

Learning made easier and more effective by WebLI

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Web Learning with Interaction (WebLI) was developed during 2005-2008 in Finland by a research group led by professor Yli-Luoma. The theoretical basis was advanced first. The tool is a semantic web learning tool, which is based on social interaction and other SECI – features (Socialization, Externalization, Combination, and Internalization). All four features are applied in WebLI learning/teaching process.

The auditorium tool could be used first for up to 1000 students. It is an interactive tool where every student has possibilities asking questions during the teaching process. This phase will activate the **Socialization process**, which should be followed by the **Externalization process** (Discussion Tool for 15 persons). The **Combination Tool** is applied as a Team work in a small group (3-5). The testing of the new knowledge is run by one or two students (**Internalization**).

During the developmental process about 19 articles and 5 books were published of which one book was published as a dissertation by Dr. Kaarina Pirilä (2007).

In e-learning the teacher and learners can meet each others asynchronously or synchronously by using new technology. The asynchronous students have access to the class's lecture videos and course material stored in the server and they could watch the videos any time and from anywhere. Students can have interaction with their instructor and peers by using e-mails. The social-emotional bonds, supportive relationships and feeling of real interaction with the teacher and peers are more difficult to arrange. Lack of communication can affect the perceived motivation and satisfaction and lower student performance. Interaction is very important also provoking students critical thinking abilities. So one concern of the project is to test if online learning can help the students develop their critical thinking abilities.

We conclude that socialization and the type of and level of interaction when learning online are cornerstones in effective students performance. Online learning environment requires a learning community so that the participants maintain mutual caring and understanding thru the interaction... and they should be able to develop a sense of belonging.

What are we doing in Finland now with our WebLI –tool? For the moment we plan to get an e-laboratory for at least the physics and chemistry students, but also the mathematics student can use it. It is an e-laboratory for two persons so that they can work together, but their teacher can visit the laboratory and he/she can discuss with the two students if they are present. If they are not, the teacher can leave a message to help the two working together. This laboratory would work also for demos in meeting room and auditorium.

We also plan to have an online university for online teaching/learning and exporting education. The exporting is one of the smartest ideas, which Australia has used already for a few years. Under the year 2009 Australia exported for a value of about 19 billions \$.

Before starting this kind of educational exporting business, we have to know that our tools really work.

I'll show you next some important facts how WebLI works. My assistant who wrote her dissertation testing following tested the following hypotheses:

We firstly assume that we have three different groups

1. Face-to-face group
2. A Real time group attending the lecture thru WebLI
3. A group just studying the lecture (2) afterwards (the saved lecture)

Testing the Hypothetical Model through LISREL

The statistical method used after the quantitative analysis was a linear structural equation model for latent variables, LISREL 8.80. A full LISREL model consists of two parts, structural and measurement models. As the sample size in two learning subgroups in this study was small, the three learning groups were combined into two groups: synchronous and asynchronous learning groups. The synchronous learning group in LISREL analysis consisted of the face-to-face, and the synchronous online groups and the asynchronous group in LISREL was the original streamed asynchronous learning group. When the relationships between interaction, motivation and student learning outcomes were analysed in all student group (Figure 1.) it was found out that interaction would seem to be very important for motivation. Student learning outcomes is predicted by motivation but not by interaction. Interaction works through motivation in this learning group.

I'll discuss with you the conclusions we can make of these results and give some ideas to make it still better.

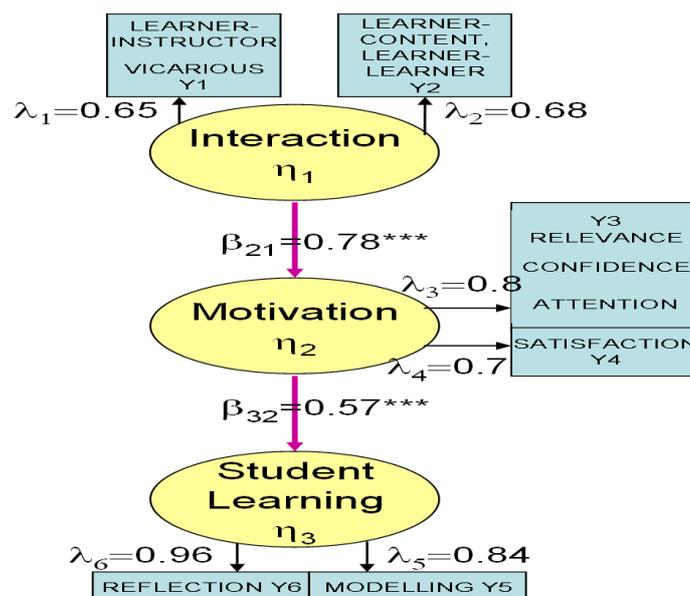


Figure 1: The statistically significant relationships, standardized solution, between variables in the main model

(all students)

In combined synchronous learning group (Figure 2.) interaction would not seem to have any impact on student motivation, but the motivation has a statistically very significant impact on student learning outcomes. Interaction has no direct impact on students learning outcomes either.

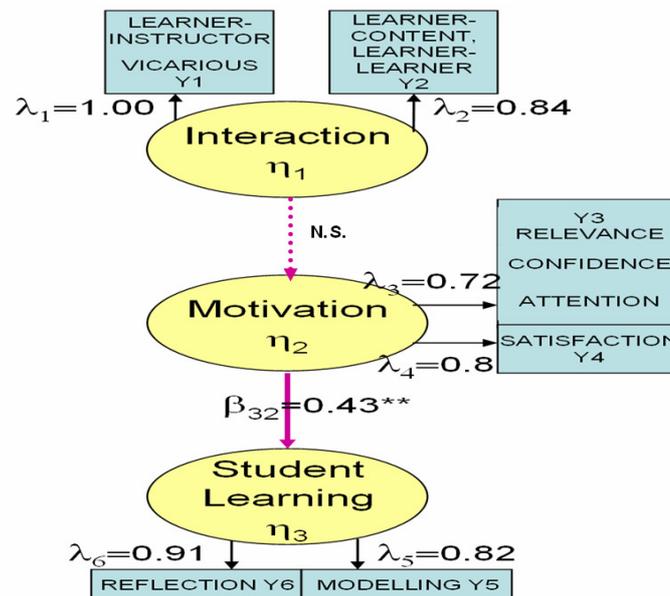


Figure 2: The statistically significant relationships, standardized solution, between variables in the combined synchronous learning group

Interaction has no impact on motivation and student learning outcomes in the combined synchronous learning group, but this was not the case in the asynchronous learning group (Figure 3.). Interaction has a statistically very significant impact on motivation and the motivation has a significant impact on student learning outcomes in this learning group. Interaction did not have any direct impact on student learning outcomes in this learning group either. This kind of difference found in the *LISREL* analysis between the synchronous and asynchronous learning groups might have important consequences for the learning process in e-learning. The difference between these two models would seem to give a clear picture of the importance of interaction especially in asynchronous e-learning process.

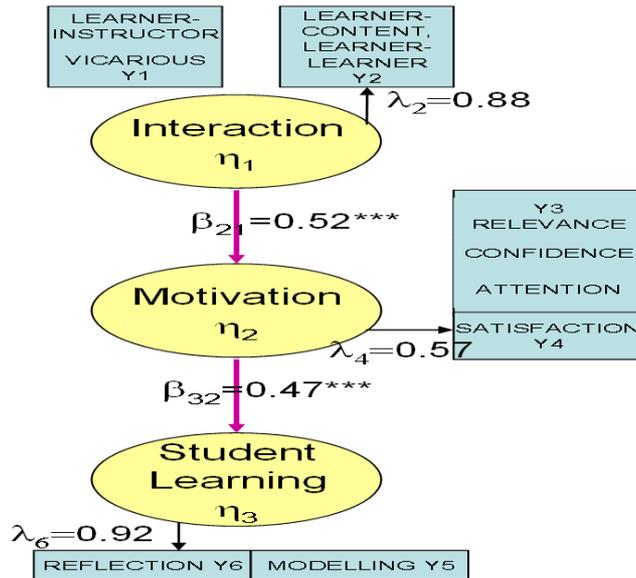


Figure 3: The statistically significant relationships, standardized solution, between variables in the asynchronous streamed group

You certainly observed the very interesting result: The face-to-face group and the group studying the saved lectures had about same results! Interesting! What can we conclude of these results?

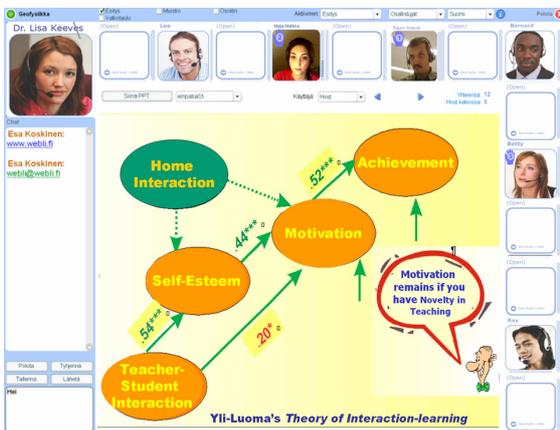


Figure 4: WebLI meeting room

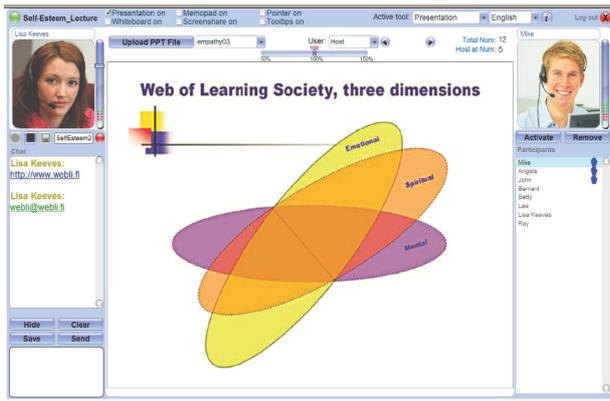


Figure 5: WebLI Auditorium

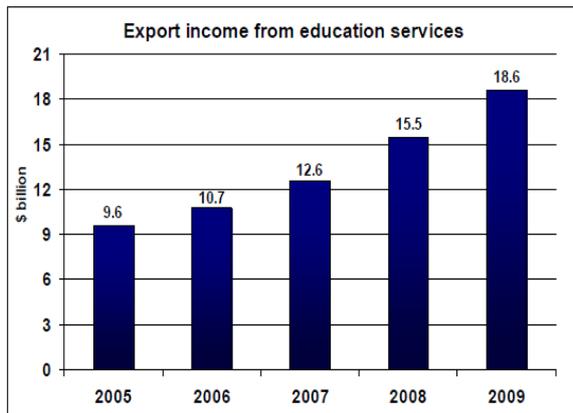


Figure 6: Educational Export in AUS