Implementing Learning Analytics

Barbara Wasson
Professor, Department of Information Science & Media Studies
Director, Centre for the Science of Learning & Technology
PEPPERKAKEBYEN
(Gingerbread City)
Drawing on interdisciplinary collaboration, SLATE investigates the technological, pedagogical, interpretive, cultural, ethical, and legal aspects of learning analytics (LA) and artificial intelligence in education (AlEd), and promotes the responsible use of technology in education.

Visit us: http://slate.uib.no
1 Professor + 1 Emeritus (hiring 1 professor)
8 Researchers
1 Postdoc (hiring 2)
1 Associate Professor (announcing soon)
5 PhD fellows (5 defended in 2023)
Admin leader
Study Administrator
2 Senior Developers
Communications (50%)
5 Professor II
Affiliated Faculty

MALGORZATA AGNIESZKA CYNDECKA
Associate Professor (Law)
<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
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<tbody>
<tr>
<td>Artificial Intelligence in Education: Layers of Trust (EduTrust AI)</td>
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<td>DALI (dalicitizens.eu)</td>
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</table>
Enthusiastic children calling out English words at a screen where there is a space ship that moves towards overtaking another planet IF the pronunciation is almost correct. A virtual English teacher is leading them from the screen through this exciting game while a teacher in the classroom helps individual students who need more help. In daily use in China!
AI Techniques
- Speech recognition
- Machine vision
- Face recognition

Learning Analytics
Multimodal (MMLA)
<table>
<thead>
<tr>
<th>Elev 1</th>
<th>Elev 2</th>
<th>Elev 3</th>
<th>Elev 4</th>
</tr>
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<tbody>
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</tbody>
</table>

**AR LUMILO GLASSES**

[https://kenholstein.myportfolio.com/the-lumilo-project](https://kenholstein.myportfolio.com/the-lumilo-project)
What data is being collected?

Surveillance?

Data protection?

Legal?

Ethical?

Cultural?

Responsible Use?
AGENDA

➤ Learning Analytics
➤ AVT project: Implementing LA in Norway
➤ Norwegian Expert Commission report
➤ Norwegian Expert Commission NOU
AI, LA, AND EDUCATION
A thorough and critical overview of the use of artificial intelligence in education.

Wayne Holmes,
Jen Persson,
Irene-Angelica Chounta,
Barbara Wasson &
Vania Dimitrova (2022)

https://rm.coe.int/artificial-intelligence-and-education-a-critical-view-through-the-lens/1680a886bd
“Learning analytics is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs”

1st International Conference on Learning Analytics & Knowledge (LAK11)
“THE USE OF STATIC AND DYNAMIC INFORMATION ABOUT LEARNERS AND LEARNING ENVIRONMENTS, ASSESSING, ELICITING AND ANALYSING IT, FOR REAL-TIME MODELLING, PREDICTION AND OPTIMISATION OF LEARNING PROCESSES, LEARNING ENVIRONMENTS, AS WELL AS EDUCATIONAL DECISION-MAKING”

Dirk Ifenthaler (2015)
LA PROCESS (LIFECYCLE)

1. Learning Activity
2. Data Collection
3. Data Storing & Processing
4. Analysing
5. Visualisation
6. Feedback Actions

ISO/IEC JTC1/SC36 LA
STAKEHOLDERS

LEARNERS & TEACHERS / INSTRUCTORS / TUTORS / ASSISTANTS

EDUCATIONAL LEADERS

INSTITUTIONS / SCHOOLS

POLICY MAKERS

PARENTS / GUARDIANS

EDTECH DEVELOPERS

RESEARCHERS
WHAT

Patterns
- Insights into trends (e.g., difficult concepts / courses)
- Engagement, motivation, interactions, networks
- Understanding learning strategies and paths

Prediction
- Trends (dropouts, success)
- Early warning > early interventions (failure/retention)
- Final grades

Recommendations
- Adaptive systems
- Individualised feedback / Group (cluster) feedback
- Pedagogical resource / activities
- Courses / Curriculum redesign / Learning design
1. Supporting student development of lifelong learning skills and strategies
2. Provision of personalised and timely feedback to students regarding their learning
3. Supporting development of important skills such as collaboration, critical thinking, communication and creativity
4. Develop student awareness by supporting self-reflection
5. Support quality learning and teaching by providing empirical evidence on the success of pedagogical innovations

BEST PAPER
INQ-ITS: PERSONALISED ONLINE LABS

<table>
<thead>
<tr>
<th>Class: Mr. Green – Section 3</th>
<th>Report as of: 25 SEP 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypothesis Formation</strong></td>
<td></td>
</tr>
<tr>
<td>Identify Independent Variable</td>
<td>High 12</td>
</tr>
<tr>
<td>Identify Dependent Variable</td>
<td>High 12</td>
</tr>
<tr>
<td>Relationship between variables</td>
<td>High 12</td>
</tr>
<tr>
<td><strong>Design &amp; Conduct Experiments</strong></td>
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</tr>
<tr>
<td>Control for Variables Strategy</td>
<td>High 3</td>
</tr>
<tr>
<td>Targeting Independent variables</td>
<td>High 3</td>
</tr>
<tr>
<td><strong>Data Interpretation</strong></td>
<td></td>
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<tr>
<td>Correct or incorrect claims</td>
<td>High 3</td>
</tr>
<tr>
<td>Selecting trials to warrant claims</td>
<td>High 3</td>
</tr>
<tr>
<td><strong>Communicating Findings</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High 15</td>
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</tbody>
</table>

LA Dashboard (Teacher)

Science Assistsments: Inquiry skill by class with at risk students

Report as of: 25 SEP 2010

<table>
<thead>
<tr>
<th>Skill (%)</th>
<th>Student Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>John Smith</td>
</tr>
<tr>
<td>5</td>
<td>Harry Grim</td>
</tr>
<tr>
<td>14</td>
<td>Sally Winn</td>
</tr>
<tr>
<td>14</td>
<td>Horace Black</td>
</tr>
<tr>
<td>16</td>
<td>Finn Turner</td>
</tr>
<tr>
<td>16</td>
<td>Jessica Foley</td>
</tr>
<tr>
<td>19</td>
<td>Rebecca Dale</td>
</tr>
<tr>
<td>23</td>
<td>Sam Stone</td>
</tr>
<tr>
<td>26</td>
<td>Eric Smith</td>
</tr>
<tr>
<td>31</td>
<td>Valerie Garibaldi</td>
</tr>
<tr>
<td>32</td>
<td>Philip Waters</td>
</tr>
<tr>
<td>32</td>
<td>Daniel Tossel</td>
</tr>
</tbody>
</table>
Teacher has full control

Mohammad Khalil & Gleb Belokrys
## Partial automation

<table>
<thead>
<tr>
<th>Student</th>
<th>Events</th>
<th>Session event</th>
<th>Time on platform (minutes)</th>
<th>Last activity</th>
<th>Arrows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muhammad Khalil</td>
<td>140</td>
<td>1</td>
<td>60</td>
<td>Tuesday, April 20, 2021, 3:27:53 pm</td>
<td>&gt;</td>
</tr>
<tr>
<td></td>
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### Notifications

- Away for a long time
- Lykke til med eksamensinleveringen
- Lykke til med inlevering av eksamen
- Call for a zoom call
- Lykke til med inlevering av eksamen

### Template

**Subject:**
Lykke til med inlevering av eksamen

**Body:**
Det er fint om dere husker å benytte kandidatnummer og emnekode(UNI56000) i finnavnet:
The course gives an introduction to the role of language and culture in the construction of national identity in Scandinavia. The primary focus is on the period from the 12th century to the present, but references will also be made to earlier periods, for example the Viking era. Among the topics that will be covered are the following: the historical evolution of the Scandinavian languages, including the emergence of the two varieties of standard Norwegian (bokmål and nynorsk), different dialects and sociallects, and ideological debates over language planning and culture. In order to explore the issue of a distinct Scandinavian identity, we will also look at the relationship between the Scandinavian countries and their Nordic neighbors (Finland, Iceland, Greenland, the Faroe Islands and the Åland Islands). In addition, the languages and cultures of the indigenous people in Scandinavia will be addressed. Throughout the course of the 19th century, different attempts were made to forge a distinct Norwegian, Swedish or Danish national identity, often by focusing on what set one of the countries apart from the other two. At the same time, one can also find an intellectual movement that stressed brotherhood and unity among the three Scandinavian countries, which were often likened to three branches growing out of the same tree. Through a focus on language and culture, SAS1 traces the evolution of these two opposing tendencies - the desire for a separate national identity as well as for a specifically Scandinavian identity - up until the current moment.
LA Dashboard (Student)

Molenaar, Horvers, Dijkstra, Baker (2020)
CHINESE NATIONAL ASSESSMENT CENTRE FOR EDUCATION QUALITY
NATIONAL OVERVIEW

LA Dashboard
(National)
CHINESE NATIONAL ASSESSMENT CENTRE FOR EDUCATION QUALITY
REGIONAL ZOOM

LA Dashboard (Regional)
AVT PROJECT

ACTIVITY DATA FOR ASSESSMENT & ADAPTATION
AVT: Activity Data for Assessment and Adaptation
AVT1 (2017 – 2019); AT2 (2019 - 2024)

AVT is an R&D project that identifies opportunities and highlights challenges that the education sector faces when it comes to the use of student activity data in learning analytics.

The most important objectives:

- Analyse student activity data across different tools (i.e. various providers)
- Support teachers in adapting teaching and assessment work
- Suggest relevant content that the student can work on

2022
35 schools
13 EdTech vendors
xAPI international standard for activity data

12 TEACHERS
AVT ACTIVITY DATA (GITTHUB)
Aktivitetsdata (xAPI standard)
ACTIVITY DATA (xAPI)

- **Feideindikatoren** (used to tie a learning activity to a student)
- **Feideindikatoren** for school owner, school, client (vendor)
- **tag** that ties learning activity to a domain reference model (fagkart)
- **oppgave-id**
- **svar på oppgaver**
- **hints brukt**
- **success** (right or wrong answer)
- **score** (min, max, raw, scaled)
- **tidsstempel på startet oppgave**
- **tidsstempel på avsluttet oppgave**
- **oppgavetype**
C1: Challenges identified related to LA core issues of scalability

C2: Gaps related to xAPI expressibility and conceptual solution

C3: Technical solution implemented and validated

MITT FAGKART
FEIDE Service: Secure login and data sharing in education and research
RECOMMENDATIONS
for teacher (individual / group / class level) or for a student

• Competence goal (for entire class / an individual / a group)
• Topic or theme (→ Fagkart)
• Difficult topics (e.g., 3D geometry)
• Misconceptions
• Types of tasks (f.eks. MC, video, text)
• Resources (tool x fra vendor y)
• Specific tool (Chapter 5 fra tool x from vendor y OR page 3 from tool xx from vendor yy)
ECO SYSTEM FOR LA
Eco-System for Learning Analytics in the School Sector

- planning tool
- search tool
- vendors
- KGV: billing tool ("spotify" model)
- Resource catalogue
- tags → vendor tool
National database for disciplines, curriculum & educational offerings for schools.
KGV Payment Model (licencing of vendor tools)
WHAT ABOUT THE DATA & ALGORITHMS
CAN WE USE THE DATA – REGULATORY

WHO OWNS THE DATA?

PRIVACY REGULATIONS (PERSONAL DATA / SENSITIVE DATA)

GDPR – GENERAL DATA PROTECTION REGULATION

+ NATIONAL LAWS

CONSENT / OBLIGATION
CAN WE USE THE DATA -- REGULATORY

DATA PROTECTION IMPACT ASSESSMENT (DPIA)

RISK ANALYSIS;
INPUT FROM ALL STAKEHOLDERS
- PARENTS, STUDENTS, TEACHERS, SCHOOL OWNERS, . . .

DATA HANDLING AGREEMENT

STORAGE;
DE-IDENTIFIED / PSEUDO-ANONYMOUS;
HOW LONG CAN IT BE STORED, ETC . . .
Norwegian Data Protection Agency (Datatilsynet)

**Sandbox for Artificial Intelligence**
- Legal basis for data handling
- DPIA
- Transparency (explainability)
- Communication

**Norwegian laws are not specific enough**
DO WE HAVE THE DATA -- TECHNICAL

CAN YOU ACCESS THE DATA?
REALTIME ; SCHEDULED
E.G., Vendors have to implement an API for us to access; Not so easy

DO YOU HAVE THE RIGHT DATA?
AT THE MERCY OF THE LEARNING TOOL DEVELOPERS!
Machine Learning:

- Use phase
- Development phase

Training phase

Learner Model

Analyse- & Anbefalingsalgoritmer

frontend
backend

activity data
anonymised activity data

LRS
LRS
Parent/Guardian (Foresatt) view on Mitt Fagkart – shows that parents can exclude their child’s data from the “training” of the adaptive algorithm.
ANALYTICS

DO YOU HAVE THE DATA IN THE RIGHT FORMAT?
UNSTSTRUCTURED, STRUCTURED, …
E.G., STANDARD -- xAPI

DESCRIPTIVE STATISTICS – ALGORITHMS
TAKES TIME TO FIND THE RIGHT ANALYSIS METHODS
VALIDITY, RELIABILITY
NOT TRANSFERABLE
RESULTS

CERTAINTY

LEGAL REPERCUSSIONS

COMMUNICATION

TRANSPARENCY, EXPLAINABILITY

TO ALL STAKEHOLDERS
Minimise the risk for erroneous or biased AI-assisted decisions

Protect children's vulnerability
Ekspertgruppen for digital læringsanalyse
Ekspertgruppen for digital læringsanalyse

Ekspertgruppen for digital læringsanalyse


Gruppen overleverte sin første delrapport 1. juni 2022. Denne redigerer for hva læringsanalyse er, og hvilke implikasjoner det kan ha for norsk utdanning i dag og i nær framtid. For å beskytte disse spørsmålene har ekspertgruppen løftet fram fire dilemmaer, som synliggjør hvor det er behov for mer kunnskap, bevissthet og refleksjon. Les mer om rapporten under menyvalget "Delrapporten".

laringsanalyse.no
Mandate

The expert group shall provide the Ministry of Education with a better basis for decisions about learning analytics and adaptive teaching and assessment tools in basic education, higher education and higher vocational education, and advise on the need for regulation and input for policy development and measures from the Ministry of Education and underlying agencies (e.g., Directorates).
EXPERT COMMISSION

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marte Blikstad-Balas</td>
<td>Professor</td>
<td>Department for Teacher Education and School Research, University of Oslo</td>
</tr>
<tr>
<td>Monica Andreassen</td>
<td>Teacher</td>
<td>Science &amp; mathematics, Langnes skole, Tromsø</td>
</tr>
<tr>
<td>Einar Duenger Bøhn</td>
<td>Professor</td>
<td>Department of Religion, Philosophy and History, University of Agder</td>
</tr>
<tr>
<td>Ann-Tove Eriksen</td>
<td>Dept. Director</td>
<td>Directorate for Higher Education &amp; Competence</td>
</tr>
<tr>
<td>Michail Giannakos</td>
<td>Professor</td>
<td>Department of Computer Science, NTNU</td>
</tr>
<tr>
<td>Hedda Huse</td>
<td>Dept. Director</td>
<td>Directorate for Education and Training</td>
</tr>
<tr>
<td>Malcolm Langford</td>
<td>Professor &amp; Director</td>
<td>Department of Public and International Law, University of Oslo &amp; Director, Centre for Experiential Legal Learning (CELL)</td>
</tr>
<tr>
<td>Eirin Oda Lauvset</td>
<td>Lawyer</td>
<td>Data Protection Officer, Asker Municipality</td>
</tr>
<tr>
<td>Per Henning Uppstad</td>
<td>Professor</td>
<td>Norwegian Centre for Reading Education and Research (national centre), University of Stavanger</td>
</tr>
<tr>
<td>Barbara Wasson</td>
<td>Professor &amp; Director</td>
<td>Department of Information Science &amp; Media Studies, University of Bergen &amp; Director, Centre for the Science of Learning &amp; Technology (national centre)</td>
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(Ministry of Education, Secretariat: Hilde Hultin, Jon Lanestedt, Øystein Flø Baste)
Central Questions

How does learning analytics affect learning?

What are the challenges and potential of digital learning analytics?

How can the regulations provide the right support for the sector?

What skills does the education sector need to make good judgments about learning analysis?
<table>
<thead>
<tr>
<th>Category</th>
<th>Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher organisations</td>
<td>Utdanningsforbundet, Norsk Lektorlag, Skolenes landsforbund, Skolelederforbundet</td>
</tr>
<tr>
<td>Pupil &amp; Student organisations</td>
<td>Elevorganisasjonen, Norsk studentorganisasjon, Organisasjon for Norske Fagskolestudenter</td>
</tr>
<tr>
<td>Municipalities</td>
<td>Asker, Lillestrøm, Lørenskog, Oslo, Surnadal (IKT-ORKidé-samarbeidet), Voss, Møre og Romsdal, Vestfold og Telemark, Vestland og KS</td>
</tr>
<tr>
<td>Universities and Colleges</td>
<td>Norges miljø- og biovitenskapelige universitet (NMBU), Norges teknisk-naturvitenskapelige universitet (NTNU), Samisk høgskole, Universitetet i Bergen, Universitetet i Oslo, Universitetet i Stavanger, Universitetet i Sørøst-Norge og UiT Norges arktiske universitet</td>
</tr>
<tr>
<td>EdTech suppliers, sellers, and industry organisations</td>
<td>BS Undervisning, Cappelen Damm, Cyberbook, Conexus, Disputas, Fagbokforlaget, Gyldendal, Hypatia, Kikora, LearnLab og IKT-Norge</td>
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<tr>
<td>Legal group</td>
<td>Jon Christian Fløysvik Nordrum, Mona Naomi Lintvedt, Sebastian Schwemer, Emily Weitzenboeck, Malgorzata Cyndecka og Trude Haugli</td>
</tr>
<tr>
<td>Others</td>
<td>Sametinget</td>
</tr>
</tbody>
</table>
Learning Analytics - Some Central Dilemmas
Midway Report

1 June 2022

https://laringsanalyse.no/
Dilemma 1: The need for information vs The need for data protection

Key points:
1. Information for quality development
2. Early intervention
3. When does information gathering become surveillance?
4. Where is the limit for privacy? (school vs private)
5. Does the information give a correct picture?
6. Is assessment influenced by information on learning behaviour? (concern)
Dilemma 2: Learning as an Individualised process vs Social process

Key points:
1. Individual ways of working with digital resources (concern)
2. Active & exploratory learning in interaction with others (more than drill & practice)
3. Safety to try and fail (concern)
4. Can individual data be used to say something about interaction? (social learning focus)
Dilemma 3: Centralisation vs Autonomy

Key points:

1. **Where are the decisions made?** (actors & levels)

2. **Centralised = Approval?**
   - Clarity in the relationship between making central decisions about digital tools and a stamp of approval for the tool need to be addressed.

3. **Does centralisation hinder innovation?**
   - A digital ecosystem where systems, services and solutions interact is a national goal for digitalisation policy in the public sector, including formalised co-management of a digital ecosystem for primary and secondary education. Will this favour large resource developers (e.g., publishers) than smaller SMEs or research-based tools where innovation often takes place?

4. **Centralised standardisation work**
   - Well-functioning standards for data exchange within learning analytics (e.g., xAPI, secure data exchange portals) can serve as a driver for diversity in the EdTech market.
Dilemma 4: Competence Needs vs Competence Reality

Key points:

1. **Vision and reality** (sufficient digital competences; this is currently lacking at all levels of education)

2. **Competence needs in connection with learning analysis.**
   - new demands including critical evaluation of use, opportunities/limitations, ethics/privacy protection, interpretative understanding of dashboards and visualisations, and most of all the effect it will have on student learning

3. **What do we risk if the gap between vision and reality is not closed?**
   - we do not have a solid Norwegian knowledge base about the potential of learning analytics to improve learning -- not closing the gap could lead to a missed opportunity to utilise a large amount of information that could have promoted learning

4. **Is competence development the only answer?**
   - there is a need to place responsibility on the technology providers to provide more transparency on how their technology works and how the information they produce aligns with the pedagogical theories commonly employed by teachers and educators.
LEARNING ANALYTICS – SOME CENTRAL DILEMMAS

Legal Issues (17 pages!)

1. Anonymised data and personal information
2. Legal basis for processing personal data
3. The Constitution and the European Convention on Human Rights the convention (ECHR)
4. The Personal Data Protection Regulation and the main legal basis
5. The Personal Data Protection Regulation and other legal bases
6. Special categories of personal data and secondary use
7. Reuse of personal data for new purposes
8. Minimising risk
9. Built-in privacy protection
10. Development of certification and behavioural norms
11. Assessment of privacy consequences and reduction of high risk
12. Data subjects' rights and participation
13. Processing and storage of personal data in third countries
14. Regulation of individual automated decisions
15. The Procurement Act and the purchase of digital resources
Learning, where did you go in all the hustle and bustle?
Use of pupil and student data to promote learning

NOU (Norwegian Public Report)

6 June 2023

Pedagogical
Legal
Ethical
Infrastructure & Support
Competence needs
ABOUT LEARNING ANALYTICS

• a digital process where the results of LA are linked to the data from the tools in use (+ other data)

• practical testing on a small scale

• there is little systematic research on learning analytics in actual pedagogical practice at all levels of education

• challenges with knowledge transfer from research to practice

(large commercial actors are driving practice → socio-economic consequences)
LEGAL QUESTIONS!

More than just learning analytics

→ tied to the use of student data & the digital tools being used

→ the sector perceives the legal basis for learning analytics as unclear (input meeting & Langford et al., 2022 - see NOU p. 137)
Four main recommendations

"Municipalities, county authorities, and training workplaces may process personal data about pupils and apprentices by means of machine analytics and aggregation when it is ethically and pedagogically justifiable and necessary to carry out duties identified in the Education Law and its regulations.

Examples of such tasks and duties may include adapting education, work on quality development (§17-12) and formative assessment (§ 3-10) according to the regulations of the Education Act. The degree of personal identification shall not be greater than necessary for the purpose in question."
Four main recommendations

To support good and sound learning analysis

3. The expert group recommends establishing a framework for good learning analytics in primary and lower secondary education. The purpose of this recommendation is to strengthen the freedom of choice for students and teachers and provide a better basis for pedagogical decisions on learning analytics to promote learning.

4. The expert group recommends developing overall guidelines for good and responsible learning analytics in higher education and higher vocational education. The purpose of this recommendation is to facilitate good privacy practices and sound learning analytics that promote student learning and increase the quality of education.
Chapter 14
Framework for good learning analytics in basic education

The expert group's clear view is that teachers, school leaders and school owners are calling for a better and more quality-assured overview of which resources are available, their characteristics and the extent to which they fulfil various pedagogical, legal and technical requirements.

We recommend subsidy programmes for the purchase and development of digital learning resources as important drivers for freedom of choice, and that financial measures should be established to test and develop resources with learning analytics functionality.
Recommendations for Basic Education

- Facilitate usage-based pricing models for tools
- Centrally defined quality criteria for tools with LA
- National service catalogue
- Vendors must provide information that justifies and explains how tools work
- Vendors must document that tech specs meet legal requirements
- Quality criteria that provide guidelines for product development
Recommendations for Basic Education

- Grant scheme for purchase & development tools/resources with LA
- Funding:
  1. Innovation, R&D of tools w/ LA & AI
  2. Evaluation of use of resources
- Stimulate innovative LA & AI that meet privacy regulations & Responsible AI
- Ensure that pupils receive customised & comprehensible information
- Measures for teachers, leaders, owners to develop expertise in LA
10 Recommendations for Higher Education

15.8 Ekspertgruppens anbefalinger

- Ekspertgruppen anbefaler at det i samarbeid med sektorene utvikles overordnede nasjonale retningslinjer for god og forsvarelig læringsanalyse. De nasjonale retningslinjene må kunne tilpasses til lokale forhold. Retningslinjene bør minst omfatte disse tiltaksområdene:
  - personvern
  - medvirkning
  - åpenhet
  - valgfrihet
  - anskaffelser

- Ekspertgruppen anbefaler at en statlig aktør utvikler og forvalter de overordnede retningslinjene for god og forsvarelig læringsanalyse i tett samarbeid med sektoraktører som Universitets- og høgskolerådet og Nasjonalt fagskoleråd. Ekspertgruppen understreker at ansvaret for god og forsvarelig læringsanalyse ligger hos institusjonene.

- Ekspertgruppen anbefaler at de overordnede retningslinjene revideres i løn av den raske teknologiutviklingen og minimum hvert femte år.

- Ekspertgruppen anbefaler at retningslinjene omfatter både fellesløsninger, lokale ressurser og ressurser som er fritt tilgjengelige på nett.

- Ekspertgruppen anbefaler at en statlig aktør bygger opp et støttesystem for å hjelpe lærestederne med å utarbeide risikoanalyser, personvernnkonsekvensvurderinger (DPIA) og databehandleravtaler. Den statlige aktøren skal også hjelpe lærestedene i forbindelse med anskaffelsesprosesser og systemutviklingsprosjekter.

- Ekspertgruppen anbefaler at retningslinjene forklarer hva som utgjør god læringsanalyse som fremmer studentenes læring.

- Ekspertgruppen anbefaler at kompetanse i læringsanalyse inkluderes i opplæringsstilbud for pedagogisk basiskompetanse i høyere utdanning og høyere yrkesfaglig utdanning. I tillegg anbefaler ekspertgruppen at læringsanalyse ingår i ulike kursstilbud rettet mot undervisere, ledere og støttepersonell som bistår undervisere, og som deltar i kvalitetsarbeid.

- Ekspertgruppen anbefaler at lærerutdanningen sikrer at nyutdannede lærere har nødvendig kompetanse i læringsanalyse og kunnskap om kunstig intelligens. Institusjonene må vurdere hvordan de kan ivareta slik kompetanse i undervisningen og i læringsutbyttebeskrivelser.

- Ekspertgruppen anbefaler at det utlyses midler til innovasjon, forskning og utvikling på digitale læringsressurser som har funksjonalitet for læringsanalyse og adaptivitet, og midler til å forske på bruken av slike ressurser i autentiske lærings situasjoner.

- Ekspertgruppen anbefaler at institusjonene sørger for at studentene får tilpasset og forståelig informasjon slik at de kan ta stilling til spørsmål om læringsanalyse. Videre er anbefalingen at institusjonene jevnlig evaluerer om studentene opplever at institusjonene ivaretar retten de har til medvirkning.
Student Participation (influence) in learning analytics requires that students gain as thorough an insight as possible into which data and analysis methods are used and how they are used, so that they can benefit from the insight the analyses provide into their own learning and academic progression.

Guidelines:
- must ensure that educational institutions can meet student’s right to influence and their information needs
Transparency  (necessary for student trust)

The Guidelines require educational institutions to provide information on:

• which data is collected from which sources
• how they may be combined with other data
• what the data is actually used for
• the extent to which the individual student can be identified
• who has access to this data
• when collection takes place
• when they can use digital resources without anything being tracked at an individual level
Freedom of choice

The decision on which resources with learning analytics functionality should be available to all HE lecturers is within the institution's framework - and the student’s freedom of choice.

Guidelines:

• It is important to ensure that teachers have access to various resources, but also to safeguard their freedom and responsibility to organise the content, working methods and teaching methods of their teaching
• the scope of student’s freedom of choice with what learning analytics should be must also be linked to whether information about them is actually anonymised
  (aggregated and pseudonymised data as a basis for quality work vs individual follow-up with individual students)
Procurement

Representatives from the sector confirm that possibilities for learning analytics have not been specifically considered when purchasing tools and services.

Guidelines:

• should support the sector in drawing up requirements for learning analytics in tender processes, if relevant
• the requirements must be based on local professional discussions at educational institutions about the needs of teachers and educational institutions, the types of analyses they want, and how learning analytics are intended to support learning processes and quality work
• requirements for inbuilt privacy and information security
Financial & Administrative Resources

Recommendations for HE:

• overall national guidelines are developed for good and sound learning analytics in higher education and higher vocational education and training

• a support system must be developed that assists higher education institutions

• a training programme for teachers, managers and support staff who assist teachers in quality assurance work

• ensuring that newly qualified teachers have the necessary expertise in learning analytics and knowledge of artificial intelligence

Building such a support system will require financial and administrative resources and needs to be analysed in more detail.
SUMMARY:
MY REFLECTIONS
Learning Analytics has a lot of potential

Its implementation is not that straightforward!
What should be addressed on a policy-making level or in legislative framework?

Legal & Regulatory (safeguarding privacy when AI/LA is used)

• **Update national laws and regulations** (together with the GDPR) to give permission to handle personal and/or sensitive data through machine algorithms in situations **when it is justifiable and necessary** to perform obligations set out in the law (e.g., quality work, adapted education, identification of dyslexia...)

• **EU AI Act** will give new insights

• Council of Europe’s Ministers of Education meeting (September 2023) passed a **resolution to the start of work on a legal instrument on the use of artificial intelligence systems in education**
What should be addressed on a policy-making level or in legislative framework?

**Infrastructure & Support**: national digital infrastructure, data processing, standards and common solutions

- Support work with identification of needs, procurement, and use of digital infrastructure
- GDPR: Data Protection Impact Assessment & Risk Analysis - carry out & share work at national level?
- Develop measures to ensure safe and secure handling of educational data (confidentiality, integrity, access)
- Consider standards and national common services for identity management and data sharing
What should be addressed on a policy-making level or in legislative framework?

**Competence** *(LA/AI-literacy: technical & social aspects)*

- Provide good information and advice about safe digital environment (data/information security + privacy) for all.
- Address the competence needs in how to integrate LA/AI into pedagogical practice, quality work in schools, etc..
- Address the necessity to prepare students for a future that includes LA/AI in all aspects of schooling, work, and life.
TAKK!