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Evaluation of the educational influence on forwarding planning capacity

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Forwarding

The challenge in seemingly simple work, but...

- ***Load fast in the forest, and be slow when unloading?***
- ***Be fast with this load, and be slow in the next?***
- ***Try to adapt planning between stands, or use simple standard rules?***



Forwarding performance

- ***Environmental conditions***
- ***Machine features***
- ***Operator's capacity***
 - ***to handle the machine***
 - ***to plan the work***



How does education influence the operator's capacity to plan the work?

Case study

POPULATIONS

- 2 vocational schools compared
- 15 students per school
- Age ca. 18 years
- At least ca 50 hours of actual forwarding
- Various forwarder simulator experience



Case study

EXECUTION

- **Ponsse's Forwarding game**

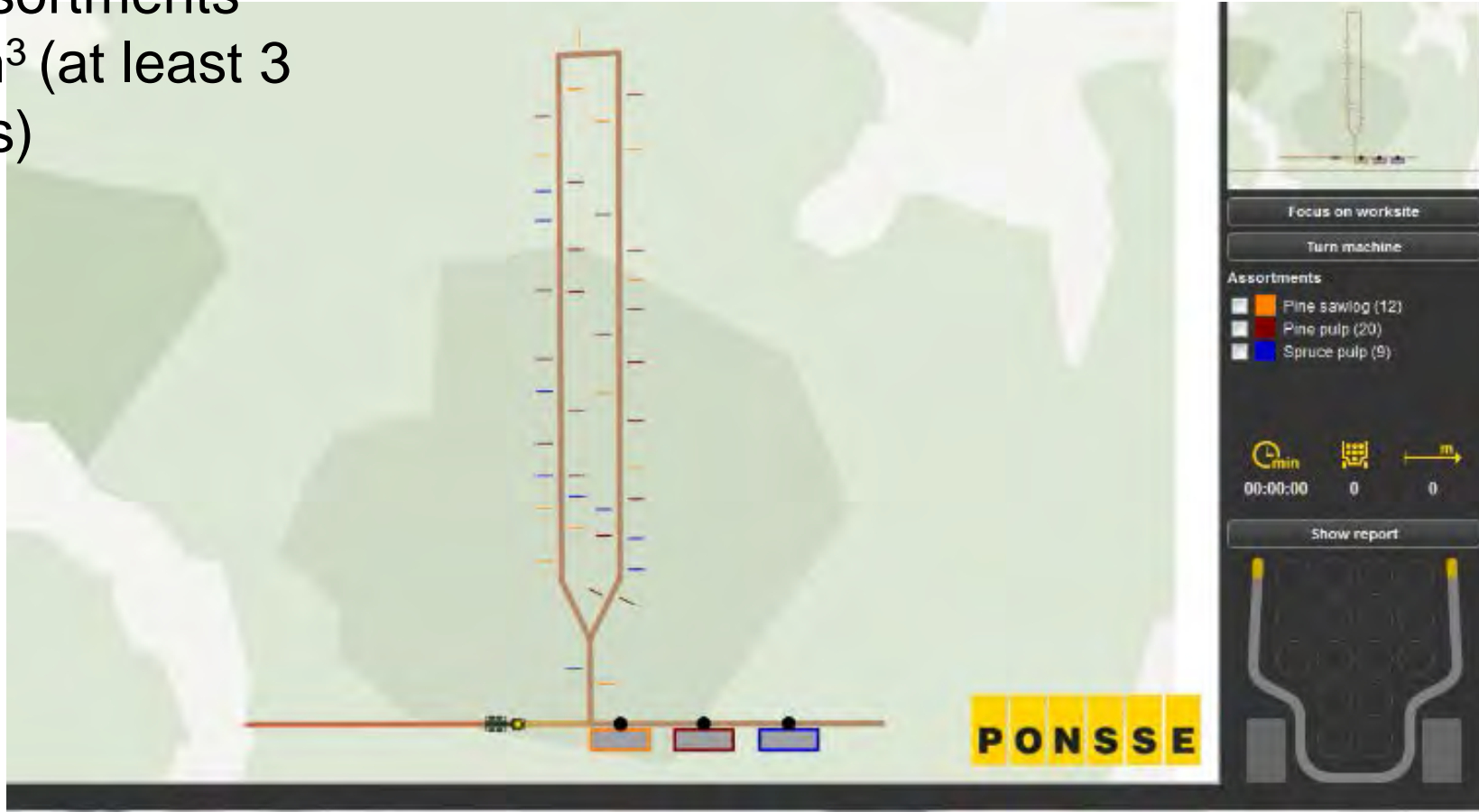
<http://www.ponsse.com/media-archive/ponsse-forwarder-game>

- **Given conditions and machine behaviours**
- **Work planning gives variation in results (time, distance)**

- **All students in a school played simultaneously, without previous experience of the game**
- **1 warm-up game**
- **2 actual games – same track, different complexity**

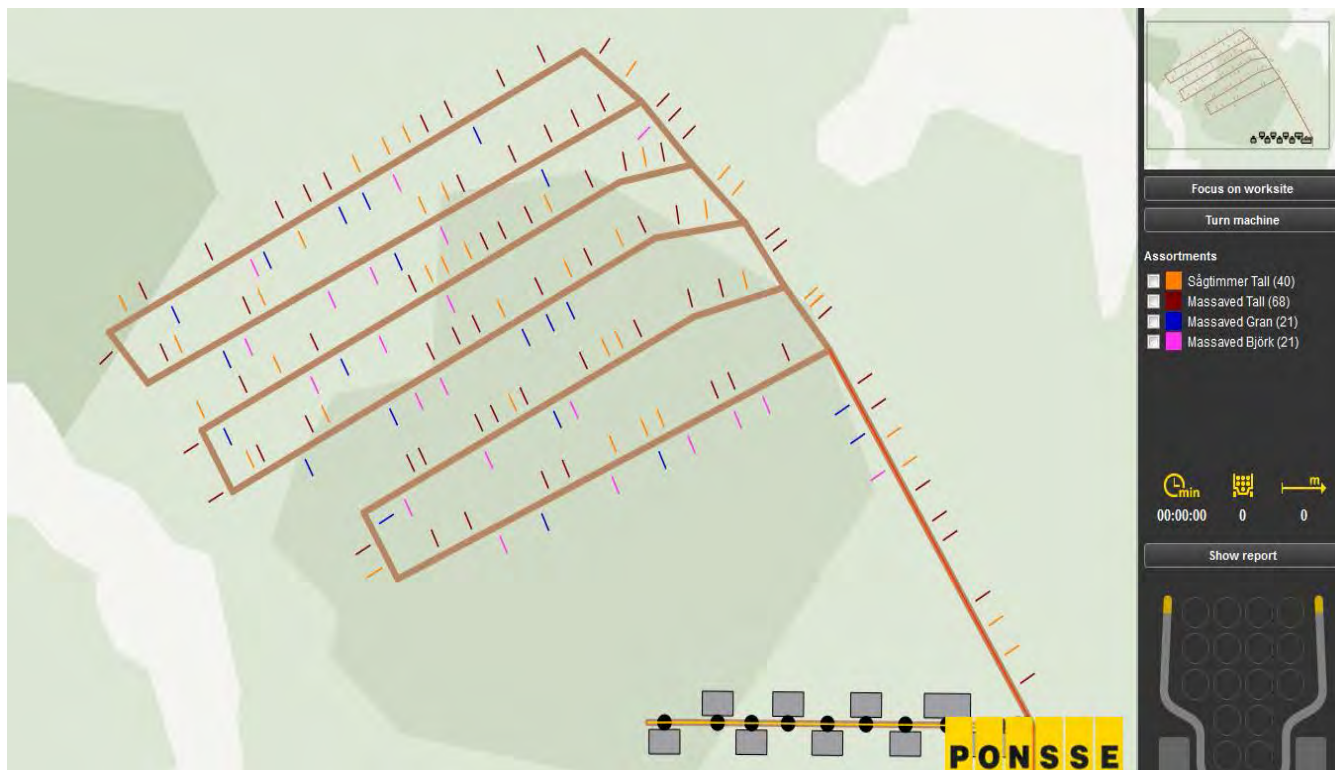
Introduction game

- 3 assortments
- 41 m³ (at least 3 loads)

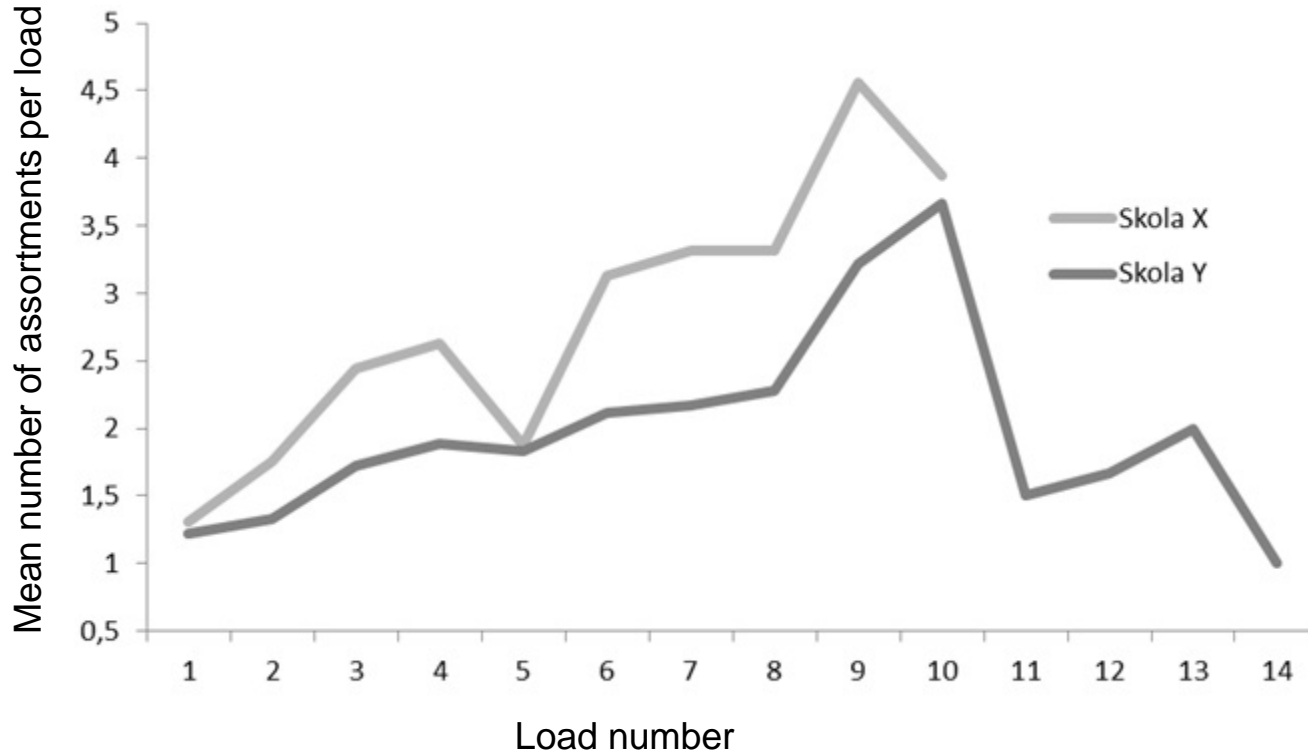


Evaluation games

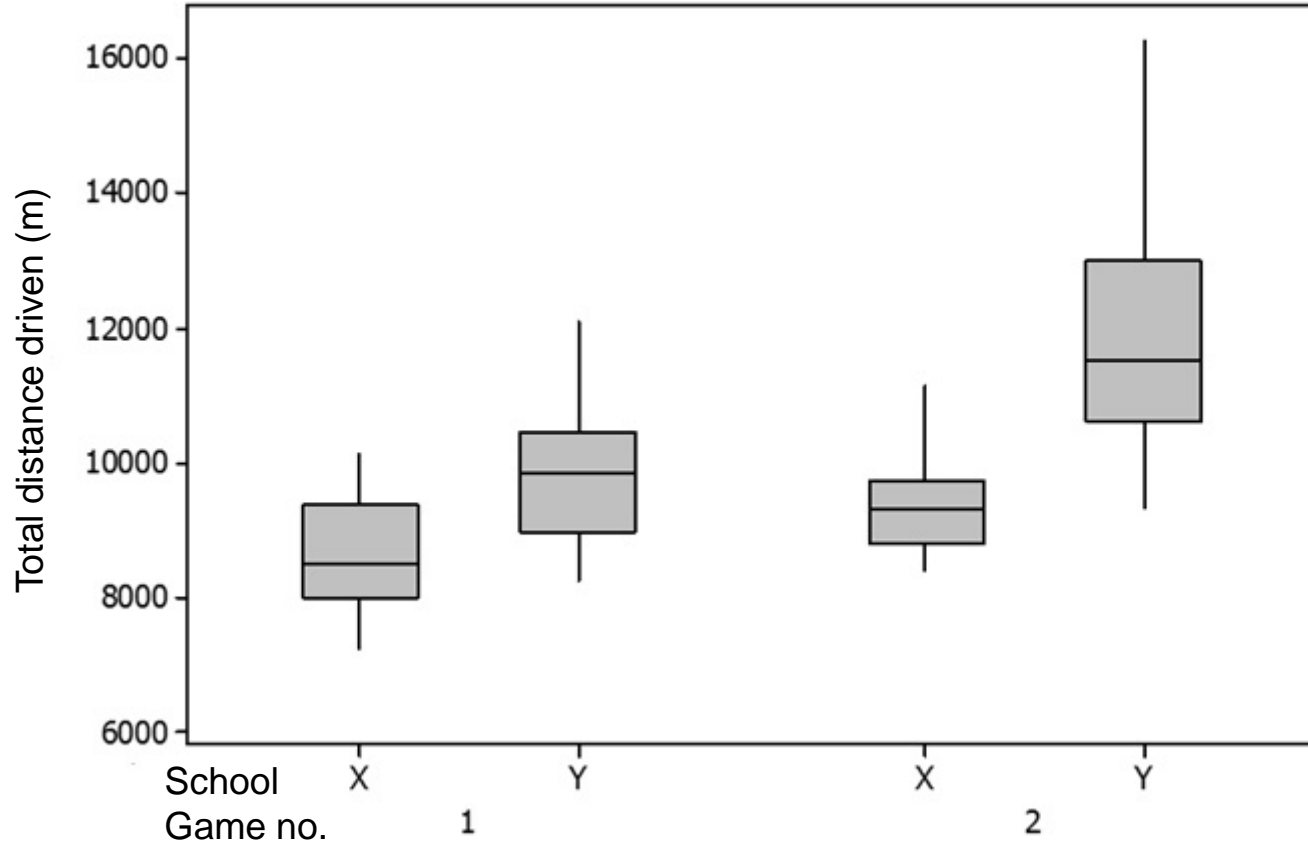
- 150 m³ (at least 10 loads)
- Game 1: 4 assortments
- Game 2: 8 assortments



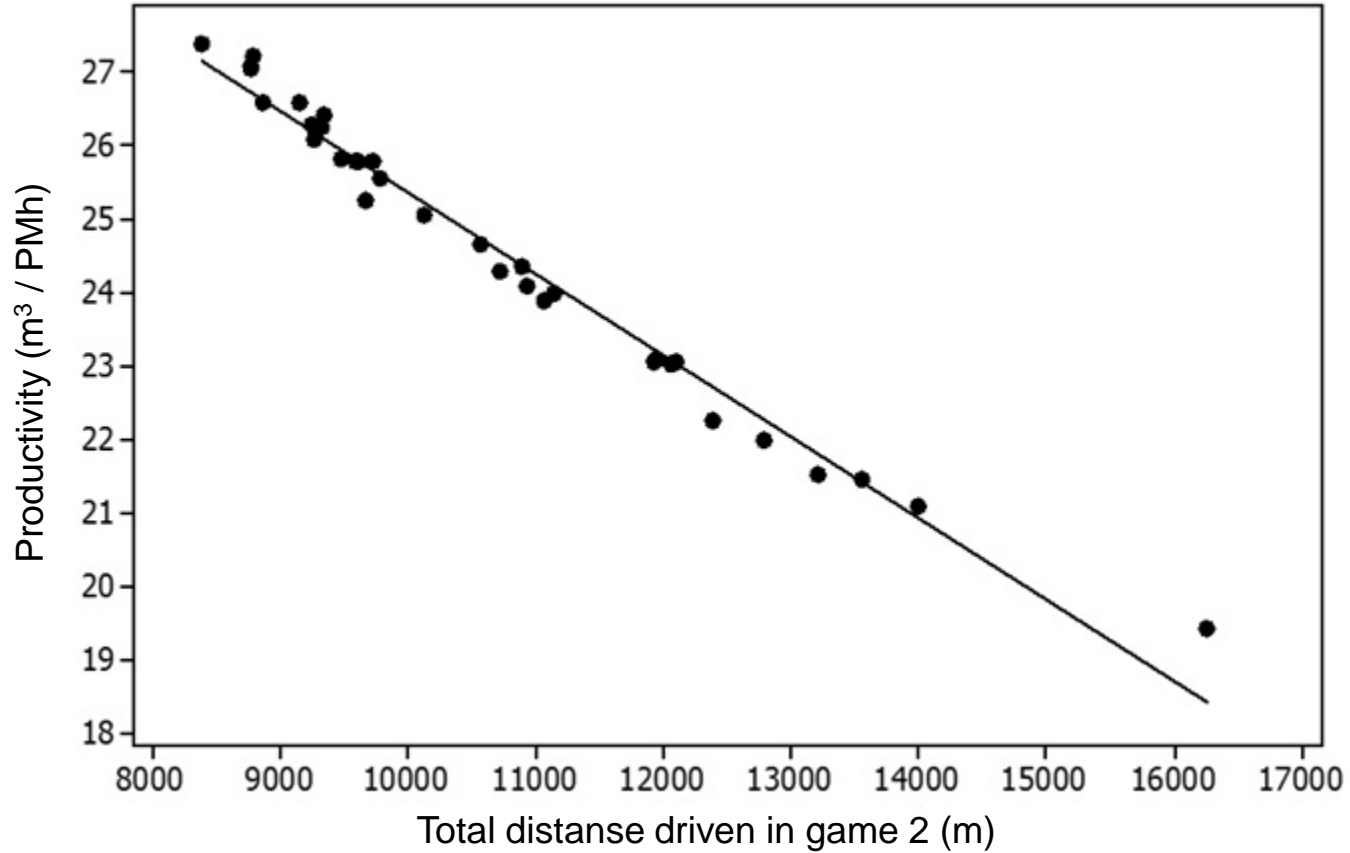
Results



Results

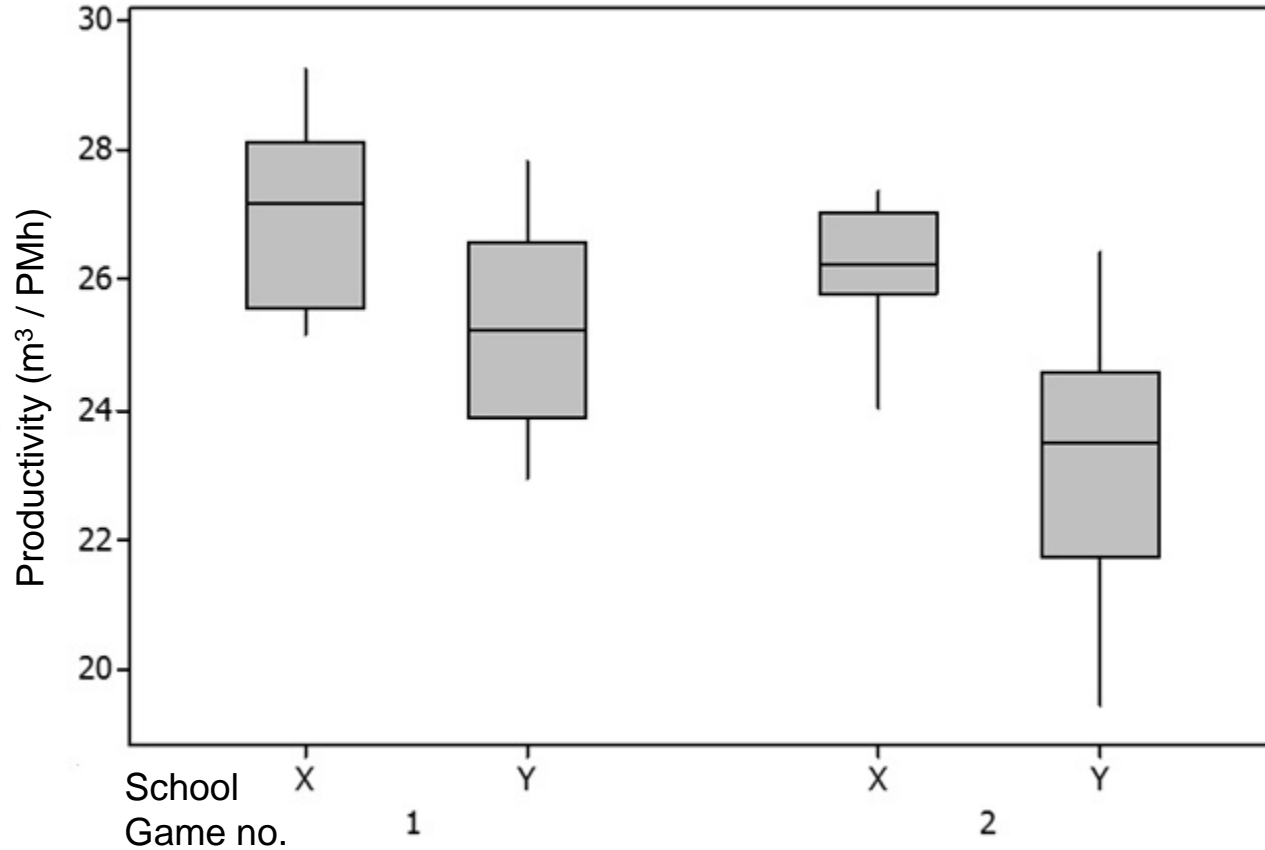


Results

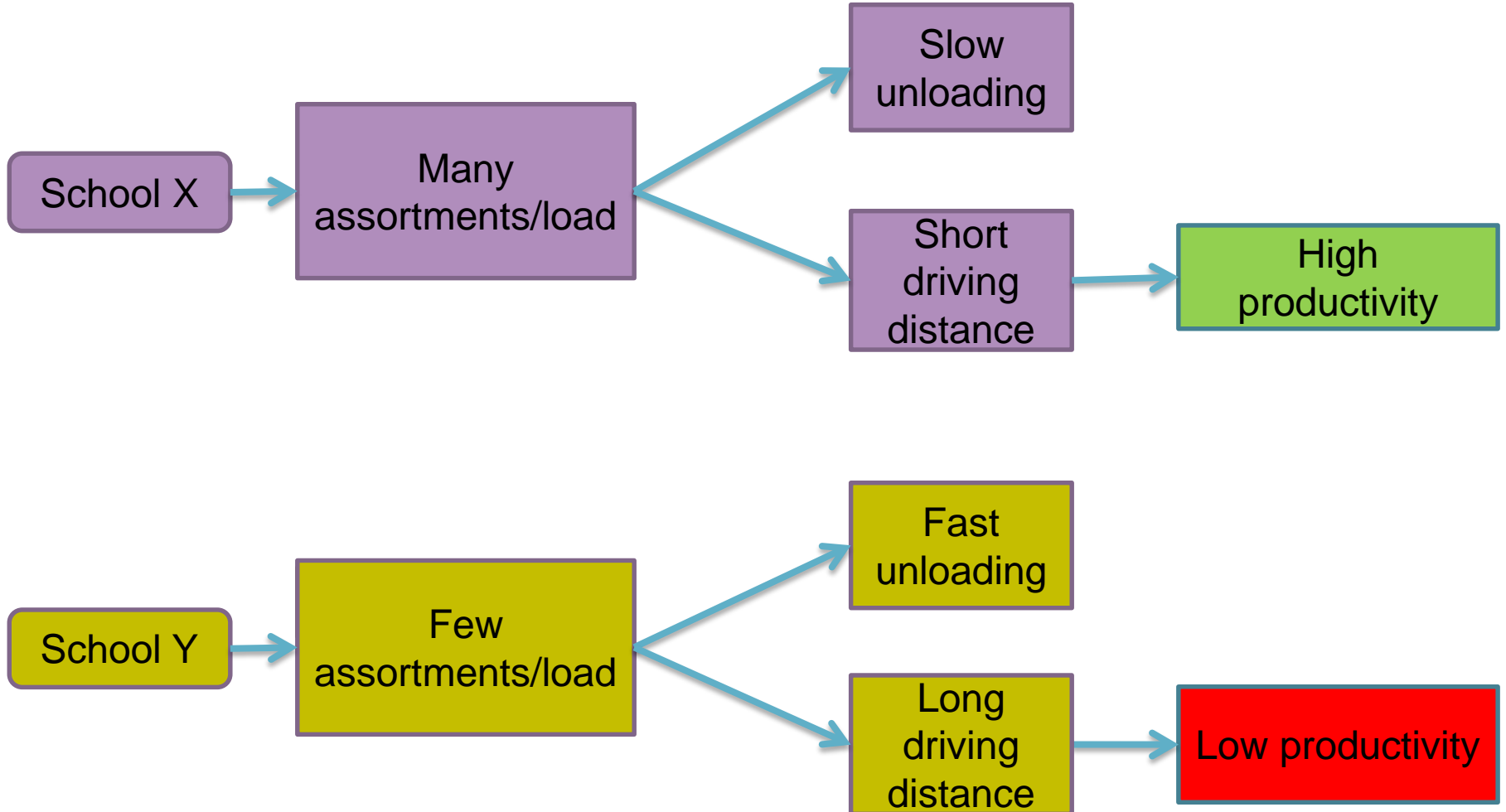


Results

School X was 7-12% more productive!



Work strategies

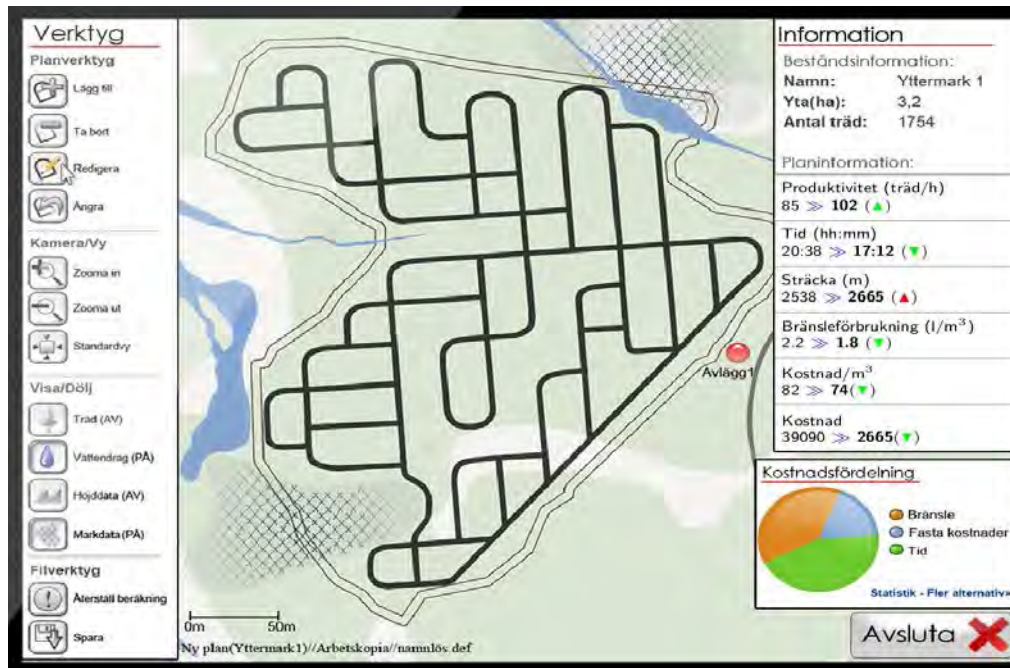


Conclusions

Large differences in forwarding planning = large differences in forwarding costs

Education matters – even (or rather especially) in forwarding!

Important to develop knowledge on situation adapted forwarding (and load per load)



Verktyg

Planverktyg

- Lägg till
- Ta bort
- Redigera
- Angra

Kamera/Vy

- Zooma in
- Zooma ut
- Standardvy

Visa/Dölj

- Träd (AV)
- Vattendrag (PÅ)
- Höjddata (AV)
- Markdata (PÅ)

Filtverktyg

- Återställ beräkning
- Spara

Information

Beständsinformation:

Namn: Yttermark 1
 Yta(ha): 3,2
 Antal träd: 1754

Planinformation:

Produktivitet (träd/h)
 85 >> 102 (▲)

Tid (hh:mm)
 20:38 >> 17:12 (▼)

Sträcka (m)
 2538 >> 2665 (▲)


Bränsleförbrukning (l/m³)
 2.2 >> 1.8 (▼)

Kostnad/m³
 82 >> 74 (▼)

Kostnad
 39090 >> 2665 (▼)

Kostnadsfördelning

Statistik - Fler alternativ

Avsluta 

Ny plan(Yttermark1)//Arbetskopia/namnlös.def

New project: Optimize the routing – before the felling starts

Thank you!

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