vitenskapelig artikkel publisert i Computers in the Schools Denne handler egentlig o bruk av spill	In this article we look at the links between early years pedagogy and the use of digital game-based learning. Early years education is a distinctive phase of the education system in many countries, generally covering the age range from 3–6 or 7 years. In the United Kingdom, it tends to bridge preschool and the first two years in primary school We look at the role of information and communication technologies in such pedagogy, specifically the use of digital games, illustrating the case with reference to a recent empirical study which looked at the use of a commercial off-the-shelf game with 5- and 6-year old children.	1. How does the teacher plan for and organize the learning activities related to the Nintendogs project? 2. What effect does the project have on social aspects of classroom life? 3. How does it influence personal aspects of children's development—for example, levels of motivation and self-esteem? 4. How does it impact learning? 5. What are the views of parents about the work the children have been doing?	Four early years classes in primary schools in North East Scotland took part in the study (n = 74 children, ages 5–7 years; 4 regular classroom teachers). This was a purposive sample; the teachers, selected by the local authority, were chosen for their interest in, although not necessarily experience of, using digital games as part of learning. Two teachers were newly qualified and in their first full year of teaching; two were more experienced, each having over 10 years' experience. All four teachers used the game as a contextual hub for a thematic study based on pets; that is, it served as a focus for project work across the curriculum. Elements of language, mathematics, social studies, expressive arts, and a range of other areas were integrated with the theme of pets. A mixedmethod approach was adopted, employing methodological triangulation, asoutlined in the following section.	Lee Shulman: his work on pedagogical content knowledge. COTS games sit comfortably in this signature pedagogy; but their value is mediated by the skill, knowledge, and disposition of the teacher.	We conclude by reaffirming the congruence between such games and a signature pedagogy of early years education. The role of the teacher, and in particular his/her pedagogical skill, is central to the educational use of commercial games. It is important to recognize that there are those who remain skepticalabout the value of digital games in school. Some point out—not without justification—that the evidence base remains limited. Some are concerned that computer games may encourage solitary activity, at the expense of social interaction. However, the evidence collected in the Nintendogs study would seem to dispel that notion. Other concerns include a perceived threat
Chien-Heng Lin **(Lin, 2012)** *Application of a Model for the Integration of*	to resolve the situation of poor performance in technology integration, we must create a model for technology	(1) What ways do teachers integrate computer technology into their classroom teaching?	The research method of grounded theory was adopted as our data analysis method. Through a series of analysis steps grounded theory allows us to analyze the collected data	Eight tool kits for integrating computer technology into kindergarten classroom teaching were classified:	Computer technology is progressing swiftly day by day and has become an indispensable auxiliary tool for teachers' classroom teaching. School education should appropriately utilize the advantages of computer technology and effectively integrate technologies appropriately into the

Technology in Kindergarten: An Empirical Investigation in Taiwan Vitenskaplig artikkel i Early Childhood Education Journal	integration which must include the current teacher's teaching methods and teaching habits, etc. This model has to begin with the view of teacher's practical use or be teacher-centered, and when teachers are familiar with various types of technology integration methods they can gradually engage the learner-centered teaching concept with the teaching process.	(2) In what part of the classroom teaching do teachers involve computer technology? (3) What sort of combination of technology products (multimedia elements) do they apply in teaching? (4) To what extent does the use of the developed model help to improve teachers' integration of computer technology?	systematically from the raw data corpus, to generate codes and to build some initial low level concepts, thus gradually we may develop some more abstract themes and then substantive theories are constructed in the final stage	Storytelling, Motivation, Group discussion, Drill, Game, Instruction, Portfolio making, and Evaluation. These were identified as the most possible teaching patterns that could be involved with computer technology by the participating informants.	curriculum. A successful integration of computer technology into teaching should not only focus on how many technologies are applied or how often we use technology, but also focus on how to choose appropriate technology at the right time and place in the educational program. Teachers are used to utilizing computer technology mostly for administrative needs or personal usage (Palak and Walls 2009), even for instructional purpose there is a lack of constructive management. Therefore, this study was designed to provide a model which can provide useful and practical guidelines for teachers to integrate computer technology in their classroomteaching easily. This integration model is built based on the empirical data collected from actual interviews and observations in kindergarten classrooms and is generalized through inductive analysis, which is closer to real classroom teaching. The eight tool kits raised in this model provide strategies for integrating computer technology into kindergarten classrooms. A real example was used to demonstrate how teachers can apply this model to real classroom teaching, integrating with computer technology. Through the application of this model, teachers can maximize the effective applications of technology in the curriculum and enhance young children's opportunities to learn.

Teknologi i bruk i språkstimulering to norske utenom Eric søket via Eric var det 18

Navn, tittel, type publikasjon	*Forskningsfokus og hensikt*	*Problemstilling*	*Metode*	*Teori*	*Funn*
Margareth Sandvik (Sandvik, 2012) *"Skal vi ta eventyr eller tegne?" om bruk av interaktive tavler og lesebrett i flerspråklige*		Prosjektet følger en førskolelærer for å se 1) hvordan hun bruker den interaktive tavle og noen lesebrett i det pedagogiske arbeidet, 2)hvilke aktiviteter hun	Denne artikkelen rapporterer fra et prosjekt hvor en barnehage er blitt fulgt for å kunne si noe om den digitale praksisen der. Barnehagen har 80	Devey og Bruner med utgangspunkt i en sosiokulturell læringsteori hvor bana sees på som aktører i egen kunnskapskonstruksjon.	Førskolelæreren har tro på at teknologien kan motivere barna, gjøre aktivitetene lekefylte og engasjerende, og hun har solid digital kompetanse, som hun ønsker å dele med andre. Typisk for bruken er at hun selv initierer språklige aktiviteter som

barnegrupper Vitenskapelig artikkel i artikkelsamlingen Medialisert barndom Fonologi og begrepsinnlæring		legger opp til , 3)hvilke prinsipper hun legger vekt på når hun bruker disse verktøyene sammen med fem utvalgte barn, der fire av dem er flerspråklige.	% med barn med flerspråklig bakgrunn.		hun tilpasser den interaktive tavlen. Hun driver ikke isolert begrepstrening, men knytter innlæringen av begreper til eventyrtekster, rim og regler, spill og barnas tegninger og innspill. Når aktivitetene inngår i slike sammenhenger, blir de autentiske og meningsfulle for oppgavene. Førskolelæreren mener at aktiviteter på den digitale tavla er klart språkstimulerende, og at hun ser en tydelig effekt på språkutviklingen særlig hos visse barn.
Sandvik Smørdal Østerud (Sandvik, Smørdal, & Østerud, 2012) *Exploring iPads in Practitioners' Repertoires for Language Learning and Literacy Practices in Kindergarten* Vitenskapelig Artikkel i temautgave i Nordic Journal of Digital Literacy		1. What role might tablet computers have as scaffolds for language learning and literacy practices in kindergartens? 2. What important properties and affordances need to be assessed when selecting apps for different types of talk?	This article reports an exploratory study where we introduced iPads and a shared display in a group consisting of the oldest children (aged 5), in an adult-led activity. In collaboration with a practitioner, we selected two iPad apps that we believed would support language learning and literacy practices. Empirical material: consists of video recordings showing conversations and interactions around the iPads in both adult-led and child-initiated activities.	We review the literature about conversation types related to language learning and literacy practices in kindergarten, before we discuss the types of conversation we observed in the activities, relating them to properties and affordances in the iPads and iPad apps.	We have explored the role of a tablet computer (the Apple iPad) and a shared display as extensions of a practitioner's repertoire for language learning and literacy practices in a multicultural kindergarten. In collaboration with a practitioner, an intervention was designed that included the use of two iPad apps in a language learning and literacy practice session with a group of 5 children aged 5. We have analysed the conversations around the tablet computers and in front of a shared display, trying to identify types of talk. The roles of the iPads, the apps and the shared display are discussed in relation to the types of talk, engagement and playfulness observed in the activities. We argue that the intervention led to valuable activities for language learning and literacy practices. The preschool teacher pays attention to each child's active engagement, their group participation and their previous knowledge of the world, and she practices a kind of guided participation, which we can see is productive on behalf of the children's positive engagement, their verbal activity, their will to cooperate with both the teacher and with their peers, their

					verbal and non-verbal responses, and their ability to pick up elements from the real-world contexts and connect it to the technology. These characteristics of the interaction between the preschool teacher and the children are requirements for characterising the The two selected apps differ in their levels of structure (directed vs. open) and genre (show and tell vs. fairy tale), and this difference will be discussed in relation to the types of conversation they initiate, and the extent to which they enable the children to transfer experiences from books and hence develop their literacy to include digital and multimodal resources.
Joke Voogt **Susan McKenney** (McKenney & Voogt, 2012) *Teacher Design of Technology for Emergent Literacy: An Explorative Feasibility Study* Vitenskaplig atikkel i Australasian Journal of Early Childhood					
Sandra Hesterman (Hesterman, 2011) *A Contested Space: The Dialogic Intersection of ICT, Multiliteracies, and Early Childhood*	Denne studien undersøkt hvordan to Western Australian lærere integrert IKT for å støtte multiliteracies læring i barnehagen	Hvordan vil barnehagen legge til rette for små barns bruk av IKT for å støtte multiliteracies læring?	To kasusstudier, gjennomført over en ni-måneders periode og med etnografisk metode, illustrerer hvordan ulikt pensum, pedagogisk, og klasseromsdesign innvirker på barns tidlige	Får ikke tak i fullteksten Denne er såpass INTERESSANT at jeg kjøper teksten Url til tekst jeg skal kjøpe under	If students are to be equipped with skills necessary to meet the challenging and diverse demands of different forms of communication brought about by the introduction of new

Vitenskaplig artikkel i Contemporary Issues in Early Childhoo			lese-opplevelser. En analyse på tvers av de to sakene belyser hvordan ulik pedagogikk, definisjoner, veiledning, ressurser og læreplanen formet det dialogiske skjæringspunktet mellom IKT og multiliteracies i barnehagen.		technologies, then a broader definition of literacy is required. A pedagogy of multiliteracies recognises that there are multiple modes of representation that communicate meaning beyond language alone. As debate on information and communication technology (ICT) integration and literacy definition intensifies, early childhood teachers contemplate how they will accommodate these changes.
(Gomez et al., 2013) Co-Located Single *Display Collaborative Learning for Early Childhood Education* Vitenskapelig artikkel i International Journal of Computer-Supported Collaborative Learning	In this paper we show how small group co-located collaborative learning on a single display computer improves oral language, logical-mathematical and social skills in pre-school children.	Can small-group co-located collaborative learning on a single display computer improve oral language, logical-mathematical, and social skills learning for preschool children?	The study was implemented in 10 kindergarten classrooms with 268 children between the ages of 5 and 6 years old. A group of 5 kindergarten classrooms with equivalent characteristics participated as a comparison group. During the four-month intervention, children worked on collaborative activities at least twice a week. A quasi-experimental approach was used to assess the implementation, including pre- and post-testing. intervention for computer-supported co-located collaborative activities using SDG for one computer (co-located single display collaborative learning activities) shared by three kindergarten-age children. We chose this technology because it creates an environment that has tasks that require children to collaborate in order to reach certain goals, supports the simultaneous visualization of elements involved in the tasks, and ensures equal access to technology in a context where1:1 access cannot be guaranteed. The activities developed		The analysis reveals that for the oral language test there was no significant difference between groups, but there was a significant difference favoring the experimental group for the logical-mathematical and social skills tests. The implementation of the intervention highlighted the importance of offering settings where students in early childhood can share activities and develop collaboration while learning basic skills. It is also important to carefully provide teacher support for these activities in order to facilitate the collaborative interactions among children, and strengthen the role of the teacher. To this end, tools such as co-located single display collaborative learning have been shown to serve this purpose when used adequately by teachers, that is integrating them into their regular work and mediating accordingly with the children; thus achieving collaboration and learning.

			allowed for the use of three different dynamics implemented using the same technology system.		
John Siraj-Blatchford University of Swansea Neelam Parmar University of Bournemouth (Siraj-Blatchford & Parmar, 2011) *Knowledge, learning processes, and ICT in early childhood education* Vitensklig artikkel utgitt på en konferansen: European Distance and E-Learning Network 2013 Annual Conference	An enduring problem for educators and educational researchers in recent years has been related to the difficulties of discriminating between curriculum and pedagogy in early childhood education. At no point has the debate been more acute than in relation to the issue of the inclusion of phonic approaches to reading in the UK Guidance for the Foundation stage of learning.	In this paper we present data collected in research into the use of ICT in early childhood, and argue that a consistent application of the philosophical concept of emergence, which many early childhood academics have paid lip service to for some time, offers a means of resolving these controversies.	We draw upon data collected in Effective Provision of Pre-School Education (EPEE) qualitative case studies (Siraj-Blatchford et al. 2002) to demonstrate some of the challenges of implementing a phonics curriculum. A study of emergent literacy work carried out in a UK preschool is also presented to show the value of applying information and communications technology (ICT) in early childhood education (Parmar, 2011).	Piaget og Wygotsky	We argue that the major problems that are considered with phonics are related to the pedagogies that are typically applied. The assumptions that are apparently made by policy makers that the universal adoption of phonics instruction may be sufficient to ensure that all children learn to read at an early age are also considered unhelpful. It is suggested that the curriculum content of phonics are less problematic and controversial than commonly supposed, and a case is made for the inclusion of playful phonics in an emergent literacy curriculum, where ICT may be seen to provide significant pedagogic knowledge support to the educator. Young children are learning all the time, and however implicit or hidden it may be in some settings, the curriculum content is always determined by the adults who care for them. The notion of totally 'free' play should therefore be recognised as a myth. The material resources (toys, furniture, props and technology), the activities, and the environments that we offer children define both the opportunities and the limitations for their learning. The linguistic and cultural context that they are immersed in even more fundamentally determines what it is that they learn. It may be a recognition of this fundamental 'truth' of early childhood learning and development that provides the most significant challenge to the early years profession.

Teknologi som sted for interaksjon og samhandling

Navn, tittel, type publikasjon	*Forskningsfokus og hensikt*	*Problemstilling*	*Metode*	*Teori*	*Funn*
Margrete Jernes (Jernes, 2013) *Interaksjoner i digitale kontekster i barnehagen* PhD avhandling	Interaksjoner i digitale kontekster i barnehagen Mål: å få kunnskap om eksisterende praksiser med bruk av digital teknologi i barnehagen, ut fra både førskolelæreres og barns perspektiver. hensikten er å beskrive, analysere og problematisere samspillsprosesser i digital kontekst, ikke ulike tekniske muligheter.	Hva trer frem i interaksjon barn-barn og barn-voksne i lek og aktivitet i digitale omgivelser i barnehagen, og hvilke perspektiver har førskolelærere og barn på dette?	Metodologisk har avhandlingen en fenomenologisk hermeneutisk Tilnærming. I forskningsarbeidets feltarbeid er intervju og observasjon anvendt.	Teoretisk er avhandlingen forankret i sosiokulturelle perspektiver innenfor humanistisk, kvalitativ forskning Dewey Klafki	Analysen av dette viser at introduksjon av digital teknologi i barnehagen har implikasjoner for flere felt. For barnehageansatte dreier det seg blant annet om betydningen av å reflektere over begrunnelser for bruk av teknologi i pedagogisk barnehagepraksis. For utdanningsfeltet dreier det seg om kunnskap om barn og teknologi i et samfunnsperspektiv. Intensjonen har vært å bidra til å utvikle et forskningsbasert kunnskapsgrunnlag på dette viktige feltet, også i forhold til norsk kontekst. Avhandlingens resultater slik de framtrer i de tre artiklene peker på et mangfold av aktiviteter med digital teknologi i barnehagen. På bakgrunn av problemstillingen og avhandlingens resultater reises flere områder som berøres her og belyses nærmere i kapittel 6. 1 aktiviteter og erfaringer med digital teknologi i barnehagen, 2 hvordan førskolelærerne og andre voksne møter barna i denne digitale konteksten. Hva betyr barnas ønsker om tilgang til teknologien, og hvordan kan kompleksiteten med inklusjons- og eksklusjonsproblematikk forstås når teknologi er del av hverdagen? Spørsmål knyttet til spenningsforhold mellom individualitet og fellesskap ved anvendelse av digital teknologi i barnehagen vil også bli drøftet utfra avhandlingens samlede resultater. 3. Det siste område er utfordringer og implikasjoner ved bruk av teknologi i barnehagen. Avhandlingens endelige metaanalyse var det femte temaet hvor jeg rettet søkelyset mot en fruktbar balanse i arbeidet med barn og teknologi. Her argumenterte jeg for en balansert pragmatisk tilnærming som omfatter både frihet, disiplin og dannelse. Til slutt ble konsekvenser for feltet skissert, med vekt på en faglig pedagogisk begrunnelse for bruk av teknologi i pedagogisk barnehagepraksis og betydningen av

					pedagogens aktive deltakelse i barns omgang med teknologi.
Agnetea Ljung-Darf (Ljung-Djärf, 2004) *Spelet runt datorn: datoranvändande som meningsskapande praktik i förskolan* *PhD avhandling*	Denna avhandling handlar om datorns användande inom ramen för förskolans institutionella praktik. Med förskola avses heldagsverksamhet för barn i åldern 0-5 år (Skolverket, 1998a). Arbetet berör mötet mellan förskolan och datorn, som en förhållandevis ny teknik i detta sammanhang. Studiens avsikt är att lyfta fram aspekter av och diskutera det meningsskapande som erbjuds när datorn används i förskolan.	1) hur förskolan som pedagogiskt sammanhang har präglat användandet av datorn 2) Hvilke ulike positioner och positionering i barns samvaro runt datorn i förskolan. 3) undersöka personalens sätt att förhålla sig till datorn och dess användande samt att relatera detta till den lärmiljö som erbjuds runt datorn på de undersökta förskolorna.		Studien tar sin övergripande utgångspunkt i ett sociokulturellt perspektiv på individers handlingar, i huvudsak med hänvisning till Säljö (1998, 2000, 2002). Det sociokulturella perspektivet kombineras med Gibsons (1986) ekologiska perspektiv på visuell perception samt ett positioneringsteoretiskt perspektiv på handlingar så som det beskrivs av Harré och van Langenhove (1999).	1) Analysen visar att olika sätt att reglera barnens användande av datorn var ett centralt och ständigt återkommande tema. Att problematisera möjligheter och begränsningar som erbjuds genom variationen av restriktioner blev utgångspunkt för vidare analyser. 2) Delstudien visar på variationer i pedagogernas sätt att förhålla sig till barns möjligheter att delta i samvaron runt datorn. De handlingar som utförs i relation till datorns användande i de tre olika 3) Den avslutande delstudien kan därmed sägas utgöra en syntes av de första två, och det är också här som resultaten mer specifikt kopplas till de tre förskoleavdelningarna och dess likheter och olikheter.
Plowman og Christina Stephen (Plowman, Stephen, & McPake, 2010; Stephen & Plowman, 2012) *Veiledet samspill i barnehagen: Undersøkelse av hvordan voksne kan støtte barns læring med digitale medier* Vitenskapelig artikkel i		Hvordan kan pedagoger forbedre tre og fire år gamle barns møter med teknologi i miljøer som fokuserer på at ban lærer gjennom lek? Når de snakker om å forbedre møtene med digitale medier, mener de å tilrettelegge for den typen vedvarende, oppmerksomt engasjement som	8 barnehager deltok i studien *Interplay*. Barna og pedagogene eksperimenterte med ulike teknologiske nyvinninger i lekerommene i barnehagen. Noe som ble gjort om til data gjennom observasjon og videoopptak gjort i lekerommet, disse ble delt med forskerteamet og diskusjoner rundt funnene som etter hvert trer frem	Sosiokulturell læringsteori gjennom scaffolding (Wood, Bruner, Ross) Assisted performance (Tharp og Gallimore 1988) (Denne er bestil, må sjekkes ut) Dialogic enquery (Wells, 1999)	De fant at måten pedagogene tenker om sin rolle i barns læring på, samt implisitte og eksplisitte ideer om god praksis, hadde betydning for det veiledede samspillet som barn opplevde. De deler inn i distalt veiledet samspill og proksimalt veiledet samspill Distalt veiledet samspill: Når pedagogene la vekt på barnestyrt utforskning som læringsmåte, fokuserte de på rollen som forsørgere som prioriterte planlegging og skaffe til veie resurser. I disse tilfellene fikk barn velge fritt fra et vellutstyrt miljø, men det var mindre sannsynlig at de var involvert i ansikt-til-ansikt-samspill med de voksne mens de lekte med teknologien. Proksimale veiledet samspill: Proksimalt veiledet samspill handler om når voksne og barn engasjerer seg i digitale medier sammen. Stephen og Plowman

artikkelsamling		kjennetegner aktiv læring.	ble satt i system. På denne måten forklarer Stephen og Plowman at funnene er forankret i hverdagsrealitetene på travle lekerom.		presiserer at det er viktig å merke seg at det det proksimale veiledede samspillet ikke bare ble formidlet gjennom språk. Det støttende samspillet var multimodalt. I tillegg til snakking (eller ofte istedenfor snakking) innebar proksimalt veiledet samspill også fakter, berøring, språk og i noen tilfeller følelsesmessige støtte av det å ja en kjent voksen ved sin side. (131-132) De konkluderer med at når tre og fireåringer engasjerer seg med digitale medier i førskolen, trenger de aktiv støtte fra pedagogene hvis disse møtene skal inspirere og lette til rette for læring. Veiledet samspill gjør en forskjell for barns engasjement med digitale medier og for læringspotensialet ved slike hendelser. Men den typen støtte som barn trenger mest mens de bruker teknologi, må være både distal og proksimal. (138-139)
(Ødegaard & Knudsen, 2012) Nye digitale begivenheter: nye former for deltakelse i Fløyenfugl barnehage Vitenskapelig artikkel i artikkelsamling	Digitale medier i barnehagen i vår tid åpner nye veier til skapende utfoldelse, muligheter for utvidet sosial og stedelig deltakelse som vil kunne ha et deltagende demokratisk potensiale i tråd med et relasjonelt handlende danningsideal.	Hva, hvor og hvordan brukes digitale bildeskapende medier? Og hvilke vilkår for deltakelse gir digital bildeskaping?	Kasusstudie ”deltagelse i sirkel i fløyenfugl barnehage	Sosialepistemologiske perspektiver: Intergenerasjonelle perspektiver (Alanen & Mayall, 2001) Dialogisk kulturteori (Bakhtin, 1981; Matusov, 2011) Eksperimentell relasjonell kunstteori(Dam Christensen & Illeris, 2009; Illeris, 2002, 2004)	De argumenterer for en i digital bildepedagogisk praksis krever en mer deltakende voksen rolle. De tilbyr ansatser til nye tenke- og handlemåter i den digitale bildepedagogikken: noe de kaller en interstedlig og entergenerasjonell bildepedagogikk.
Pål Årsand (Aarsand, 2010) *Young Boys Playing Digital Games* *From Console to the Playground* Vitenskapelig Artikkel i Nordic Journal of Digital Literacy		how digital games matter in Swedish boys’ everyday lives from the child perspective. The focus is on how boys use games in situ and how their game play competence matters in peer group interaction.	Inspired by multi-site ethnography (Hannerz, 2003; Marcus, 1995), the present study follows children’s use of digital games on different sites. My data consist of one week of videotaped observations of two first grade classrooms, two after-school centres and four homes. I have named the two school areas East and West to differentiate between these schools, after-school centres and homes. The video recordings have focused on four children, two boys and two girls aged 7-8, and their encounters during one week. More precisely, we follow one boy and one girl in the same class during the same week. The children have been videotaped in the school and at the leisure centre by the researchers, while parents video-recorded them in the home. Informed consent was	Fenomenologi two analytical concepts: translation and power/knowledge relations. Translation is seen as ‘a relation that does not transport causality, but induces two mediators into coexisting’ (Latour, 2005 p. 108). In contrast to the idea that objects move between and are adjusted to different activities, the idea of translation highlights the	This article studies how digital games are part of the everyday lives of Swedish 6 to 7-year-old boys. The data consist of video recordings from two schools, two after-school centres and four homes. The focus is on how children engage in, organize and use digital games in face-to-face interaction. It is argued that digital game competence matters not only in front of the screen,

			obtained from the children in the school class and their parents as well as from the head teachers, class teachers and the leisure-time pedagogues. All participants have been given pseudonyms. Examples from the video recordings have been transcribed according a modified version of conversation analysis (see Appendix 1) and translated into English.	relation between mediators in order to understand the phenomenon.	but also in the playground. In addition, it is argued that what counts as game competence is negotiated in the peer group.
Mari-Ann Letnes (Letnes, 2013) *Barnehagens kunstmøte i digitalestetisk praksis* Vitenskapelig artikkel i artikkelsamling A.-L. S.-K. Østern, Geir; Angelo, Elin (red.) (Ed.), Kunstpedagogikk og kunnskapsutvikling	I denne artikkelen fokuserer Mari Ann Letnes på barneperspektivet i et møte mellom barnehagebarn og Hannah Ryggens vevde veggtepper. Dette møtet representerer et kompleks forhold mellom skaperen, verket og mottakeren. Hensikten med dette er å undersøke hvordan digitale verktøy kan stimulere men også begrense kunstmøtene i digitalestetisk praksis.	Hvordan kan digitale verktøy fremme eller hemme kunstmøter når barn skaper digitale fortellinger med utgangspunkt i et kunstmuseumsbesøk?	Metodene brukt i den empiriske datainnsamlingen var kvalitative og inspirert av etnografi. Utviklingsprosjektet ble gjennomført som et pedagogisk forsøk, hvor hensikten var å øke kunnskap om digital-didaktikk ved høgskolen. Etnografiske innsamlingsmetoder som har vært brukt i dette prosjektet har vært observasjon, intervju og logg. Informantene i prosjektet har vært barnehagebarn, studenter, førskolelærere og høgskolelærere. Hver av disse informantene har bidratt med ulike typer data på forskjellig tidspunkt i prosjektet. I tillegg til dette ble det av barna laget flere digitale fortellinger. Disse artefaktene inngår også i	Sosiokulturell læringsteori	Et slikt møte generer estetisk refleksjon, og selv om ingen av perspektivene i dette forhold kan forklare den estetiske erfaringen alene, kan man i følge Løvlie (1990) fokusere på et av disse perspektivene. Ved at fokus for prosjektet som presenteres i denne artikkelen, har ligget på mottakeren i møtet med kunst, ønsker Letnes å få tak i interaksjonen som foregår mellom menneskene, deres handlinger, kulturelle hjelpemidler og kunst.

			det empiriske materialet, og sier noe om kunstmøtene barna har hatt i prosjektet.		

Teknologi som medium for meningsskaping

Navn, tittel, type publikasjon	*Forskningsfokus og hensikt*	*Problemstilling*	*Metode*	*Teori*	*Funn*
Anna Klerfelt (Klerfelt, 2007) *Barns multimediala berättande: en länk mellan mediakultur och pedagogisk praktik.* PhD avhandling	Forskningsinteressen i denne avhandlingen er rettet mot å innenfor rammen av en pedagogisk praksis studere barns skaping av fortellinger med data som verktøy, i samspill med kamerater og pedagoger. Av særskilt interesse er barns meningsskaping og kommunikative uttrykk. Avhandlingen ønsker dermed att bidra til forståelse av hvordan fortelling og data kan brukas i interaktive prosesser i institusjonelle pedagogiske praksiser.	Spørsmål i studiene var rettet mot de interaktive prosesser som oppstår når barn og pedagoger møtes i pedagogisk praksis hvor målet er å lage historier med digital teknologi. Et særlig fokus på hvordan det verbale og gestikulerte samspillet mellom barn, pedagoger og teknologi ble synlig når de skapte historier i ord og bilder. Videre er spørsmålet om hva barn kommuniserer i sine multimedia-produksjoner, og hvordan denne kommunikasjonen koblinger innenfor og mellom ulike praksiser ble undersøkt.	educational ethnography and ethnomethodology have been used. rundt 300 barn og deres pedagoger fra 17 pedagogiske praksiser ble fulgt over en periode på to år. I begynnelsen ble et omfattende sett av metoder som brukt i en beskrivende observasjon. Disse ble etterfulgt av fokusert observasjon, video-dokumentasjon av 34 barn og 17 pedagogers tette samspill ved datamaskinen gjennom verbale samtaler og bevegelser. Til slutt ble selektiv observasjon av barnas billedlige fortellinger utført. Forskjellige metoder for analyse ble anvendt.	Studiene tar sitt utgangspunkt fra sosiokulturelle perspektiver. Hvordan folk forstår hverandres mening beslutningsprosesser er analysert.	Studiene viser hvordan barn og pedagoger bygger bro over gapet mellom utdanningsinstitusjonen og media kultur gjennom sine interaktive prosesser og gjennom sine billedlige historier. Pedagoger har forskjellige strategier for å gi barna muligheter til å bruke sine erfaringer med mediekultur i den pedagogiske praksis. Dette resultatet viser hvordan pedagoger kan endre sin posisjon i situasjoner som oppstår når forholdene som ramme inn aktivitetene i en pedagogisk setting endres ved bruk av nye verktøy. Analysene av interaksjonen viser hvordan pedagoger bruker indeksikalske gester og ord for tekniske instruksjoner, referansebegrensninger. Gester for å referere og kombinere ressursene i konteksten, og metaforisk, på liksom, og representasjons gester og ord i en rik verbal dialog. Den narrative analysen viser at barna opptrer som "meglere" hvor deres multimediale historier fungere som "grenseobjekter". De forener ulike kulturer, ved at de former dialoger gjennom i tid og rom, og de formidler vanlige betydninger av semiotisk system. På denne måten gis barn muligheten til å oppnå kompetanse å opptre som aktive produsenter av kultur.

Ødegård og Knutsen (Ødegaard & Knudsen, 2012)					

Teknologi i kunstfaglig virksomhet

Navn, tittel, type publikasjon	*Forskningsfokus og hensikt*	*Problemstilling*	*Metode*	*Teori*	*Funn*
Leslie J. Couse, Dora W. Chen, (Couse & Chen, 2010)	Undersøker hvordan tableter kan brukes blant barnehagebarn og opp til 8 årsalderen. Fokuset var på hvordan barna tar til seg teknologien og hvordan de klarer å bruke tabletne til å tegne	1) Is stylus-interfaced technology a viable tool for early education? 2. How can stylus-interfaced technology align with technology curriculum standards for early education?	I alt 41 tre-til seks år gamle barn ble filmet mens de brukte tablettene.		Studien fant signifikante forskjeller i nivået på bruken av tablet mellom de forskjellige øktene, og engasjement økte med alderen. Lærerne rapporterte at barnas interesse for denne typen tegning var over det som var vanlig å forvente i denne alderen. Barn utviklet raskt kompetanse med pekepennen for tegning. Selv om tekniske problemer i å lære denne nye teknologien ble også funnet, var barn interessert og engasjert uten frustrasjon. Det som synes å ha betydning for barnas læring er hvordan lærerne velger å implementere denne teknologien.

Spesialpedagogikk

Navn, tittel, type publikasjon	*Forskningsfokus og hensikt*	*Problemstilling*	*Metode*	*Teori*	*Funn*
David Passig, Sigal Eden, (Passig & Eden, 2010) *Enhancing time-connectives with 3D Immersive Virtual Reality (IVR)* Vitenskaplig forskningsartikkel i Journal of Educational Computing Research,			134 participants aged 4-10, 69 children with hearing impairment and 65 hearing children, divided into two age groups, pre-school and elementary school children, took part in this study. The study examined their ability to express time and cause-connectives, using the different modes of representation.	Using Bruner's (1973, 1986, 1990) representation stages, we tested the comparative effectiveness of VR (Virtual Reality) as a mode of representation on children's production of time-connectives with four other modes of representation: pictorial, oral, signed, and textual.	The findings demonstrate substantial differences in producing time-connectives with the various modes of representation. The leading mode of representation is 3D IVR amongst the hearing children, and signed representation and 3D IVR amongst the children with hearing impairment.

Teknologi i bruk i matematikk og naturfag 5 Artikler

Navn, tittel, type publikasjon	*Forskningsfokus og hensikt*	*Problemstilling*	*Metode*	*Teori*	*Funn*
Georgios Fesakis Christina Sofroniou Elisavet Mavroudi (Fesakis, Sofroniou, & Mavroudi, 2011) *Using the Internet for Communicative Learning Activities in Kindergarten: The Case of the "Shapes Planet"* Vitenskaplig artikkel i Early Childhood Education Journal Her vil jeg skrive at forskneren ser at det å bruke internet kan bidra til læring i geometri	To obtain a pedagogical validation of the activity, to document its learning value, to highlight problems not foreseen at the design phase, to record difficulties encountered during the application of the activity in a real setting and last, to detect possible expansions as well as improvements of the activity.	Is the proposed activity applicable and appropriate for preschoolers? Table 1 A brief description of the ‘‘Shapes planet’’ activity 2. Is the activity worthwhile with respect to learning outcomes? More precisely, does it give the chance for (1) detection of the children’s van Hiele level, (2) the development of dialogue around geometric shapes, and (3) the evolution of children’s level in geometry? 3. Are children able to verbally describe shapes’ syntheses and vice versa, to redraw a synthesis based on recorded descriptions made by others? 4. Does the proposed activity constitute an authentic and attractive challenge that can actively engage children?	This paper presents an experimental case study of a learning activity meant for teaching preschoolers geometric concepts, which uses communication tools from the internet.	From the research findings, the application of the activity may—in general—be considered successful. The activity gave the children learning opportunities related to reading, naming and building shapes, use of colors and the concept of number, within an authentic and attractive communicative framework, which requires the use of the Internet.	The activity constitutes a developmentally appropriate adaptation of a successful model, known as "Monster Exchange", to kindergarten. The paper presents the proposed adaptation, the experimental findings regarding the errors children mad, the difficulties they encountered, and finally, the drawings that children produced, with the aim of evaluating the appropriateness and the learning value of the activity.
Elizabeth Kazakoff and Marina Bers (Kazakoff & Bers, 2012) *Programming in a Robotics Context in the Kindergarten Classroom: The Impact on Sequencing Skills* Journal of Educational Multimedia and Hypermedia	This paper focuses on the impact of programming robotic artifacts in sequencing skills in kindergarten classrooms, replicating a prior laboratory-based study	does computer programming have an impact on kindergartners’ sequencing skills? (1) Will differences in effect size emerge between groups based on classroom size? Will differences in effect size emerge between groups based on teachers’ previous experience and	Fifty-eight children participated in the study; 54 children were included in data analysis. This study was conducted in two different school environments, where class size and teachers’ experiences with the technology use varied – one teacher had used the technology in the prior year; the other teacher had not. School environments were further subdivided into control and experimental groups. Children in the experimental group were exposed to the TangibleK program for a period		Overall, this study demonstrated the positive impact a computer programming intervention in kindergarten may have on sequencing skills, consistent with the prior study. The classroom studies showed a significant increase in sequencing scores for the experimental groups versus the control groups. Differences in teacher experiences with technology are important to consider with our current and expanding digital world. This study may indicate

		comfort level with technology?	of 20 hours, taught by their classroom teacher. Children participated in computer programming activities using a developmentally appropriate tangible programming language, specifically designed to program a robot's behavior.		the need for teacher training and professional developmental programs that focus on engaging teachers in using technology in their classrooms. Furthermore, the results are consistent with previous studies that show greater impact on academic skills for children in smaller classrooms. Though there is still much to learn about the impact of individual digital technologies on the development of young children, this work demonstrates that it is possible to teach young children to program a robot with developmentally appropriate tools, and, in the process, children may not only learn about technology and engineering, but also increased their sequencing abilities, a skill applicable to multiple domains in early childhood
Georgios Fesakis,; Sonia Kafoussi,; Eleftheria Malisiova, (Fesakis, Kafoussi, & Malisiova, 2011) *Intuitive Conceptions of Kindergarten Children about the Total of Two Dice Problem, through the Use of a Microworld* Vitenskaplig artikkel i International Journal for Technology in Mathematics Education			case study regarding the influence that a specially designed computer microworld had on the development of intuitive conceptions about probability		The experiential findings support the learning value of the proposed microworld. In addition, the proposed learning activity facilitates the diagnosis of primary and the development of secondary intuitive conceptions about probabilistic concepts.
Michael A. Evans & Eliot Feenstra & Emily Ryon & David McNeill	Our research aims to identify children's communicative strategies		microethnographic case study of two small groups of 7 and 8-year-old learners	Sosiokulturell læringsteori Human activities and learning are profoundly	We characterize the establishment of shared reference points as

(Evans, Feenstra, Ryon, & McNeill, 2011) *A multimodal approach to coding discourse: Collaboration, distributed cognition, and geometric reasoning* Vitenskaplig artikkel i Computer-Supported Collaborative Learning	when faced with the task of solving a geometric puzzle in CSCL contexts We investigated how to identify and trace distributed cognition in problem-solving interactions based on discursive cohesion to objects, participants, and prior discursive content, and geometric and cooperative concepts.		solving tangram manipulatives in physical and virtual desktop settings.	influenced, or mediated, by the use of psychological and physical tools Vygotsky 1978 Merleau-Ponty 1945	**"**coreferences**"** which cohere on object, para, and meta-levels through both gesture and speech. Our analysis foregrounds how participants establish common referential ground to facilitate collaborative problem solving with either computer-supported or physical puzzles. Using multimodal analysis and a theoretical framework we developed to study interactional dynamics, we identified patterns of focus, dominance, and coalition formation as they relate to coreferentiality on multiple levels. Initial findings indicate increased communication and cohesion to higher-level principles in the virtual tangram puzzle-solving setting. This work contributes to available models of multimodal analysis of distributed cognition using current manipulative technologies for early childhood mathematics education. Furthermore, our case study demonstrated that small group collaboration and the creation/sharing of artifacts operates differently in the virtual and physical realms; learners

					are more likely to discuss and articulate their ideas in the computer-supported setting, but there is a decrease in gestural communication and so students who are more hands-on learners may fade into silence, as happens in both the boys' and girls' computer-supported settings.
(Kalogiannakis, Rekoumi, & Antipa, 2012) Vitenskaplig artikkel i Proceedings of the 10th International Conference on Computer Based Learning in Science (CBLIS)	Planning educational activities for natural sciences using ICT tools: teaching volcanoes in early childhood In this article, we present the planning and application of a teaching intervention, introducing geo-environment knowledge in kindergarten school about a basic geological concept, the volcanoes, using ICT (Information and Communication Technologies).		The intervention consists of the following three steps: first to form is the pre-test of pre-existing perceptions and alternative ideas of children on basic concepts related to volcanoes using semi-structured interviews. In the second stage, we create a science laboratory for the implementation of various activities and conduct experiments with simple materials in a safe way such as a virtual explosion in a model volcano and the observation of the lava process. In addition with the mentioned activities, using ICT as a rich source of authority in various formats (images, video, etc.) indirect observation of the natural phenomenon and source of information search (google, google earth, virtual museums) children learn about the Greek volcanoes by enriching their experiential cognitive representation using and the concept map software kidspiration.	Semi-structured interviews were conducted one-to-one in private, with 24 children, aged from 4 to 6 years selected, in a preschool classe in Korinthos (Greece). It took about half an hour for each interview. Classroom observations were also arranged. The proposed curricular intervention for teaching volcanoes in kindergarten is implemented in 3 major phases: (a) After interviews with 24 children aged from 4 to 6 years, identification of the pre-existing perceptions and the alternative ideas of children (pre-test) we designed the teaching intervention. (b) Implementation of the intervention by exploring and enriching the topic volcanoes using ICT. (c) Evaluation of the intervention by interviewed children and using the concept map software kidspiration (post-test). During the third phase of the study (post-test) after the teaching intervention, the same	Under the global trend for scientific literacy education should play a structural role in shaping well-trained people and in promoting social attitudes. The environmental education programs involved with awareness of environmental issues are fundamental to shaping attitudes of the child-friendly environment. Earth is the result of numerous geological events that combined to create earth, as we know it today. The specific topic of volcanoes was chosen due to the volcanism of the Greek territory. Beyond the cognitive scientific part of this approach, is attempted the involvement

			In the third stage, the evaluation of the teaching intervention (post-test) takes place in order to identify the transformation on children's existing ideas and addressing cognitive barriers to the construction of scientific knowledge. In the framework of this article we present in detail the proposed activities of the second phase of the teaching intervention.	test of the first phase was given to all students to measure their improvement. Due to the young age of the children the 274 pre and post-tests were administrated individually to each child. Within this article, we will present in detail the proposed activities of the second phase. At this phase increasing scale simple activities are used such as simple experiments in serial sequences.	of social aspects by having as orientation the changes of children's attitudes in relation to the quality of life and the geo-environment

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