Jon Sundan

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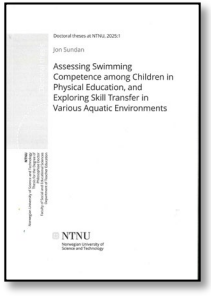
2013

NTNU

2017

2025

2025-



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NTNU

AMBLE

Research Group for Physical Activity, Motor Behavior and Learning

Norgeskart.no


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Hva slags kompetanse trenger barn for å trives, være trygg og mestre aktiviteter i, ved og på vann?

Foto: Privat

NTNU Kunnskap for en bedre verden

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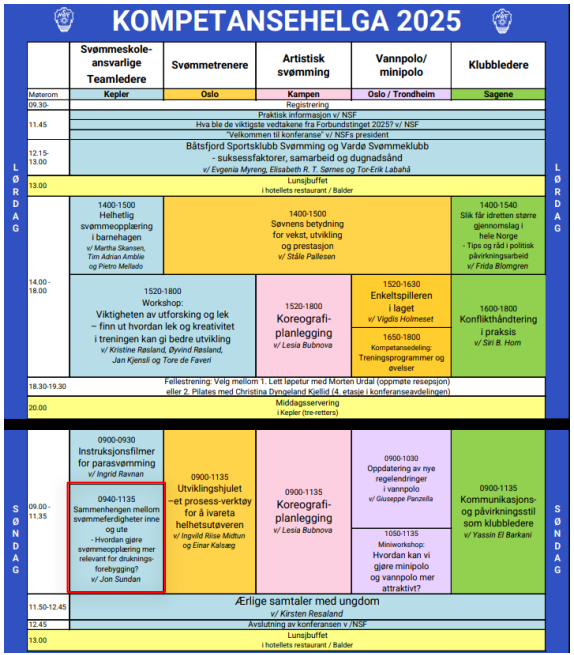
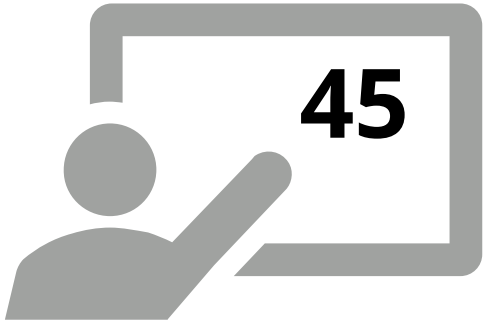
Sammenhengen mellom svømmeferdigheter inne og ute –
Hvordan gjøre svømmeopplæring mer relevant for drukningsforebygging?

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Fokus


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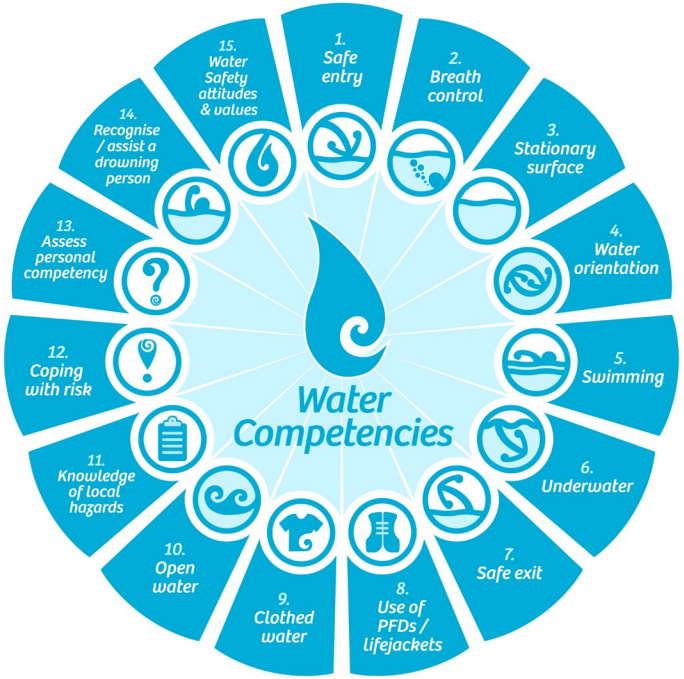
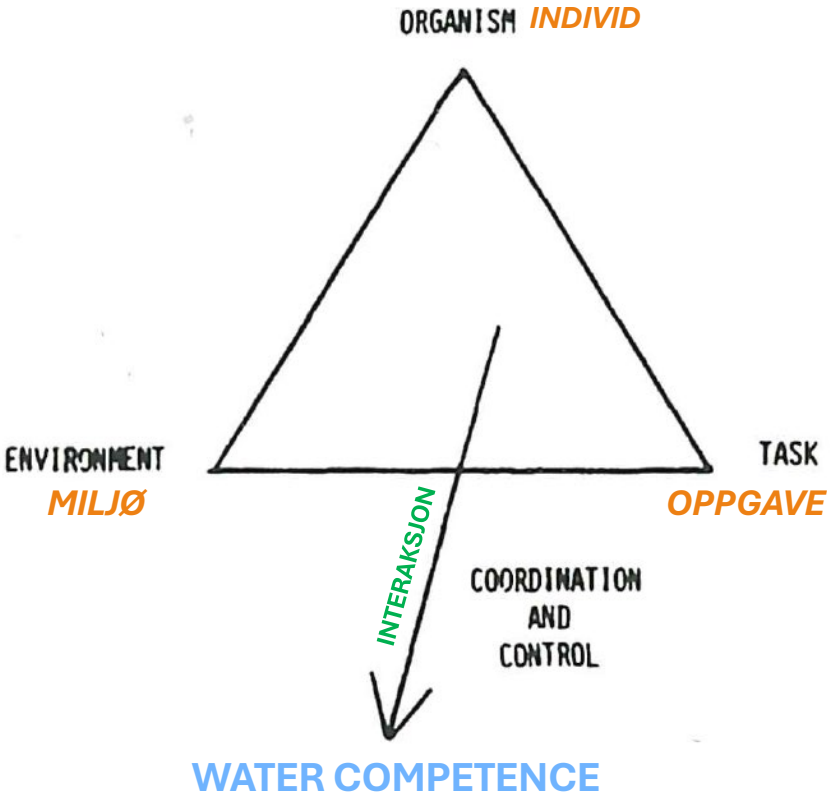
TEORETISK PERSPEKTIV



Modellen lånt med tillatelse fra Drowning Prevention Auckland (n.d.)



Tilpasset fra den originale modellen fra Newell (1986)

Transfer kan beskrives som:

*"the influence of **previous** experiences on performing a skill in a **new** context..."*

(Magill & Anderson, 2017, p. 299)

Transfer

Trening

Konkurranse

«***Transfer***» oppgaven → «***Kriterie***» oppgaven

Transfer forts.

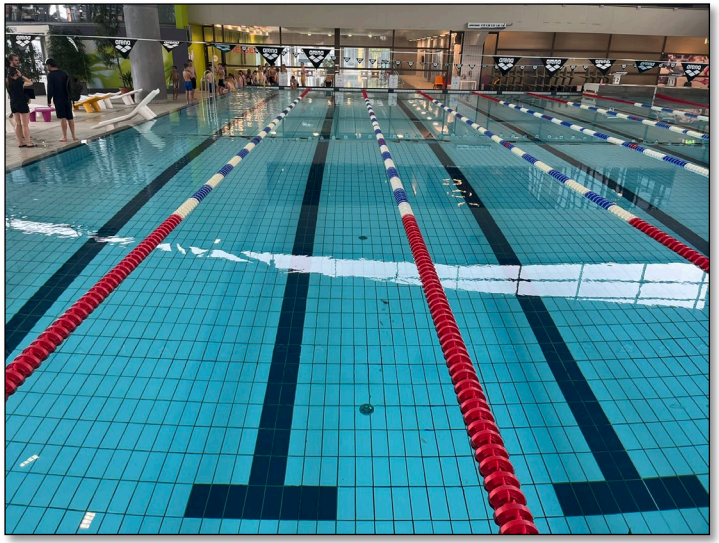
Trening

Konkurranse

«***Transfer***» oppgaven → «***Kriterie***» oppgaven

Transfer forts.

Utdanningskontekst

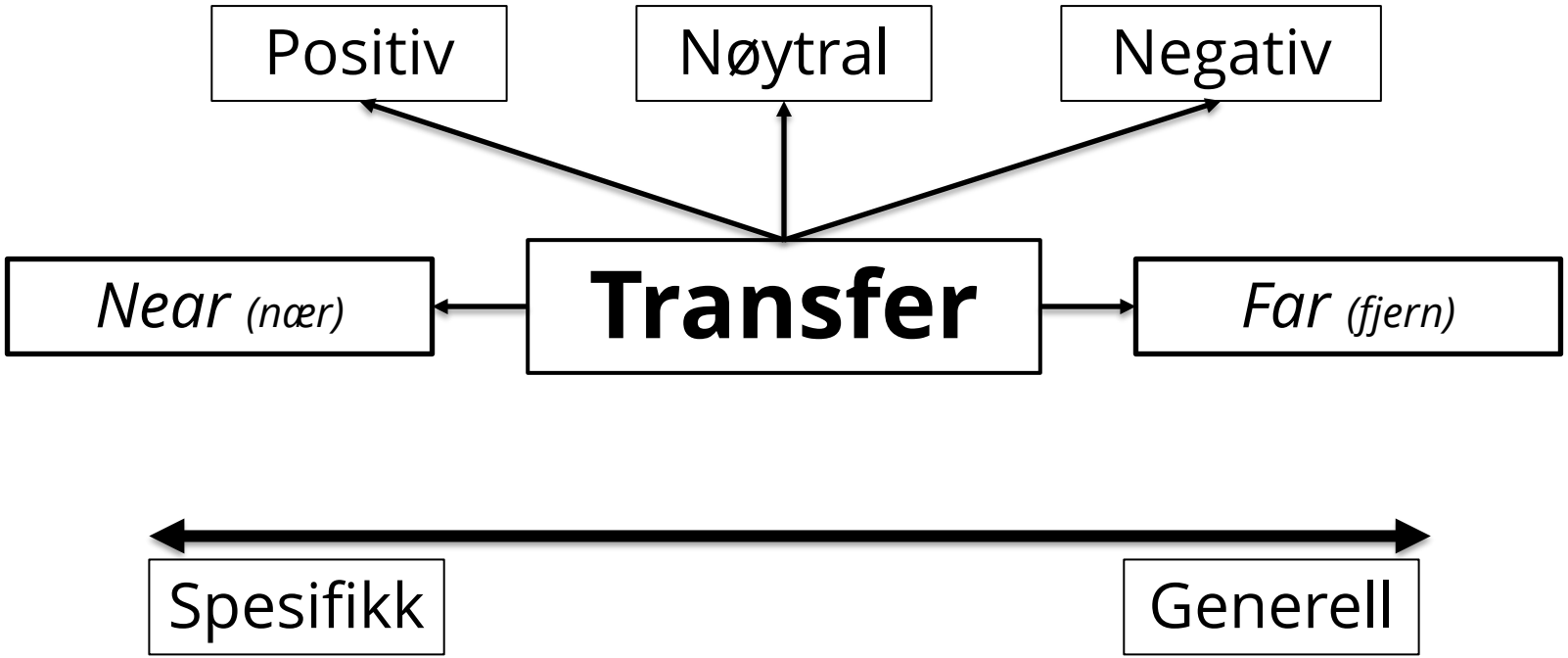


«***Transfer***» oppgaven

Drukningskontekst

«***Kriterie***» oppgaven

Gevinsten (eller tap) i evnen til å utføre en oppgave (kriterieoppgave) som følge av øvelse i en annen oppgave (transferoppgave)



Original Manuscript

Development and Content Validation of the Swimming Competence Assessment Scale (SCAS): A Modified Delphi Study

Perceptual and Motor Skills
2023, Vol. 0(0) 1–19
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Jon Sundan[1], Monika Haga[1], and Håvard Loràs[1]

Abstract

The purpose of this study was to design and develop the Swimming Competence Assessment Scale (SCAS) to measure children's aquatic skills as they align with the physical education curriculum for Norwegian primary schools. We conducted a three-round modified Delphi study involving 22 national experts in the aquatic profession. Experts reached consensus on scale items within an observation form and coding sheet based on a swimming proficiency test for measuring six aquatic skills: water entry, frontstroke swimming, surface dive, float/rest, backstroke swimming and water exit. Independent experts obtained high agreement (scale level: 88%, item level: 80–93%) on the relevance, representativeness, and clarity of the scale. Current results suggest that the SCAS is a valid instrument for researchers and practitioners to observe and record children's aquatic proficiency for the purpose of screening and developing aquatic education.

Keywords

children's aquatic competence, swimming skills, sport assessment, water safety, sport psychometrics

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Article

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Swimming competence of 9–10-year-old Norwegian primary school children: A cross-sectional study of physical education

Jon Sundan
Norwegian University of Science and Technology, Norway

Monika Haga
Norwegian University of Science and Technology, Norway

Håvard Loràs
Norwegian University of Science and Technology, Norway

Abstract

Swimming is a profound source of joy in life. The impact of swimming competence extends beyond leisure, encompassing aquatic skills crucial for the prevention of drowning incidents. The World Health Organization (WHO) strongly advocates for the proactive initiative of teaching basic swimming and water safety skills to school-aged children, which is recognised as a direct and effective measure in mitigating the risk of drowning. This article aims to investigate and quantify aquatic skills and swimming competence in 9–10-year-old primary school children. A study was conducted throughout the academic year of 2021–2022, as an integral component within the primary schools' physical education. The study design was tailored to facilitate large-group assessment, encompassing children from 69 primary schools (*n* = 2421) situated across three Norwegian municipalities. The assessments were administered upon the culmination of the fourth-grade learn-to-swim programs and carried out using the Swimming Competence Assessment Scale, involving six consecutive aquatic skills: water entry, swimming on the front, surface diving, float/rest, swimming on the back, and water exit. The results indicated that 62.5% of the children successfully met the predetermined criteria for swimming competence according to the Norwegian standard. Among the six assessed aquatic skills, proficiency in swimming on the front emerged as the most influential factor contributing to the overall competence level. This study emphasizes the pivotal role of swimming education for school-aged children. It highlights the need to prioritise swimming and water safety education, initiating children's learning journey toward being water-competent.

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Doctoral theses at NTNU, 2025:1

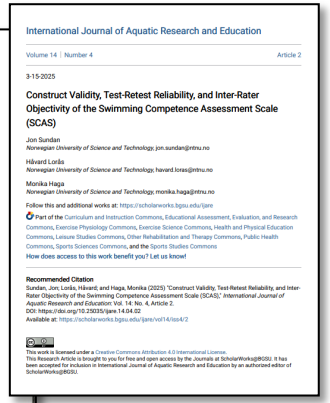
Jon Sundan

Assessing Swimming Competence among Children in Physical Education, and Exploring Skill Transfer in Various Aquatic Environments

Doctoral thesis

NTNU
Norwegian University of Science and Technology
Thesis for the Degree of Philosophiae Doctor
Faculty of Social and Educational Sciences
Department of Teacher Education

NTNU
Norwegian University of Science and Technology



International Journal of Aquatic Research and Education

Volume 14 | Number 4 Article 2

3-15-2025

Construct Validity, Test-Retest Reliability, and Inter-Rater Objectivity of the Swimming Competence Assessment Scale (SCAS)

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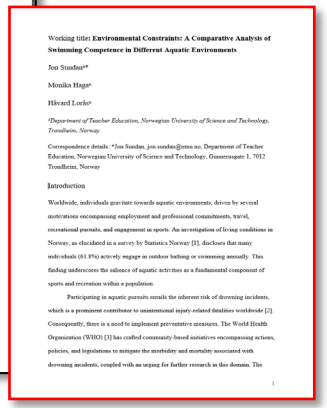
Available at: https://scholarworks.bgsu.edu/ijare/vol14/iss4/2



Working title: **Environmental Constraints: A Comparative Analysis of Swimming Competence in Different Aquatic Environments**

Jon Sundan[a*]

Monika Haga[a]

Håvard Lorås[a]

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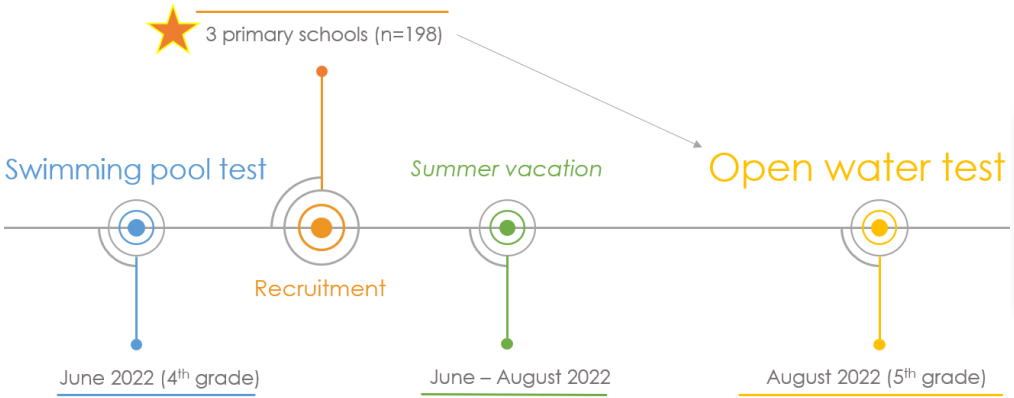
Correspondence details: *Jon Sundan, jon.sundan@ntnu.no, Department of Teacher Education, Norwegian University of Science and Technology, Gunnerusgate 1, 7012 Trondheim, Norway

Introduction

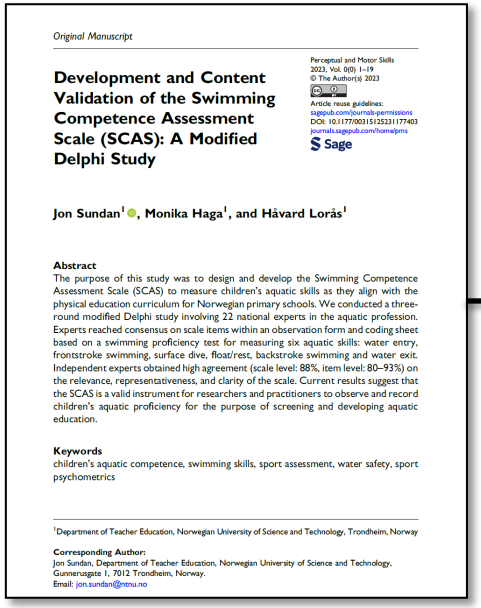
Worldwide, individuals gravitate towards aquatic environments, driven by several motivations encompassing employment and professional commitments, travel, recreational pursuits, and engagement in sports. An investigation of living conditions in Norway, as elucidated in a survey by Statistics Norway [1], discloses that many individuals (61.8%) actively engage in outdoor bathing or swimming annually. This finding underscores the salience of aquatic activities as a fundamental component of sports and recreation within a population.

Participating in aquatic pursuits entails the inherent risk of drowning incidents, which is a prominent contributor to unintentional injury-related fatalities worldwide [2]. Consequently, there is a need to implement preventative measures. The World Health Organization (WHO) [3] has crafted community-based initiatives encompassing actions, policies, and legislations to mitigate the morbidity and mortality associated with drowning incidents, coupled with an urging for further research in this domain. The

Sundan, Lorås & Haga (2025) [Forthcoming]. Environmental Constraints: A Comparative Analysis of Children's Swimming Competence in Different Aquatic Environments. *Physical Education and Sport Pedagogy.*


3 primary schools (n=198)
Swimming pool test
Summer vacation
Open water test
Recruitment
June 2022 (4th grade)
June – August 2022
August 2022 (5th grade)

Måleverktøy



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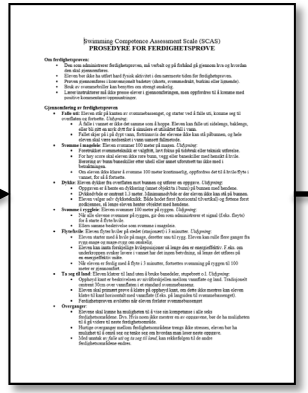
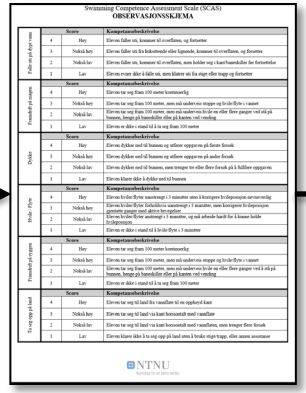


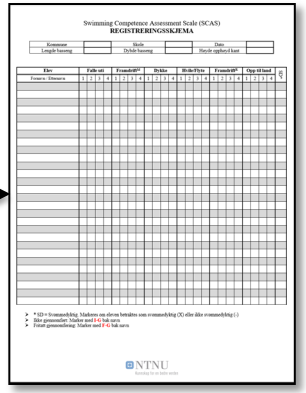
Swimming Competence Assessment Scale (SCAS)
PROSEDYRE FOR FERDIGHETSPROVE

Procedures



Swimming Competence Assessment Scale (SCAS)
OBSERVASJONSSKJEMA

Observation form



Swimming Competence Assessment Scale (SCAS)
REGISTRERINGSSKJEMA

Coding sheet

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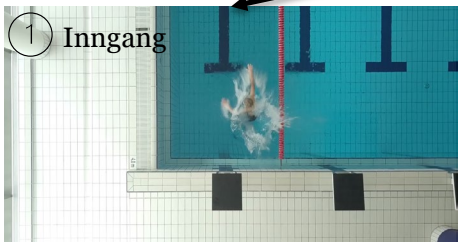
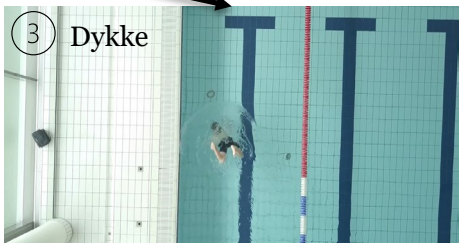
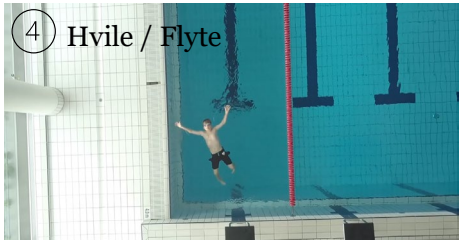
Sundan, J., Haga, M., & Lorås, H. (2023). Development and Content Validation of the Swimming Competence Assessment Scale (SCAS): A Modified Delphi Study. *Perceptual and motor skills*, *130*(4), 1762–1780. https://doi.org/10.1177/00315125231177403

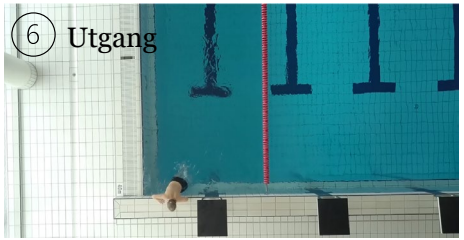
Kompetansemål etter 4. trinn

være svømmedyktig ved å falle uti på dypt vann, svømme 100 meter på magen, og underveis dykke ned og hente en gjenstand med hendene, stoppe og hvile i 3 minutter (og samtidig flyte på magen, orientere seg, rulle over og flyte på ryggen), og deretter svømme 100 meter på rygg og ta seg opp på land









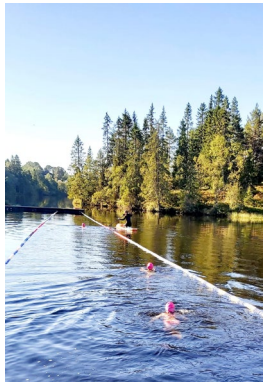
Water Competence, (n. d.)

Kompetansemål etter 4. trinn

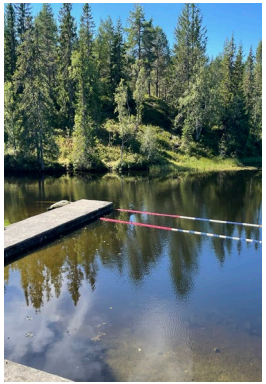
være svømmedyktig ved å falle uti på dypt vann, svømme 100 meter på magen, og underveis dykke ned og hente en gjenstand med hendene, stoppe og hvile i 3 minutter (og samtidig flyte på magen, orientere seg, rulle over og flyte på ryggen), og deretter svømme 100 meter på rygg og ta seg opp på land

1. Inngang

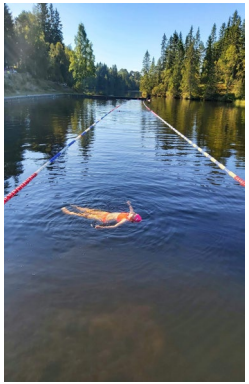
2. Svøm mageleie



3. Dykke



4. Hvile / Flyte



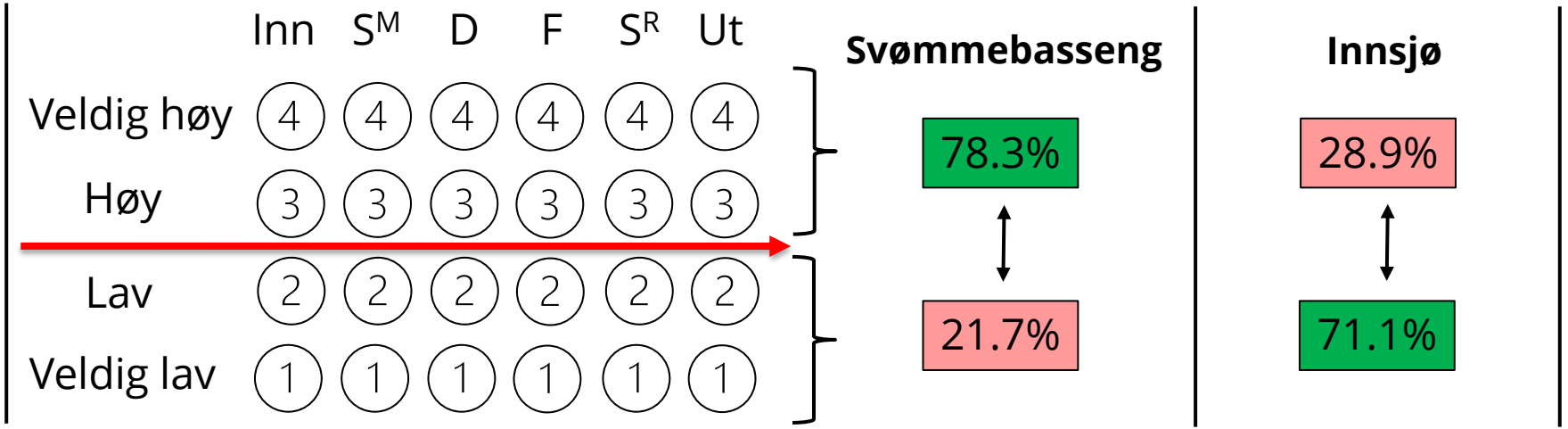
5. Svøm ryggleie

6. Utgang

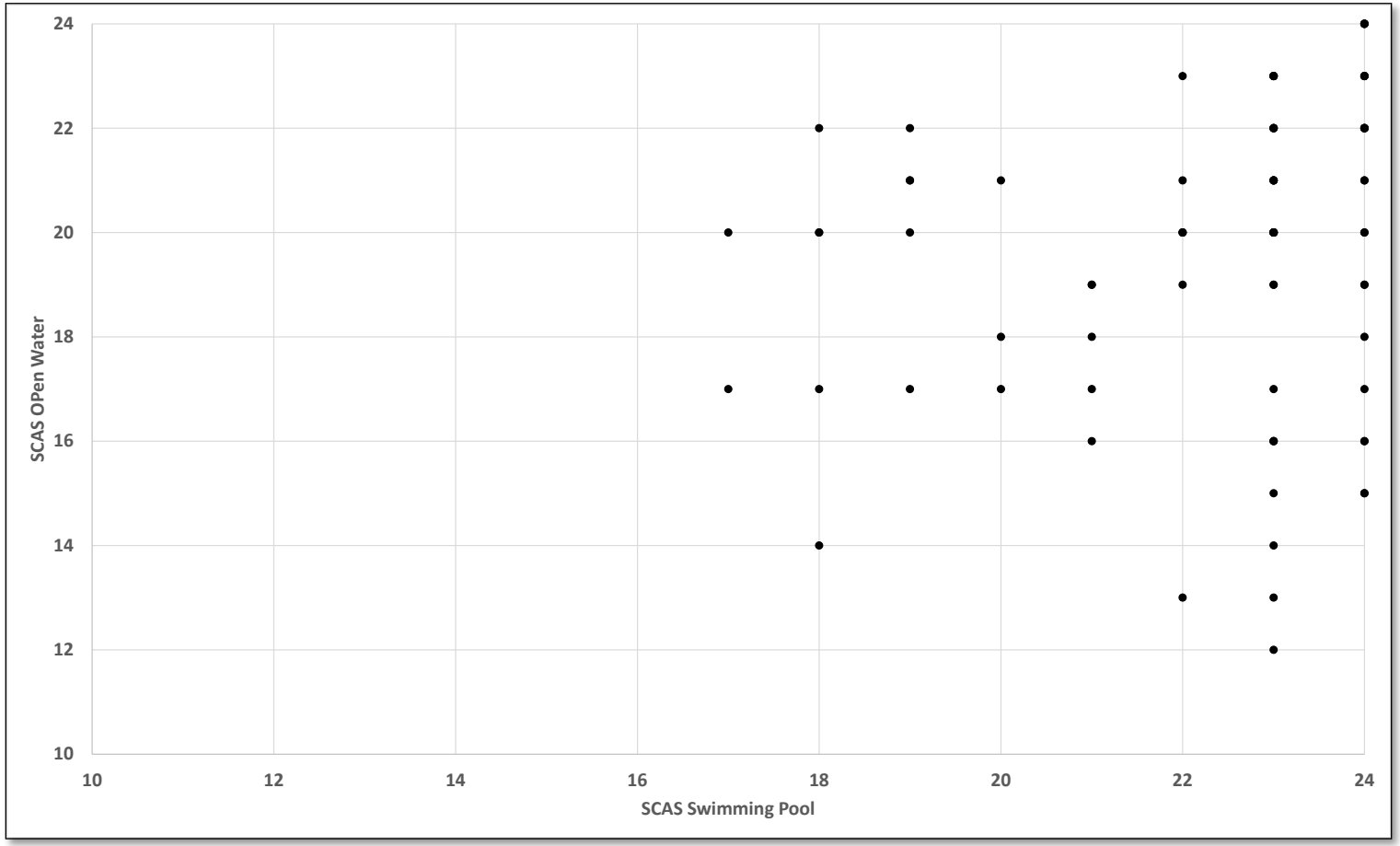
Resultater (N=83)

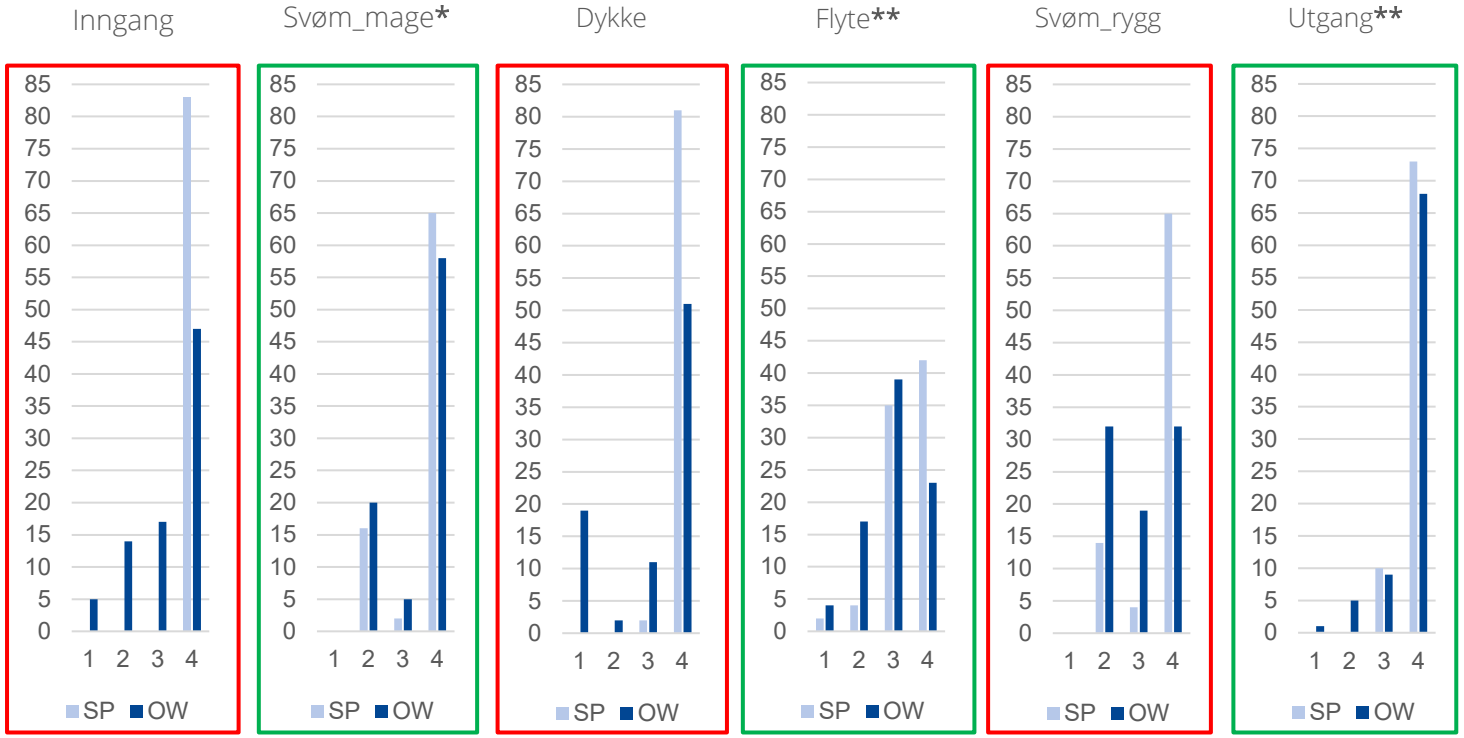
være svømmedyktig ved å falle uti på dypt vann, svømme 100 meter på magen, og underveis dykke ned og hente en gjenstand med hendene, stoppe og hvile i 3 minutter (og samtidig flyte på magen, orientere seg, rulle over og flyte på ryggen), og deretter svømme 100 meter på rygg og ta seg opp på land

Utføre kontinuerlig



		Open-water		
		No	Yes	Total
Swimming pool	No	**19**	1	20
	Yes	**40**	**23**	63
	Total	59	24	83


SCAS OPen Water
SCAS Swimming Pool
24
22
20
18
16
14
12
10
10
12
14
16
18
20
22
24



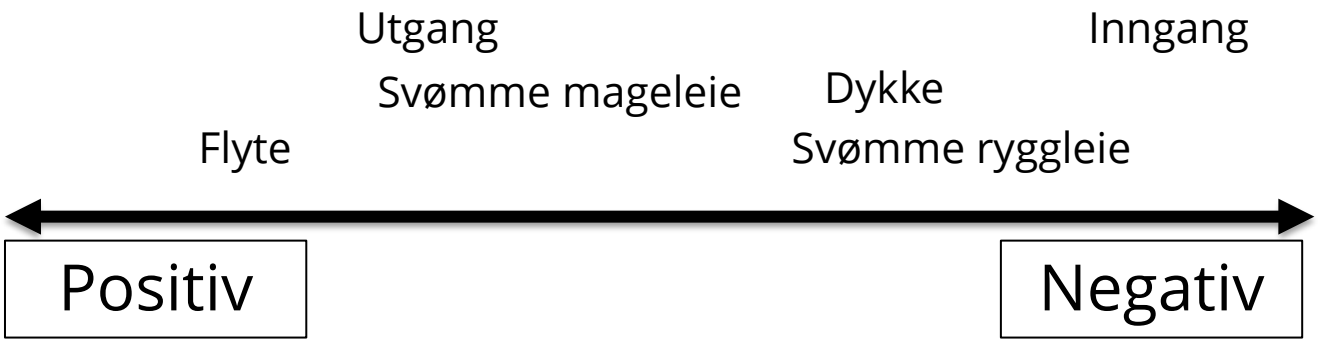
	Swimming pool (SP)
	Open water (OW)

* $p < .05$

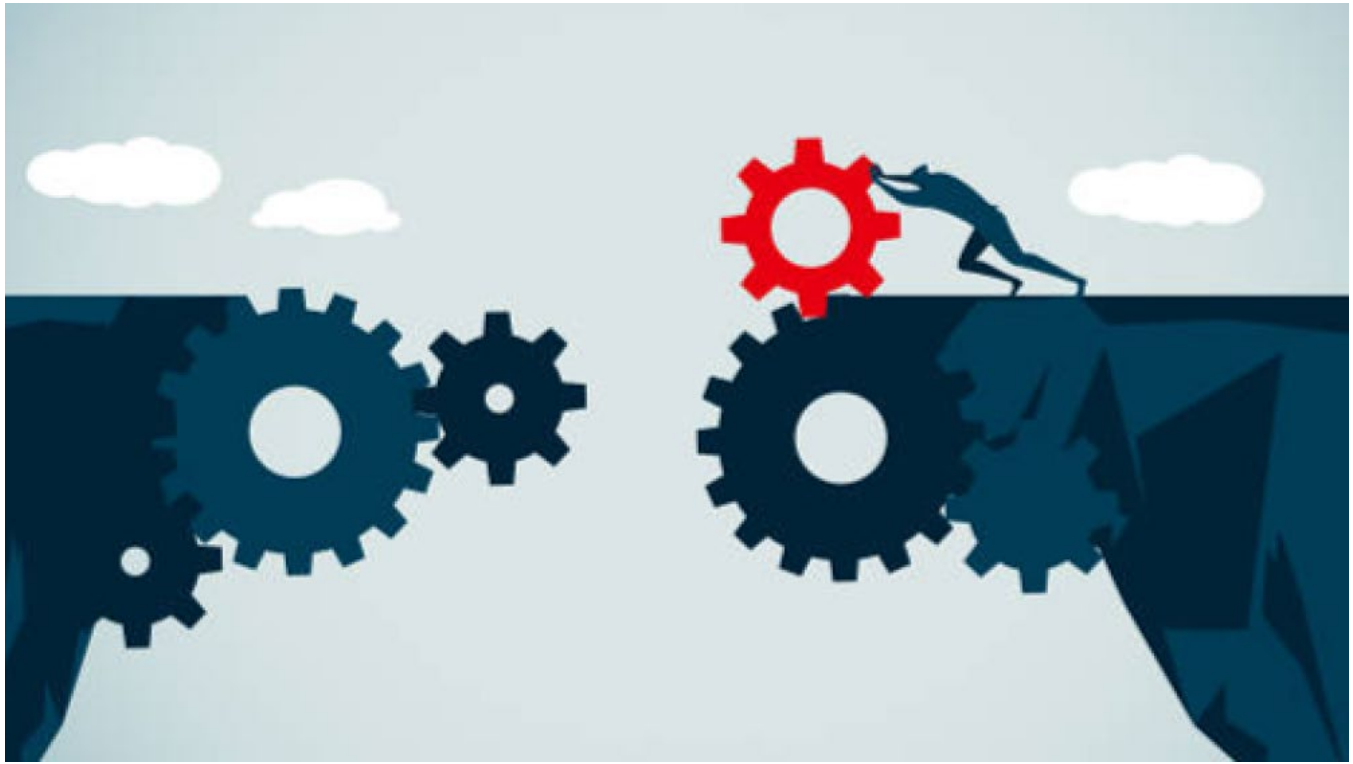
** $p < .01$

Hva forteller resultatene oss?

- Variasjon i grad av transfer
- Omgivelsenes rolle
  - Kaldt vann/ Kuldesjokk respons (CSR)
  - Manglende evne til å tilpasse seg



Hvordan kan vi redusere gapet?



Representativt Lærings Design (RLD)

(Button et al. 2021; Davids et al., 2012; Pinder et al., 2011)

- Forslag: Ethvert bevegelsesproblem vi står overfor på trening (transfer-oppgave) som har samme *grunnleggende struktur* som de du møter i virkelige scenarier (kriterie-oppgave) vil overføres

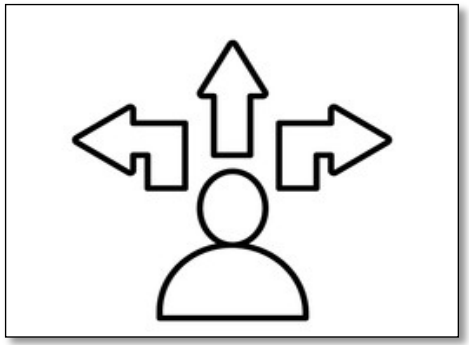
- **Hvordan utformer vi slike oppgaver?**

Hva må kakestykket inneholde?

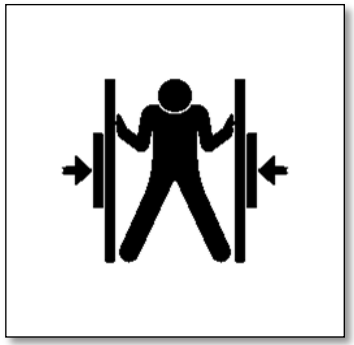
- Hva må være likt?
- Fokusområde
- 4 nøkkelelementer (grunnleggende struktur):

Informasjon

Bevegelser

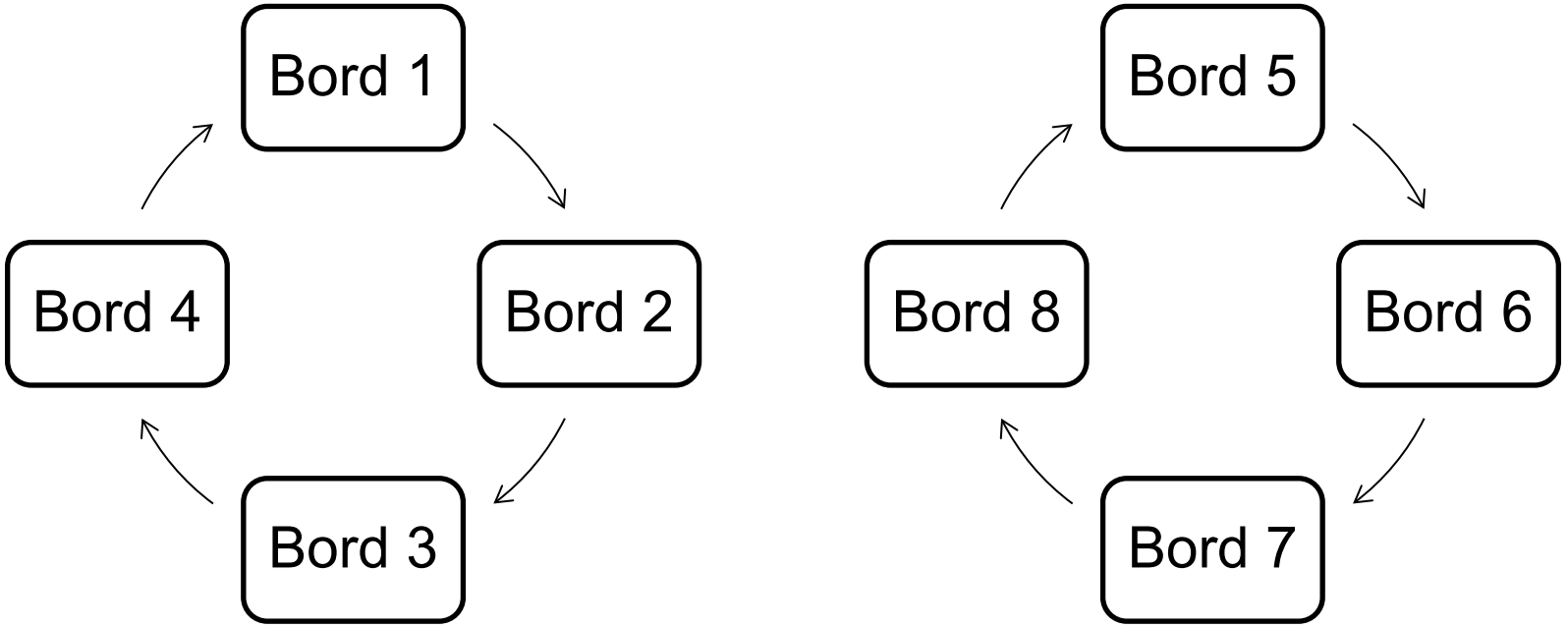


Beslutninger



Trykk

Kaffepause



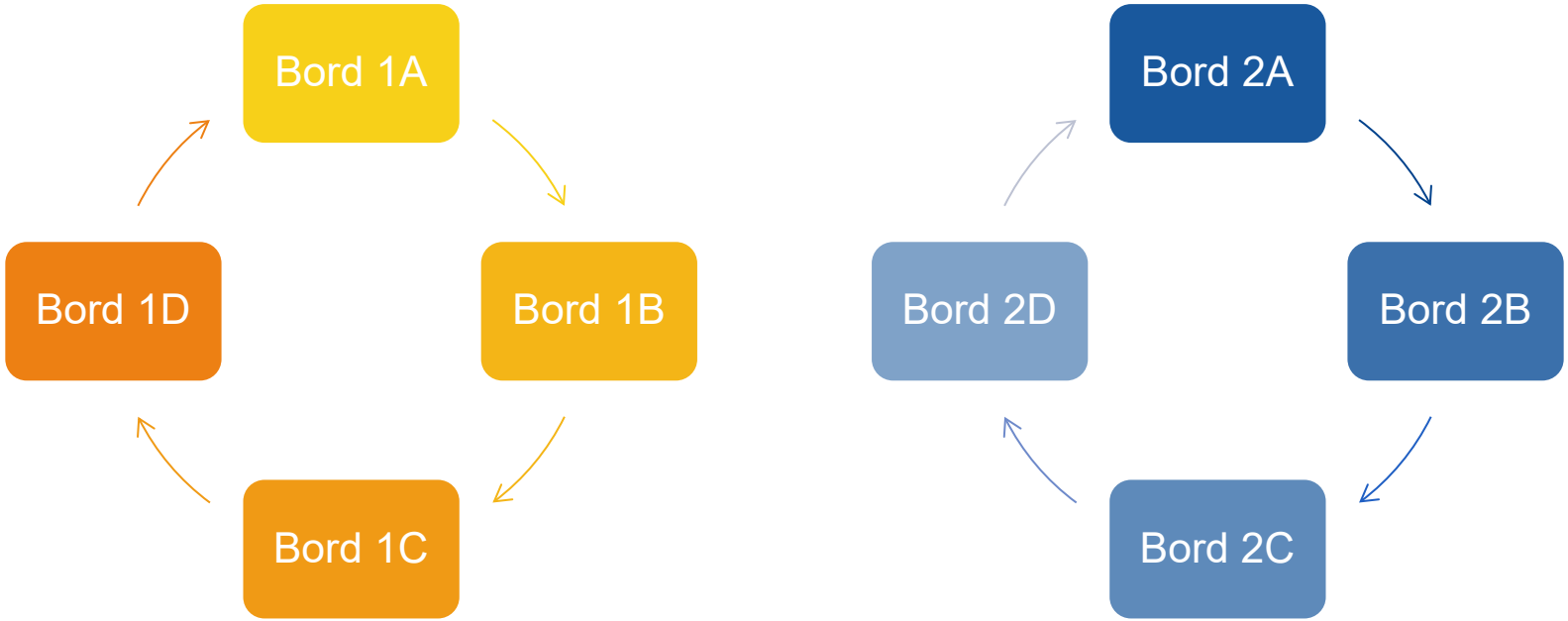
Workshop

- Arbeide med å designe kvalitetsproblem (representative oppgaver)
- Designe oppgave
  - **Transferoppgave** (innendørs)
  - Skal gjenspeile et utemiljø (**kriterieoppgave**)
    - *Informasjon – relevante bevegelser – beslutningstaking – press*
- Fire caser
- Målgrupper 5 – 7. trinn:

Kompetansemål etter 7. trinn

vurdere sikkerhet i uteaktivitet og naturferdsel og gjennomføre selvberging i vann

Verdenskafe

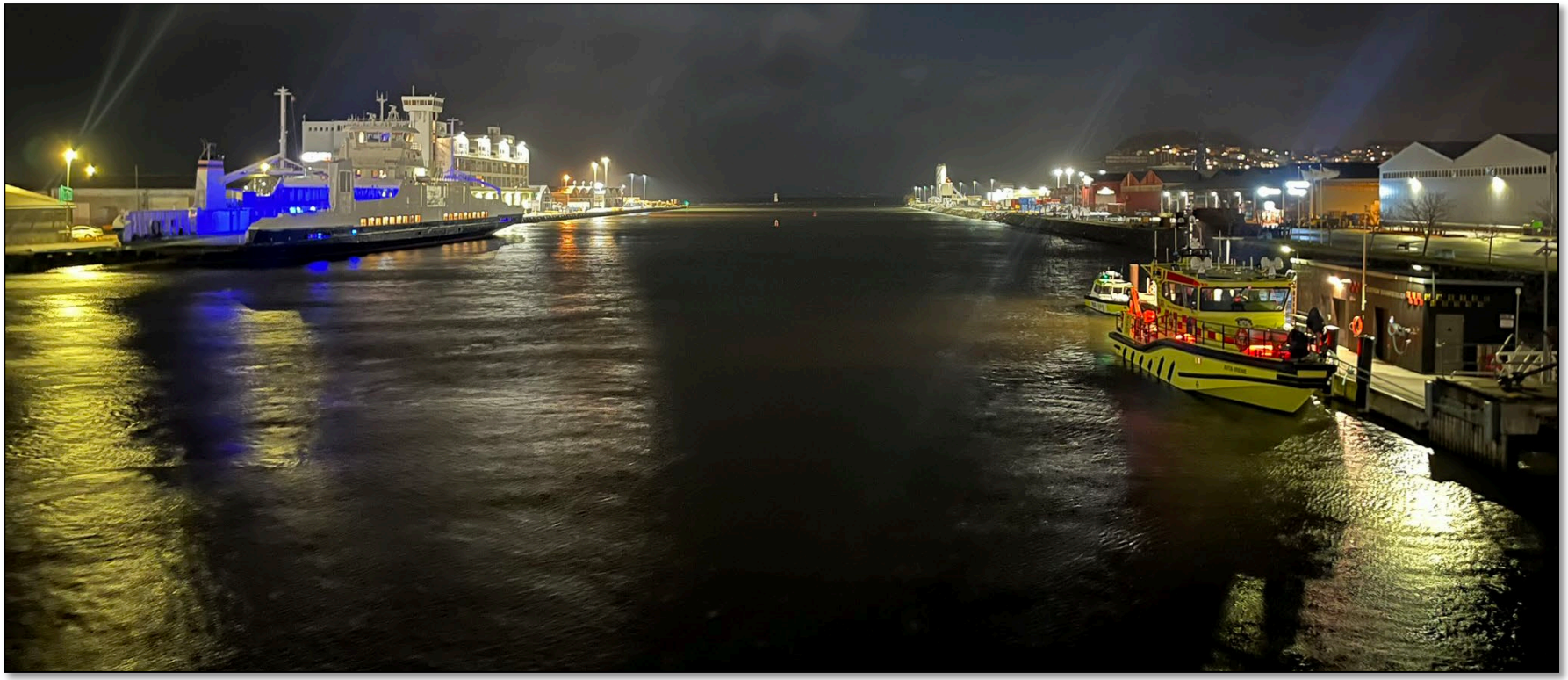


Kriterieoppgave 1

Kriterieoppgave 2

Kriterieoppgave 3

Kriterieoppgave 4



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REPRESENTATIV LÆRINGS DEISGN (RLD)

1) Kriterieoppgave:

Beskriv setting (på bildet):

2) Nøkkelkomponenter (grunnleggende struktur i kriterieoppgaven)

Informasjon (information)	**Bevegelser** (actions)	**Beslutninger** (decision-making)	**Trykk** (emotion/affective)

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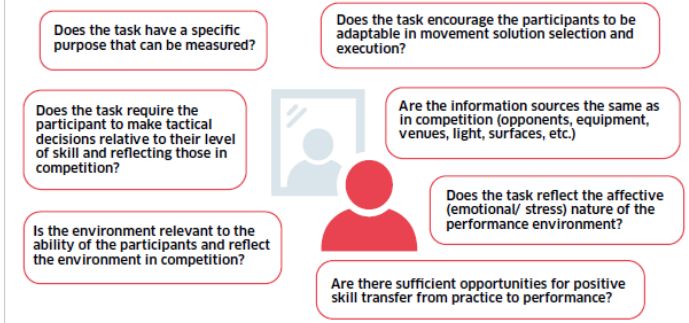
3) Design og beskriv en representativ oppgave / kvalitetsproblem i et svømmebasseng (vær gjerne kreativ ift. hvor i svømmehallen, utstyr brukt, oppdagende og utforskende karakter etc.)

UK COACHING

Representative Practice Design Reflection Tool



Refleksjon	Hvordan kan du forbedre dette i din kommende aktivitet?
1. Har oppgaven en en spesifikk hensikt?	
2. Krever oppgaven at deltakeren tar avgjørelser i forhold til sitt ferdighetsnivå og reflekterer målkontekst?	
3. Er miljøet relevant for deltakernes evner og gjenspeiler det miljøet i målkontekst?	
4. Oppmuntrer oppgaven deltakerne til å være tilpasningsdyktige i valg og utførelse av bevegelsesløsninger?	
5. Er informasjonskildene de samme som i målkontekst (motstandere, utstyr, arenaer, lys, underlag osv.)?	
6. Gjenspeiler oppgaven den affektive (emosjonelle/stressende) naturen til ytelsesmiljøet?	
7. Er det tilstrekkelige muligheter for positiv ferdighetsoverføring fra trening til ytelse?	

Fritt oversatt etter RPAT (Representative Practice Assessment Tool) Krause et al., 2017.

- *«Å være dyktig er ikke prosessen eller å gjenta en bevegelse, men er prosessen med å gjenta å finne en løsning»*

- Bedre beslutningstakere…

- … og problemløsere


Takk for diskusjonene, og takk for meg

Resultatene fra workshopen, inkludert eksempler på representative oppgaver og utfordringer i et svømmebasseng med mål om å øke overføringsverdien til et utemiljø, vil bli gjort tilgjengelige så snart de er renskrevet.