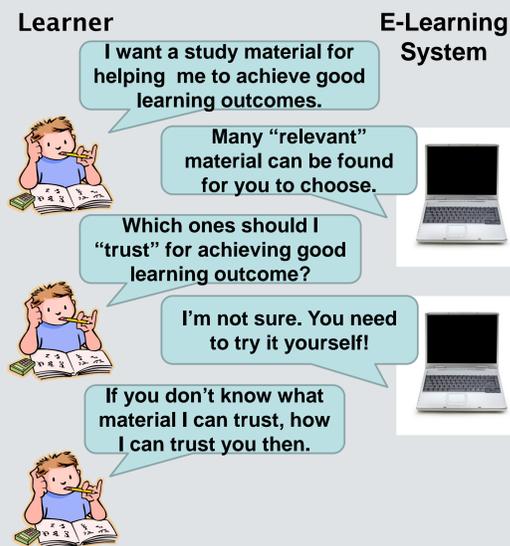


Calculating Learner's Trust in Teaching Activity

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Introduction and Problems

- E-learning has become an integral part of digital earth.
- It supports everyone who is keen to learn and get higher performance.
- Every organisation or individual can easily and quickly create e-learning content, teaching activity and suggest materials.
- Pro.** is learners can access to study anywhere, and anytime.
- Con.** is how learners trust that the teaching activity or materials in e-learning could help them to achieve a learning outcome.



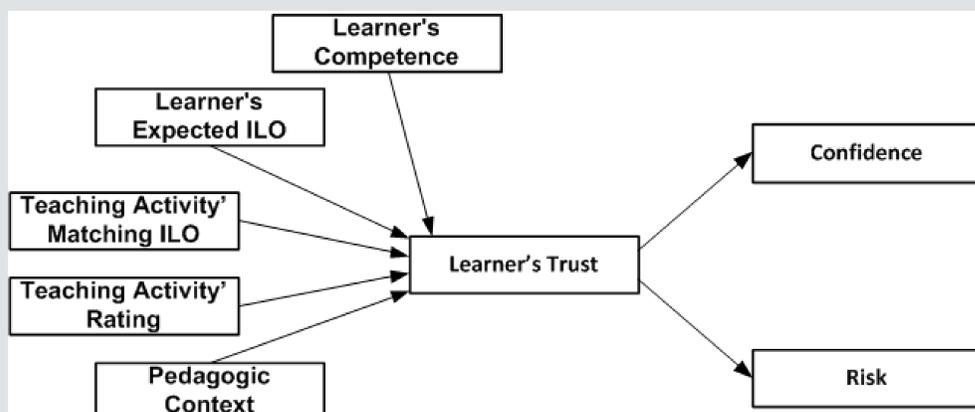
Learner's Trust Calculation

- In e-learning, learner states their purpose is an achieving good performance in the expected intended learning outcome (ILO) under the specific pedagogical context.
- Each learner's trusts value and the perceived trustworthiness value of teaching activities may vary according to personal skills, experiences and knowledge.
- This skills, experience and knowledge of learner are combined to form a learner's competence.
- So, learner's trust value in teaching activity is calculated by the perceived trustworthiness of teaching activities from the parts learners, the expected ILO of learner and the exiting learner's competence within the specific pedagogical context and the learner's competence of himself.
- Given a set of learners $A = \{a_1, a_2, a_3, \dots, a_n\}$ and a set of teaching activities $Act = \{act_1, act_2, act_3, \dots, act_m\}$

Objective

- To calculate a learner's trust value in the teaching activity.
- This learner's trust value aims to help learners select the trustworthy teaching activity and material.

Conceptual of Learner's Trust Model

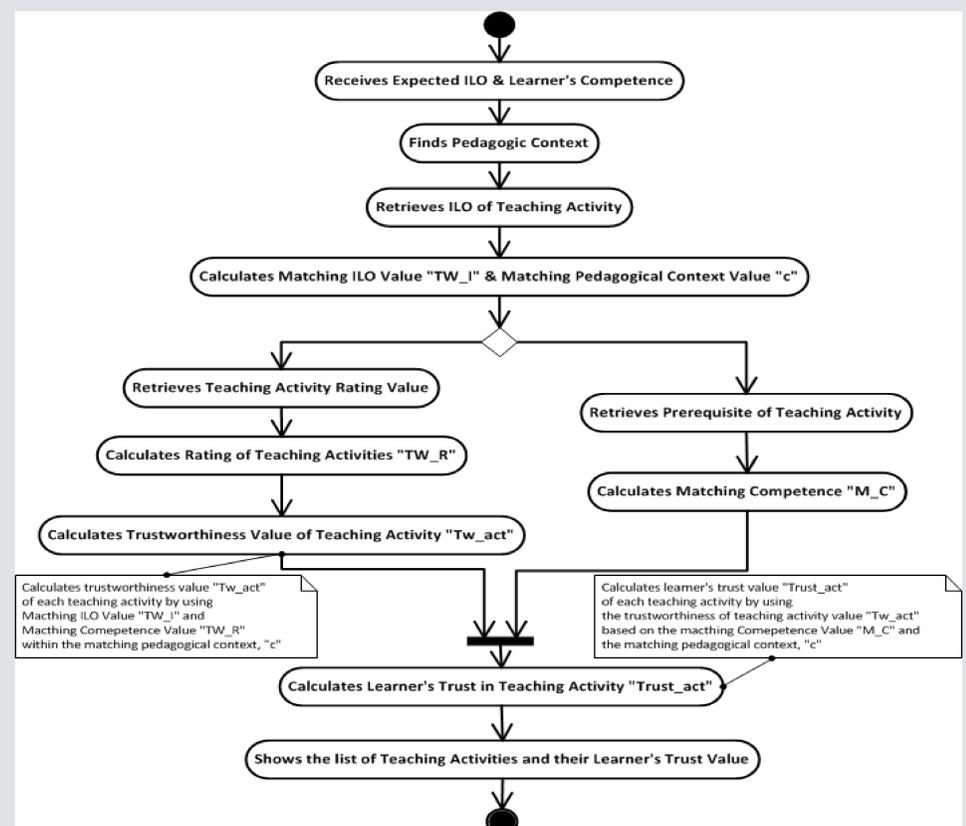


How does Semantic Web Technology help to calculate learner's trust value?

- Using semantic technologies to construct Knowledge Representation of following information.
 - Learner's Competence
 - Intended Learning Outcome (ILO)
 - Material's Rating
- Using semantic technology to support automated reasoning and draw conclusions.

Future Work

- Designing knowledge bases of competence, ILO, rating information.
- Developing algorithm
 - Investigating effective machine learning techniques to automate ILO matching and competence matching.
- Implementing prototype based on the knowledge bases and the algorithm
- Testing and evaluating model



- $Trust_{act}(a_n, act_m, Tw_{act_m}, c) \equiv has(Tw_{act_m}, act_m, c, M_C) \supset believe(a_n, Tw_{act_m} \rightarrow x)$
- The learner a_n trusts the teaching activity act_m regarding the teaching activity act_m has trustworthiness Tw_{act_m} in context c and under the matching competence M_C , then a_n believes Tw_{act_m} that will supports him to improve his performance to x .

Example of Prototype Screen

Showing Potential Learner's Trust Value in each Learning Activity

Course ID: Bi2019 Course: Introductory Biology Student ID: 468819 Programme ID: BSc183 Programme: Biological Sciences BSc Year: 1

ILO ID	ILO Description	Subject Matter	Capability
21	analyse the effects of temperature and intensity	CO2 concentration	define
22	analyse the effects of temperature and intensity on the process	Effects of temperature	define
23	analyse the effects of temperature and intensity on the process involved in photosynthesis	CO2 concentration, the effects of temperature	analyse, define

Selected ILO ID: 23 The Antecedent Factors of Learner's Trust

*R	Activity ID	Activity Description	Material	** TW of Learner's Competence	*** TW of Activity's Rating	Learner's Trust Value
2	15	Read (Book Title: How Did We Find Out About Photosynthesis? Page 15-22)	Book ID 245	0.7	0.6	0.65
1	32	Watch (Video Title: Photosynthesis, URL: http://www.youtube.com/watch?v=rYk4eCKnA)	Video ID 478	0.6	0.8	0.7
3	07	Read (Webpage: Photosynthesis, URL: http://biology.dcu.edu/courses/bio104/photosyn.htm)	Webpage ID 546	0.5	0.6	0.55

Selected Activity ID: 15

* R = Ranking
 ** TW of Learner's Competence = the perception of trustworthiness based on Learner's Competence
 *** TW of Activity's Rating = the perception of trustworthiness based on Teaching Activity's Rating