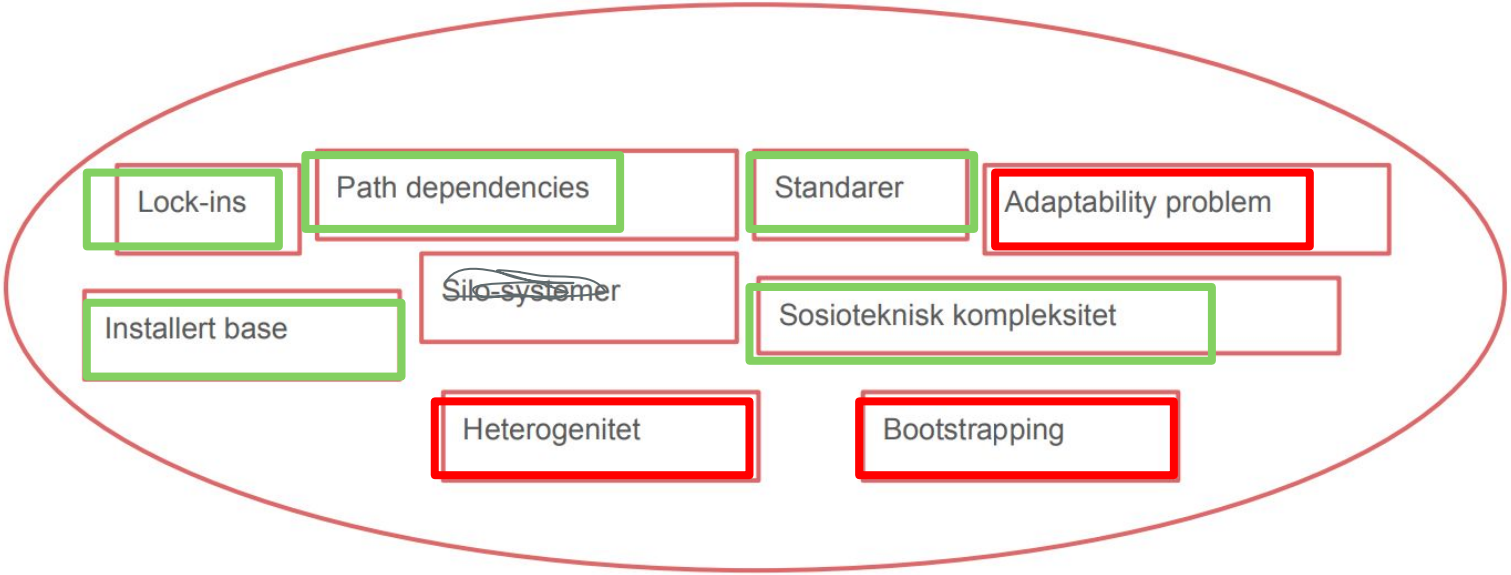
Velkommen til Gruppetime 6

IN2150

Hovedtemaer for i dag

- Sentrale begreper vi har gått gjennom fram til nå
- Mulighet for at dere kan jobbe med å få oversikt i faget
- Et lite utdrag av hovedpunktene dere burde kunne fram til nå




Lock-ins
Path dependencies
Standarer
Adaptability problem
Silo-systemer
Installert base
Sosioteknisk kompleksitet
Heterogenitet
Bootstrapping

Informasjonssystemer (IS)

“An information system (IS) is an organized system for the collection, organization, storage and communication of information. More specifically, it is the study of complementary networks that people and organizations use to collect, filter, process, create and distribute data.” (Wikipedia)

Informasjonssystemer (IS)

- Mennesker
- Notatbøker
- Brev
- Telefon
- Datamaskin (hardware + software)

Eksempler:

- Google
- Nav
- Facebook
- Internett

Informasjonsinfrastrukturer(II)

- Installert base
  - Åpen
  - Delt
  - Heterogen
  - Evolverende

Informasjonsinfrastrukturer(II)

- Installert base
  - Åpen i betydningen ‘kan utvides’, flere kan ta det i bruk, koble seg til osv.
    - Delt
    - Heterogen
    - Evolverende

Informasjonsinfrastrukturer(II)

- Installert base
  - Åpen
- Delt Felles, delt av flere brukergrupper, ikke et spesifikt system for bare en gruppe
  - Heterogen
  - Evolverende

Informasjonsinfrastrukturer(II)

- Installert base
  - Åpen
  - Delt
- Heterogen Sammensatt av ulike elementer, ulike typer teknologier, ulike bruksmåter og brukergrupper, ikke enhetlig/homogent.
  - Evolverende

Informasjonsinfrastrukturer(II)

- Installert base
  - Åpen
  - Delt
  - Heterogen
- Evolverende i inkrementer.

How do [the authors] define installed base?

- Sociotechnical installed base: users, practices, organizational arrangements, technology
- The installed base serves as the foundation for any change and development, and can be both enabling and constraining. New developments need to fit and make use of existing arrangements and at the same time transform them. p.4

Table 1 Applications, platforms and information infrastructures

Property/Type of IT system	*Application*	*Platform*	*Information infrastructure*
Emergent properties			
Shared	Yes, locally and through specified functions	Yes, across involved user communities and across a set of IT capabilities	Yes, universally and across multiple IT capabilities (Star and Ruhleder, 1996; Porra, 1999)
Open	No, closed by user group and functionality	Partially, depends on design choices and managerial policies	Yes, universally allowing unlimited connections to user communities and new IT capabilities (Weill and Broadbent, 1998; Kayworth and Sambamurthy, 2000; Freeman, 2007)
Heterogeneous	Yes, partially and mainly by involved social groups	Partially, mainly by social groups but also by technical connections	Yes, increasingly heterogeneous both technically and socially (Kling and Scacchi, 1982; Hughes, 1987; Kling, 1992; Edwards *et al.*, 2007)
Evolving	Yes, but limited by time horizon and user community.	Yes, and limited by architectural choices and functional closure	Yes, unlimited by time or user community (Star and Ruhleder, 1996; Freeman, 2007; Zimmerman, 2007)
	Linear growth	Mostly linear growth	Both linear and nonlinear growth (Hughes, 1987)
	Evolution bounded and context free	Evolution path dependent	Evolution path dependent (Star and Ruhleder, 1996; Porra, 1999; Edwards *et al.*, 2007)
Structural properties			
Organizing principle	Direct composition of IT capabilities within a homogeneous platform	Direct composition of a set of horizontal IT capabilities within a set of homogeneous platforms	Recursive composition of IT capabilities, platforms and infrastructures over time (Star and Ruhleder, 1996; Edwards *et al.*, 2007)
Control	Centralized	Centralized	Distributed and dynamically negotiated (Weill and Broadbent, 1998) Can involve only basisorganizing principles (standards) and rely on installed base inertia (Star and Ruhleder, 1996; Edwards *et al.*, 2007).

Systemic complexity

- ‘Systems of systems’ or ‘coalitions of systems’

DOI:10.1145/2209249.2209268

The reductionism behind today’s software-engineering methods breaks down in the face of systems complexity.

BY IAN SOMMERVILLE, DAVE CLIFF, RADU CALINESCU, JUSTIN KEEN, TIM KELLY, MARTA KWIATKOWSKA, JOHN MCDERMID, AND RICHARD PAIGE

Large-Scale Complex IT Systems

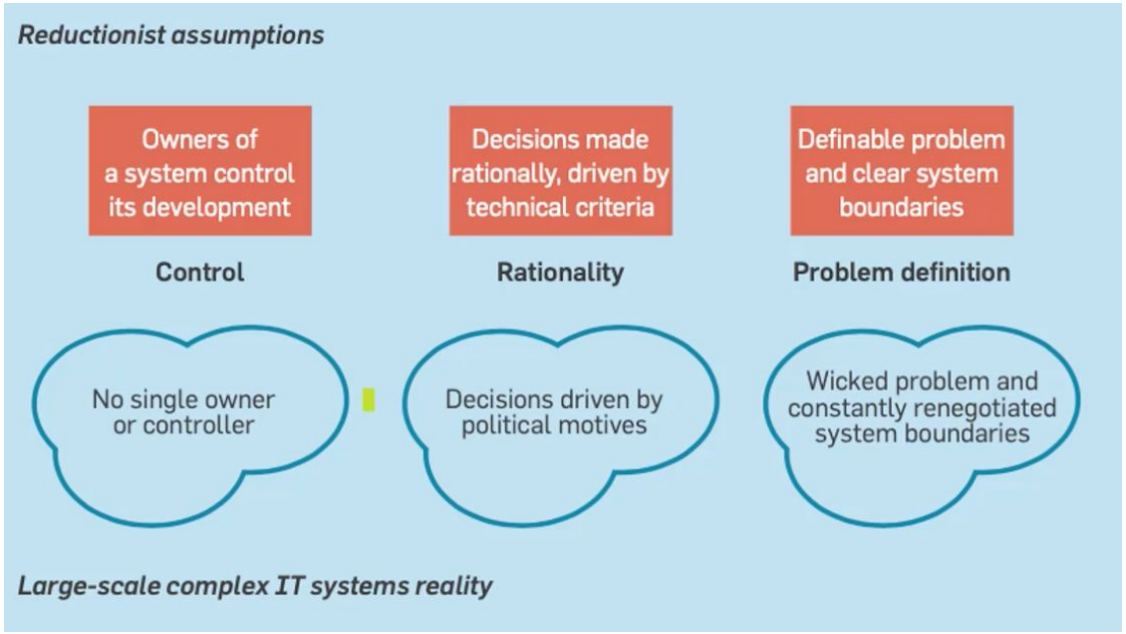
» key insights

- **Coalitions of systems, in which the system elements are managed and owned independently, pose challenging new problems for systems engineering.**
- **When the fundamental basis of engineering—reductionism—breaks down, incremental improvements to current engineering techniques are unable to address the challenges of developing, integrating, and deploying large-scale complex IT systems.**
- **Developing complex systems requires a socio-technical perspective involving human, organizational, social, and political factors, as well as technical factors.**

- Different interests involved
- Not ‘designed’ to work together
- No overall design authority

ON THE AFTERNOON of May 6, 2010, the U.S. equity markets experienced an extraordinary upheaval. Over approximately 10 minutes, the Dow Jones Industrial Average dropped more than 600 points, representing the disappearance of approximately $800 billion of market value. The share price of several blue-chip

System characteristics *emerge* “when the whole system is put to use and changes over time depending on how it is used and on the state of its external environment” p.73


Reductionist assumptions
Owners of a system control its development
Decisions made rationally, driven by technical criteria
Definable problem and clear system boundaries
Control
Rationality
Problem definition
No single owner or controller
Decisions driven by political motives
Wicked problem and constantly renegotiated system boundaries
Large-scale complex IT systems reality

Lecture 2

Aanestad, M., Grisot, M., Hanseth, O., & Vassilakopoulou, P. (2017). “Information infrastructures and the challenge of the installed base”. Chapter 3 in Information Infrastructures within European Health Care (pp. 25-33). Springer, Cham.s

How do [the authors] define sociotechnical?

The socio technical perspective include the organizational and social context of its design and use.

And how technology is intertwined with organizational structure, procedures and work practices

An organization-wide information infrastructure that is deeply embedded into work routines across several departments will be difficult to change, however, careful analysis of all its aspects can inform change strategies

What do [the authors] mean by embeddedness?

Technologies being deeply embedded into organizations, and organizations being deeply embedded into technologies.

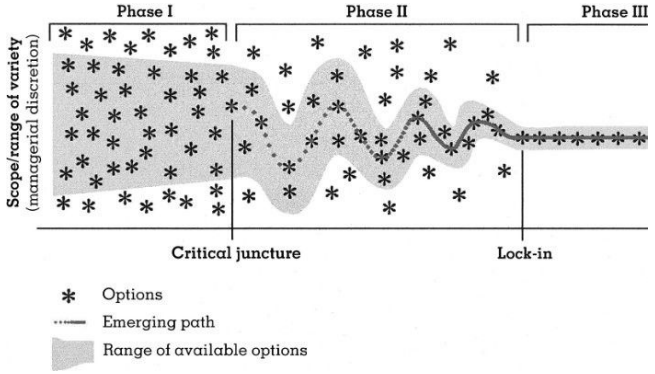
Once the infrastructure is established, it remains to see if it will lead to a **lock-in** process where existing practices are **embedded** into more complex and hard to change technological structures, or if it may enable future changes and improvement of the actual practices.

Path-dependency

Som vi vet utgjør den installerte basen det allerede eksisterende: mennesker, systemer, strategier, valg, lovverk etc.

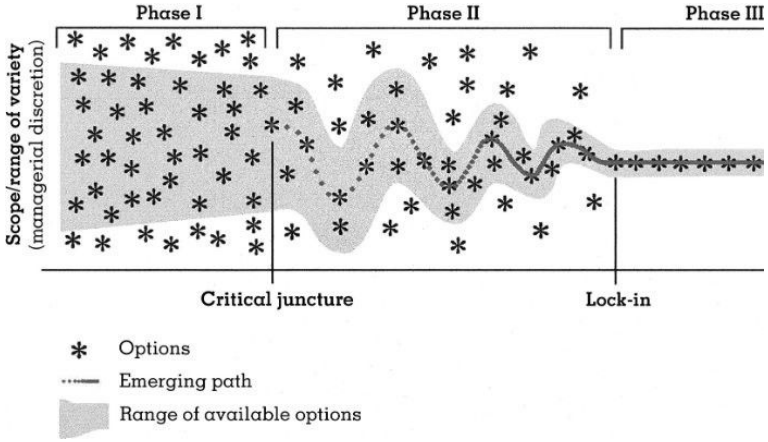
En II evolverer med utgangspunkt i den installerte basen. Det er denne som setter føringer for retningen/mulighetene for fremtidig endring.

Disse heterogene komponentene vil dermed både utgjøre mulighetsrommet, og sette begrensninger, for hvordan infrastrukturen evolverer. Vi sier derfor at en II er path dependent.



Lock-ins

Begrensningene den installerte basen setter for fremtidige endringer i infrastrukturen kan føre til **lock-ins.**



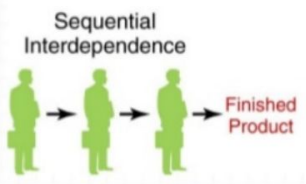
Lecture 3

Task interdependency

- Thompson: ”Organizations in Action” (1967):
  - ”In a situation of interdependence, concerted action comes about through coordination, and if there are different types of interdependencies, we should expect to find *different devices* for achieving coordination”

1. Pooled interdependencies
2. Sequential interdependencies
3. Reciprocal interdependencies

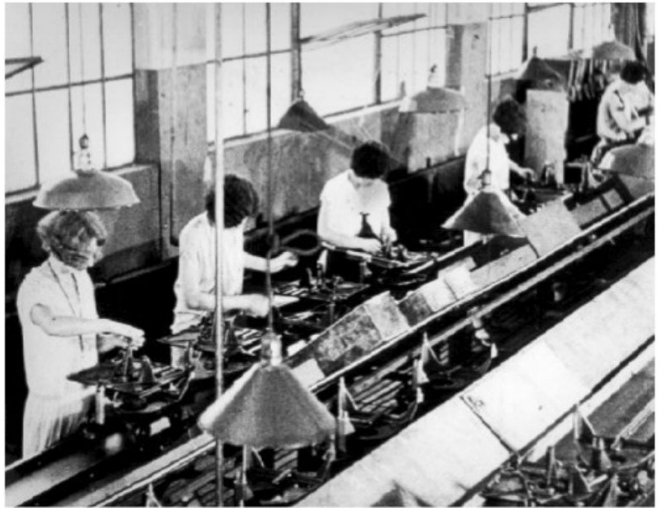


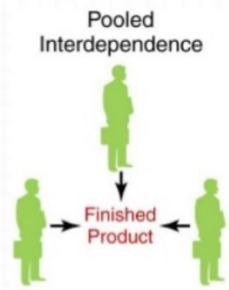







Sequential
Interdependence
Finished
Product




Pooled
Interdependence
Finished
Product




Reciprocal
Interdependence
Finished
Product

Gasser, L. (1986). “The integration of computing and routine work”. ACM Transactions on Information Systems

Produksjonsgitter består av følgende:

Primary work (primærarbeid)



Articulation work (sekundærarbeid)



Misfits

Fitting

En strategi for å håndtere en misfit mellom arbeidsrutine og datasystem

1. Justere datasystem
2. Justere arbeidsrutinene
3. Justere begge

Augmenting

Gjøre ekstra arbeid for å ta igjen for misfits.

1. Verifisere og dobbeltsjekke data.
2. Lete etter kilden til problemet.
3. Samle informasjon fra flere kilder
4. Ytterligere opplæring.
5. Arkivering av data for å gjøre opp for manglende lagring

Working around

Bevisst bruke datasystemer på måter det ikke var designet for, for å omgå misfits.

1. Justere datainput.
2. Endre arbeidsrutiner.
3. Benytte alternative systemer.

Hanseth, O., & Lundberg, N. (2001). Designing work-oriented infrastructures. Computer Supported Cooperative Work (CSCW), 10(3-4), 347-372.r sømløs integrasjon. (available also in English)

What do [the a ures? How are these infra

This term draws e developed to support specific d universal services provide tructures means infrastru

5. Beyond universal service: work oriented infrastructures

Having argued that the design of information systems for hospitals has a lot to learn from the development of "classical" infrastructures, we will now move one step further trying to identify features of the paper based radiological infrastructure which go beyond those of "classical" infrastructures – features whose "design" can teach us some lessons about the design of electronic radiological infrastructures as well as others. Taking this step is of crucial importance because implementations of PACS systems so far seem to contribute to the reproduction of existing practices rather then changing them (Bryan at al., 1998; Tellioglu and Wagner, 1996). This was also what happened in the case we studied, and that will largely be the result of the three design proposals presented in section 4.3. In all these examples, some local changes and benefits may be achieved, but the overall structure stays unchanged. And, in fact, it may be even harder to change because the practice is now (i.e. after the implementation of PACS/RIS systems) embedded into larger and more complex material structures and the socio-technical network that needs to be changed to improve the practice has become even more irreversible.

We will argue that the radiological infrastructure described in this article has some features which it has been attributed in order to support specific communities of practice in their work. In this case we are talking about highly complex and specialized practices whose properties are largely hidden for those who are not members of these communities (and which also the members are unconscious about). We call such infrastructures *work oriented infrastructures* while the "classical" infrastructures can be called "universal service infrastructures" because they are providing universal services to all citizens. The services provided by the latter kind of infrastructures are fairly simple in terms of user interfaces and functionality, used by everybody, and equal for all. Power infrastructures deliver 220 (110) voltage current, telecommunication infrastructures give us telephone services so we can call our friends, roads enable us to drive our cars, etc. And the "user needs"

Lecture 4

Denne uken!!

- ERP sjeldent implementert og derfor blir det vanskelig
- Enterprise research planning.
- Cloud computing
- Cloud ERP vs On premise ERP

Hva er forskjellen mellom ERP og cloud ERP





- Dekker funksjoner og integrerer prosesser, ressurser etc på tvers av organisasjonen
- Bedre kommunikasjon mellom funksjoner og prosesser
- Ett system med ulike moduler for diverse funksjoner, som er generiske

- Gjør de samme prosessene over nett
- Trenger ikke å kjøre det fra egne servere
- Billigere fra starten av implementeringen

Positive og utfordrende sider med ERP systemer

Noen motivasjonsfaktorer:

- “Best practice”
- Kostnadseffektivt
- Mer effektivitet!!!!
- Tilgjengeliggjør informasjon
- Økt kontroll og oversikt
- Integrasjon av IT-systemer

Noen utfordringer:

- Mindre fleksibilitet.
- Endring av system vs. endring av arbeidspraksis
- Opplæring i nye systemer/prosesser
- Implementasjon av systemet
- Unødvendige moduler

Suksessfaktorer for ERP Systemer

- Project team
  - Må ha riktige ansatte, forskjellig bakgrunn, eksterne ERP konsulenter dersom det trengs.
- Technical possibilities
  - Se på mulighetene innenfor, strategi, business felt, prosesser, interne og eksterne systemer
- Strategic decision-making
  - Godt definert business plan som definerer kostnader, tid, risk, ressurser, positive effekter

Ewout Reitsma and Per Hilletofth. (2018). Critical success factors for ERP system implementation: a user perspective. *European business review, 30(3),* 285–310. https://doi.org/10.1108/EBR-04-2017-0075

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Lecture 5

Recap forrige uke

- Arbeids konflikter på grunn av forskjellige standarder
- Forskjellige lokale og globale nivåer av arbeid
- Hidden work

Problematikk relatert til lokal og global tension og standardisering vs. fleksibilitet

- Arbeid på lokalt nivå
  - Redistributing, primary work, work arounds.

- Global vs lokal
  - Tensions
  - Delt med flere ressurser
    - forskjellige type brukere
  - Standardisering og fleksibilitet



Forrige ukens artikler

Viktig: synliggjør utfordringer ved standardisering, IKKE dårlige systemer

- Et laboratorium system
- To forskjellige kontekster

Fokus: tensions mellom kontekster

- Et kartleggingssystem
- Flere forskjellige kontekster av bruk

Fokus: tensions mellom lokal og global



Seamless Integration: Standardisation across Multiple Local Settings

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[2]Norwegian University of Science and Technology (NTNU), Trondheim, Norway
(E-mail: eric.monteiro@idi.ntnu.no)

Abstract. The pressure towards tighter or "seamless" integration of health information systems is a recurring issue with both practical and analytical relevance. It taps into a discourse in the IS literature in general and organisation and management science in particular. Unfortunately, the prevailing perception of integration in the IS literature is as a predominantly technical issue. The CSCW literature, however, is attentive to the socio-technical aspects of integration. Building on this – but supplemented with recent elaborations in science studies – we aim at exploring the unintended consequences of information systems integration. A user-led perspective implies emphasising the tailoring to local needs based on in-depth studies of the micro practices. We argue, however, that the condition for such an approach is radically undermined by politically motivated, regional changes towards integration with implicated standardisation. Enforcing order in the form of standards across multiple local settings, seemingly a prerequisite for tight integration, simultaneously produces disorder or additional work in other locations for other users. Empirically, our study is based on a large, ongoing integration effort at the University hospital of Northern Norway, specifically studying work practices and perceptions across multiple laboratories.

Key words: integration, standardisation, unintended consequences, work practices



Balancing the Local and the Global in Infrastructural Information Systems

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Eric Monteiro
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A considerable body of literature has demonstrated—empirically as well as analytically—that information systems need to be situated to the local context of use. Yet for infrastructural information systems that span numerous contexts spread out globally, this is literally prohibitive. For these systems to work, it is necessary to strike a balance between sensitiveness to local contexts and a need to standardize across contexts. We analyze a key element in this, namely, spelling out the (largely invisible) "costs" that the different actors pay to achieve working solutions. Empirically, we draw from an ongoing case study. We analyze the attempts of a maritime classification company with 5500 employees located in 300 sites in 100 countries to develop an infrastructural information system to support the surveying of ships globally. We elaborate design implications and concepts relevant to developing information infrastructures that also apply to the context of developing countries.

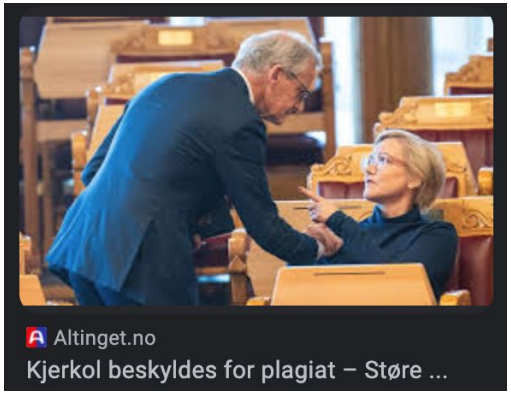
nology. There is a broad consensus about this mutually reinforcing relationship, but there is hardly an agreement about how this process unfolds dynamically. Developing and using the information infrastructures these organizations require have traditionally been regarded as a predominantly technical endeavor (Gunton, 1989). This is no longer the case, as a rapidly expanding body of literature addressing an array of issues of social, economical, institutional, political, and strategic nature demonstrates (Kahin & Abbate, 1995). Most relevant to us is the subset of this literature focusing on how the development and use of information infrastructure is interwoven with social and strategic issues in business organizations and in developing countries. This body of work explores a number of issues including: the heterogeneity of information systems due to different local needs (Davenport, 1998), the in-

Standardiseringer lager tensions over konteksten

- Order and disorder:
  - Standardization process: imposing the order of uniformity
  - Across settings: produce ‘disorder’
  - Unintended consequences
  - E.g. access to results; available options for physician when ordering tests; “hidden” results.
- Granularity of standardization
  - What to standardize?
  - The vendor based the design of system on most productive laboratories.
  - Makes Microbiology invisible/problematic

Kildehenvisning!

- Blitt mye viktigere nå.
- Viktig for eksamen!



Fem mistenkt for Chat GPT-juks på eksamen ved NTNU

Så langt har elleve studenter ved NTNU blitt mistenkt for fusk etter eksamensperioden denne våren. Fem av dem for bruk av kunstig intelligens.

Med forskningsdesign menes planen for gjennomføring av studien (Skilbrei, 2019), og beskriver hvordan vi har gjennomført studien fra idé og tema, utforming av problemstilling og hvordan undersøkelsen er gjennomført. Å lage forskningsdesign innebærer å legge en plan, velge datainnsamlingsmetode, utvalg og dataanalyse som er innafor tidsramma og de ressursene en har (Johannessen et al., 2016). Det er formålet med prosjektet sammen med problemstillinga som legger grunnlaget for metodevalget. Problemstillingen skal ifølge Thagaard (2018) bidra til å gi svar på formålet med studien gjennom å være et spørsmål som avgrenser og er retningsgivende for arbeidet med prosjektet. I tillegg skal problemformuleringen kunne besvares i løpet av studien.

Begrepet "problem" i akademisk forstand er ifølge Justesen og Mik-Meyer (2010) et uttrykk for noe som forskere mangler kunnskap om, eller noe en umiddelbart ikke kan forstå. Problemstillingen skal ifølge Thagaard (2018) bidra til å gi svar på formålet med studien gjennom å være et spørsmål som avgrenser og er retningsgivende for arbeidet med prosjektet. I tillegg skal problemformuleringen kunne besvares i løpet av studien. For oss ble formålet *å utvikle kunnskap om den politiske ledelsesrollen i en 3.0 versjon av kommunen.* Tidligere forskningsarbeid og andre forskeres erfaring rundt hvordan en god problemstilling blir til er lagt til grunn for utvikling av denne studiens problemstilling:

Kildehenvisning 101 ;)

- Finnes mange forskjellige standarder anbefaler APA 7
- Andre fakulteter kan ha andre standarder.

helt ok oppsummering av medisinske fakultet

https://www.med.uio.no/studier/ressurser/kildebruk/apa-stilen.html

Uio anbefaler

https://www.sokogskriv.no/referansestiler/apa-7th.html#artikler-fra-leksikon-oppslagsverk

Eksempel fra kilden jeg bruker

“Når du skriver en akademisk tekst er det svært viktig at du overholder alle regler for sitering og kildehenvisning. Hovedregelen er at kildene du bruker skal være lett identifiserbare, både i teksten og i en litteraturliste bakerst i teksten.Hensikten er at du skal gjøre det så lett som mulig å finne frem til den kilden du bruker. Det er grunnleggende for alt akademisk arbeid at leseren kan kontrollere at du har dekning i kildene for det du sier. Åpenhet og kontrollerbarhet, eller at leseren kan ha mulighet til å ’kikke deg i kortene’, er avgjørende for en vitenskapelig praksis. Det finnes flere ulike utforminger av kildehenvisninger og litteraturlister, blant annet Harvard-stilen og Chicago-stilen.” (UIO, 2023)

Et annet eksempel

https://www.uio.no/for-ansatte/arbeidsstotte/sta/enheter/uv/veiledning-i-akademisk-skriving/apa-som-referansestil_2021.docx

Spørsmål?

Takk for i dag!

Send evt andre spørsmål på mail:

Pederfs@uio.no