

Learning Effects of Attention Guidance in Online Discussions



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Overview

- Motivation and problem identification
- Objective of our solution
- Design and development
- Demonstration
- Evaluation
- Communication
- Comments & questions



Motivation

- According to recent estimates, over 80% of Fortune 500 companies require developers and business users to work effectively in teams to produce software applications that can add value and support business strategies.
- Students majoring in information systems (IS), should not only be technically competent, but also prepared to collaborate effectively in face-to-face and virtual team settings.



Motivation

- Computer-supported collaborative learning (CSCL) systems offer rich affordances for students to practice communal growth of ideas to complete learning tasks.
- The open source annotation tool developed by Van der Pol et al. (2006) is an effective tool for facilitating common ground in online learning conversations.



Motivation

Annotation tool's functional design:

- Decreases coordination activities
- Leaves more time and effort to revise incorrect or incomplete ideas
- Revising such ideas favor gains in individual learning outcomes

Eryilmaz, E., Van der Pol, J., Ryan, T., Clark, M. P., & Mary, J. (2013). Enhancing Student Knowledge Acquisition from Online Learning Conversations, International Journal of Computer Supported Collaborative Learning, 8(1), pp. 113-144 *Eryilmaz et al., (2016) BU-4*



Problem Identification

- Students gravitate towards familiar (comfortable) topics and avoid challenging ones in order to meet participation requirements
- Merely contextualizing students' ideas in online discussions does not always produce satisfactory learning outcomes



 Unobtrusively focus students' attention on the progressive development of ideas in areas where they struggle to gain understanding from instructional materials

Design and Development

- Attention can shift exogenously by the appearance of an unexpected stimulus
- Font size is an effective visual property to capture attention in an involuntary and obligatory fashion
 - 1. Scaffolding
 - 2. Peer-to-Peer

Eryilmaz, E., Thoms, B., Mary, J., Kim, R., and Van der Pol, J. (2015). Instructor versus Peer Attention Guidance in Online Learning Conversations, AIS Transactions of Human Computer Interaction, (7:4), pp. 234-268.



Attention Guidance Functionality

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Conversations	times are substantially slower than when the Previous studies have found that texting we more debilitating than driving legally drun	
Key Idea: I believe that it is important for companies to create PSA's in this way to get the attention of people.	drivers often underestimate the degree of o dri ^A lthough some acknowledge that texting and driving is risky and regardless of the fact that texting and driving is illegal in some states, many individuals continue to engage in this behavior ²⁰ A study examining some of the motivating factors behind	
Unfortunately, just saying "don't do it you can get hurt or hurt someone else". People need something that affects them. Something that has an impact on them. Showing the outcomes	cell phone use while driving, found that people are likely to engage in this behavior if they perceive the conversation they are having is important and believe they are good at multitasking ¹⁰ [5]. According to this study, perceived importance of the conversation	
of people who were in the situation whether its showing their injury or death might seem harsh, but it's something that will stick with that person and will be a constant reminder.	Wa'Although texting and driving is a growing epidemic, there is little empirical work examining strategies for reducing this behavior. Currently 39 states, the District of Columbia, and some local governments prohibit all drivers from texting and driving [1]. Studies examining the consequences of establishing bans against texting and	
	driving have mixed results. While some studies have found that after implementation of the source of	
Statement: This is true The PSA's have to have some type of severe emotional impact in my opinion, otherwise no one would take it seriously or want to listen. If the message does not impact the viewer, then the attitude toward the message will most likely be "that can't	their message A recent study examined the use of fear appeals in discouraging texting and driving behavior, and found that after viewing two fear appeals for companies to way to get the attracting than texting and driving behavior, and found that after viewing two fear appeals way to get the attracting than participants reported viewing texting and driving behaviors as more distracting than Average Rating:	e that it is important o create PSA's in this ention of people. 0
happen to me, I'm careful."	previously believed, but also reported an increased intention to en driving behavior [7]. ¹¹ This behavior phenomenon is referred to as the boomerang	2



Control Software

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	to persuade the driver to stop.	1
	会会会会会	
l	16 Reply	
	Key Idea:The arguments of this paper talk about how in some cases	
	banning texting and driving can either make people want to use their	
	phones more or even not use them. This is important because i believe	
	that just banning texting and driving isn't a good persuas	
	People shouldn't text and drive because statistics show how dangerous	
	it actually is.	
	<u>Reply</u>	
	Statement: lagree. People are more likely to act if they know the	l
	consequences.	
	Need to find what persuades people better	
	Statement:texting while driving is dangerous	
	i agree with you. i think that why they invented in smart phone driving	
	service option to connect with car, so you respond by voice and	

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more debilitating than driving legally drunk (i.e., BAC at .08%) [6]. Interestingly, drivers often underestimate the degree of distraction associated with texting and driving, and feel that they can adequately drive while texting [5]¹⁹.

Although some acknowledge that texting and driving is risky and regardless of the fact that texting and driving is illegal in some states, many individuals continue to engage in this behavior. A study examining some of the motivating factors behind cell phone use while driving, found that people are likely to engage in this behavior if they perceive the conversation they are having is important and believe they are good at multitasking [5]. According to this study, perceived importance of the conversation

was a higher predictor of cell phone use while driving, than perceived risk. Although texting and driving is a growing epidemic, there is little empirical work examining strategies for reducing this behavior. Currently 39 states, the District of Columbia, and some local governments prohibit all drivers from texting and driving studies examining the consequences of establishing bans against texting and vs banning texting and driving reduces personal injury accident rates, other studie that the rates of cell phone usage actually increase [7].¹⁶ In recent years, several public service announcements (PSA) have been developed to discourage texting and driving. In doing so, several PSAs have focused on utilizing fear appeals to convey their message. A recent study examined the use of fear appeals in discouraging texting and driving behavior, and found that after viewing two fear appeals participants reported viewing texting and driving behaviors as more distracting than previously believed, but also reported an increased intention to engage in texting and driving behavior [7]. This behavior phenomenon is referred to as the boomerang effect and is believed to occur as a result of participants' reaction to the message and denial of a perceived threat [7]. The current study examines the efficacy of a persuasive technology package in decreasing texting and driving behavior, by motivating and facilitating behavior change.



Ewen Enyilmae Logout



Key Idea:The arguments of this paper talk about how in some cases banning texting and driving can either make people want to use their phones more or even not use them. This is important because i believe that just banning texting and driving isn't a good persuas Average Rating: 0



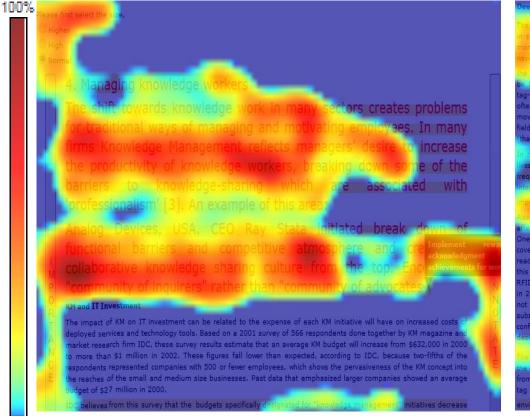
Demonstration

- Experimental study with 64 undergraduate college students distributed to two sections of a blended-format humancomputer interaction course.
- We randomly assigned each section to a software condition.



Evaluation of Students' Attention Allocations

With Attention Guidance



Without Attention Guidance

Incomplete or unreliable reads cause problems for decision making. The purpose of device an as possible. Since RFID uses radio ies or factors may affect the quality of reads and need to are to be tagged (that is, what are the characteristics and behavior of be collected, how often must tags and readers collect and transmit data and how ta need to be considered, what is the physical environment/layout, what are the possible agged person(s) or object(s), what are the functionalities of RFID hardware (readers, tags and s), and what should be the tradeoff or balance between accuracy requirements and money invested ers, i.e. more investment, can produce more accurate data, but more readers cost more.) he range of its operati irtments, rooms and partitions, with many walls and doors. These may devices because building layouts and materials can interfere with radio waves. he listed range of the devices often cannot be achieved in the field, and the actual be measured one by one in the real settings to determine the portfolio and locations of rs. Balance between accuracy requirements and investment costs is another concern. In have more accurate reads over moving patients and objects, the hospital chose an active ch more expensive than passive ones. A survey conducted by Spyglass Consulting Group that healthcare organizations in the UK prefer active RFID solutions. This implies that cost al in the decision-making of RFID adoption for healthcare organizations. Ho less expensive field generators for some readers without lowering their requirement o hnology t urations of different types of field generators normal, floor, or area were different d role in different locations.

the design of the tag must consider the characteristics and schavior of tagged persons or objects.¹⁷ In our case, the possibility of the patient's tearing off his or her RFID wristband or hospital employees taking away the tag om waste bags were considered, and an alarm design was added to signal when the wristband is torn off or the ag is removed without permission. As our study found, the design and deployment of RFID devices are highly 26



Evaluation of Students' Task Oriented Reading of Instructional Materials

	Mear	n (SD)	Test Statistics		
Scale Item	Control	Experimental	p value	d	
I read slowly and carefully to make sure I understand what I am reading	3.69 (0.54)	4.00 (0.57)	0.027*	0.56	
I try to get back on track when I lose concentration	3.84 (0.52)	4.09 (0.59)	0.075 ^{n.s.}	0.45	
I adjust my reading speed according to what I am reading from an article	3.69 (0.69)	4.06 (0.67)	0.031*	0.54	
When text becomes difficult, I re-read it to increase my understanding	3.81 (0.64)	4.19 (0.47)	0.010*	0.68	
I stop from time to time and think about what I am reading	3.72 (0.46)	4.03 (0.54)	0.015*	0.62	



Evaluation of Students' Perceived Learning

Item	Control Group (n=32)		Experimental Group (n=32)		Test Statistics		
	Μ	SD	Μ	SD	p value	Cohen's d	
Learned great deal from peers	3.25	2.00	3.84	0.65	0.04*	0.40	
Improved integration skills	2.91	1.70	3.53	0.52	0.02*	0.49	
Improved generalization skills	3.00	1.61	3.63	0.76	0.03*	0.50	
Learning quality was improved by online Discussion	3.13	1.7i3	3.75	1.10	0.04*	0.43	
Improved communication skills	3.56	1.09	4.13	0.69	0.02*	0.62	
Online discussion provided useful social interaction	3.22	1.21	3.81	0.80	0.02*	0.58	
Provided a great chance to share opinions among peers and instructor	3.16	1.43	3.69	0.48	0.03*	0.50	
Broadened my knowledge	3.44	1.48	4.00	0.52	0.03*	0.50	
Online discussion was useful to my learning	3.25	1.42	4.00	0.52	0.003**	0.70	
Most peers' comments were not very valuable	3.38	0.48	2.97	0.31	0.01*	1.01	
Online discussion decreased my learning quality	3.38	0.31	2.88	0.82	0.01*	0.81	
Full composite scale	3.24	0.66	3.64	0.26	0.003**	0.80	
Ervilmaz et al., (2016) BU-13							



Evaluation of Students' Knowledge Gain

Knowledge Test	Control Group (n=32)			ntal Group 32)	Test Statistics		
	М	SD	М	SD	p value	Cohen's d	
Pre-test	5.63	3.98	5.97	4.22	0.50	0.08	
Post-test	8.97	3.52	9.69	2.03			
Knowledge gain score	3.34	0.43	3.72	0.92	0.07	0.53	



Evaluation of Students' Learning Efficiency

Depended Variable	Control Group (n=32)			mental (n=32)	Test Statistics	
	Μ	SD	Μ	SD	p value	Cohen's d
Task completion time (minutes)	103.25	41.22	87.94	27.64	0.09	0.44
Learning Efficiency(based on z-scores)	8.97	3.52	9.69	2.03	0.01	0.63



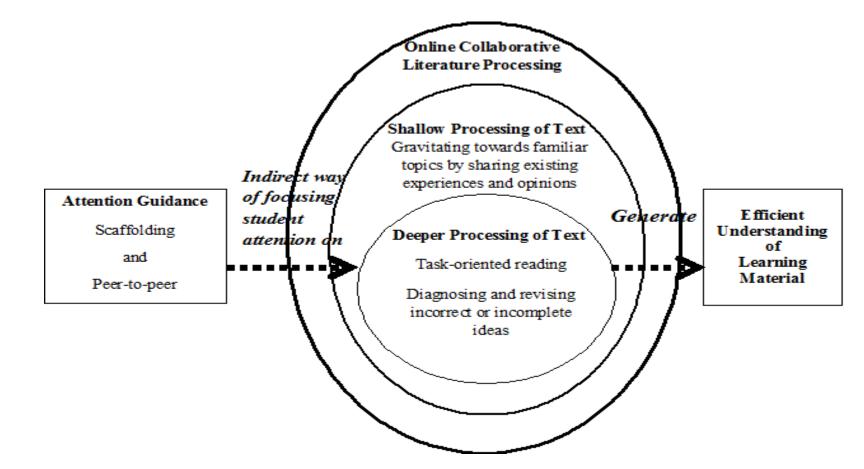
Relation between Perceived Learning and Learning Efficiency

learning efficiency = -3.39+0.09 * aggregate perceived learning score

F(1, 61)=22.95, p<0.001, with an R² of 0.27



Communication





Thank You for Your Time

Your Comments and Questions are welcomed.

Please address feedback to:

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