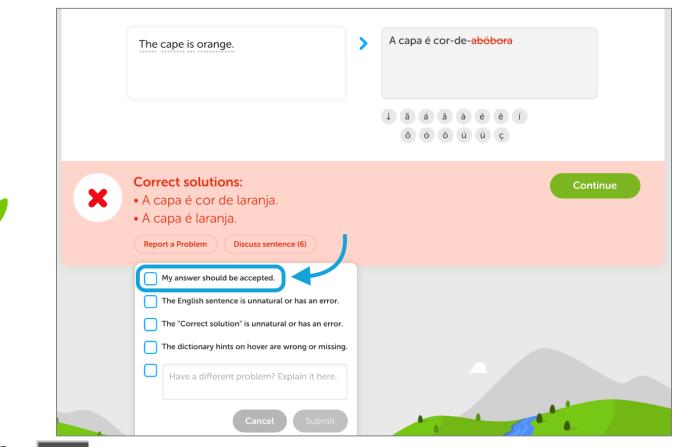
DESIGN ISSUES IN LANGUAGE LEARNING BASED ON CROWDSOURCING

THE CRITICAL ROLE OF GAMEFUL CORRECTIVE FEEDBACK

Frederik Cornillie @fcornillie

COST CA16105 eNetCollect WG3 & WG5 meeting – Leiden – 25/10/2018

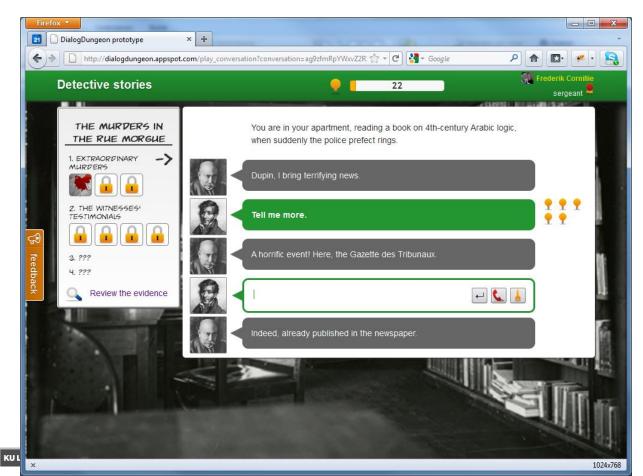




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DuoLingo



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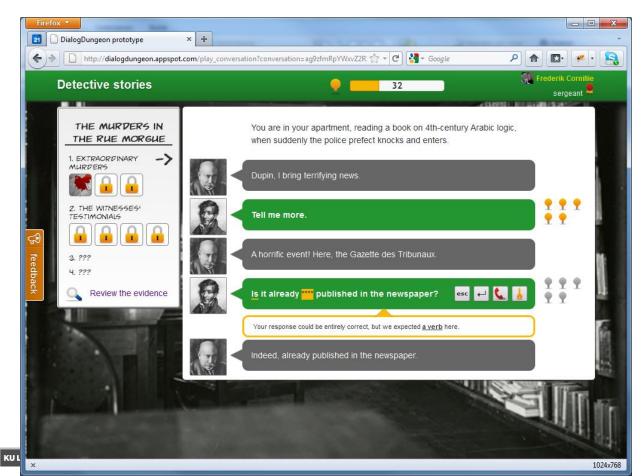
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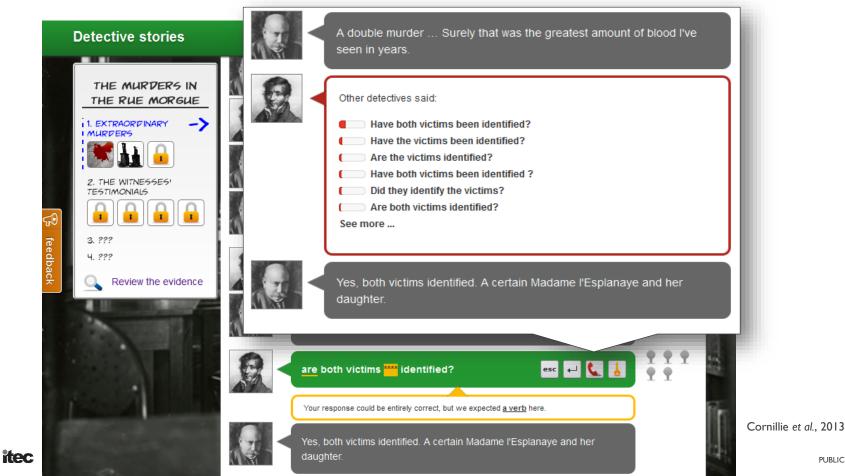
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WHY CROWDSOURCING FOR LANGUAGE LEARNING A COUPLE OF ARGUMENTS

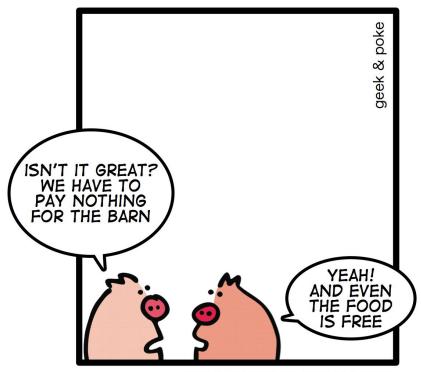
the educator's perspective

the language learning researcher's perspective

the developer's perspective

- Because we want to personalize our learning environment for each individual learner
- Because we believe language awareness has a great impact on learning
- Because storytelling is so much more interesting when the audience is actively involved (e.g. fan fiction)
- Because we want to understand learning processes
- Because language is a complex dynamic system, equally shaped by language learners as by 'native speakers'
- Because we were too lazy to finish our content before releasing ⁽ⁱ⁾

WHY NOT CROWDSOURCING



PIGS TALKING ABOUT THE "FREE" MODEL

OK CROWDSOURCING – BUT HOW ?



Aevor the Love Fool <Eat My Crit>

[2. Trade] [Kopperhead]: yes
 [2. Trade] [linsane]: wts [Hellfrozen Bonegrinders]
 [2. Trade] [Chankanaab]: can you buy wrathful shoulders with honor?
 [2. Trade] [Breakdowns]: Yes
 [2. Trade] [Projecthealz]: If tnk and 2dps for weekly
 [2. Trade] [Frappé]: DUHI what's wrong with it.
 Total time played: 6 days, 9 hours, 1 minute, 7 seconds
 Time played this level: 0 days, 0 hours, 21 minutes, 19 seconds

20. 20. 20. 20. 3 XP 918 / 1523800 World of Warcraft

~

Zone Map

Trade District

Per-

9

29

https://www.deviantart.com/praxiusalternate/art/World-of-Warcraft-group-612797937



Llana

Z5

Eythynen

Astranaar

187

83

Blackfathom Deeps

VELIDOE STARSONG

Speak with Thyn'tel Bladeweaver at the Warrior's Terrace in Darnassus.

DESCRIPTION

4

* *

Velinde Starsong was my predecessor here in Ashenvale Forest. At first it seemed she had the situation in Felwood under control, but little by little her efforts faltered. One day, she simply disappeared.

I was sent here to continue her work. I'm afraid I know nothing of the priestess, however. Perhaps Thyn'tel Bladeweaver, one of the commanders of the Sentinels, knows further details of her disappearance that I was not a

Abandon Quest Share Quest Exit

10 💀 🛠 🕲

World of Warcraft

GAMES AND L2 LEARNING 'IN THE WILD'

- All Track Quest Quests: 19/2 Ashenvale Elemental Bracers The Lost Chalice Velinde Starsong
- Players engage in ...

meaningful attention to and appropriation of linguistically complex texts (Thorne, Fischer, & Lu, 2012; Piirainen-Marsh & Tainio, 2009)

high-stakes communicative activity with other players, often in plurilingual settings (Thorne, 2008; Zheng, Newgarden, & Young, 2012)

construction of scientific discourse (Steinkuehler & Duncan, 2009)

riestess, however. Perhaps Thyn'tel ladeweaver, one of the commanders f the Sentinels, knows further details

Time spent on gaming correlates with measures of L2 proficiency (Kuppens, 2010; Sylvén & Sundqvist, 2012)

GAMES AND L2 LEARNING 'IN THE WILD': TASK-BASED !



Super Mario

- non-linguistic goals
- meaningful use of language
- scenarios and mechanics
- interactivity and feedback

Baltra, 1990; Cornillie, Thorne, & Desmet, 2012; García-Carbonell, Rising, Montero, & Watts, 2001; Mawer & Stanley, 2011; Purushotma et al., 2009; ...



TRANSLATING INSIGHTS FROM GAME-BASED LEARNING 'IN THE WILD' TO INSTRUCTED L2 SETTINGS ?

GAMES AND INSTRUCTED L2 LEARNING

"

the reflex fallacy ... the assumption that it is our job to re-create in our classrooms the natural conditions of acquisition present in the external environment. Instead, what we want to do as language teachers, it seems to me, is to improve upon natural acquisition, not emulate it ... we want to accelerate the actual rate of acquisition beyond what the students could achieve on their own ... accelerating natural learning is, after all, the purpose of formal education

Diane Larsen-Freeman, 2003, p. 20

HOW TO EFFECTIVELY SUPPORT L2 LEARNER ENGAGEMENT ?

L2 learner engagement

intrinsically motivated

primarily focused on meaning

attention to linguistic form

Game studies perspective SLA perspective

feedback

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HOW TO EFFECTIVELY SUPPORT L2 LEARNER ENGAGEMENT ?

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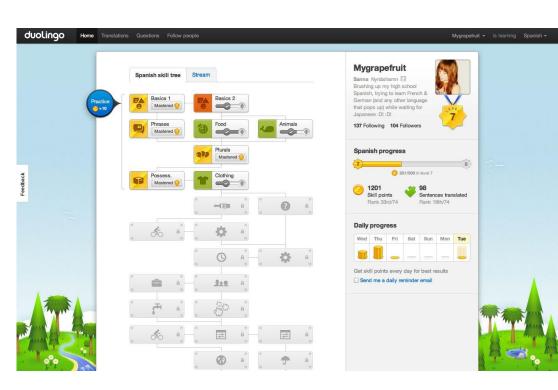
SLA perspective

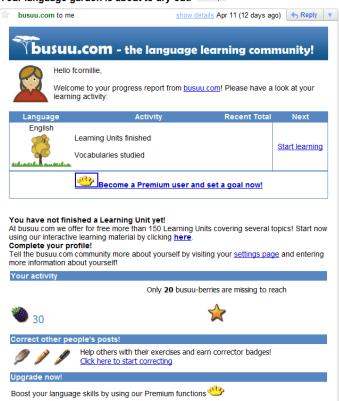
feedback

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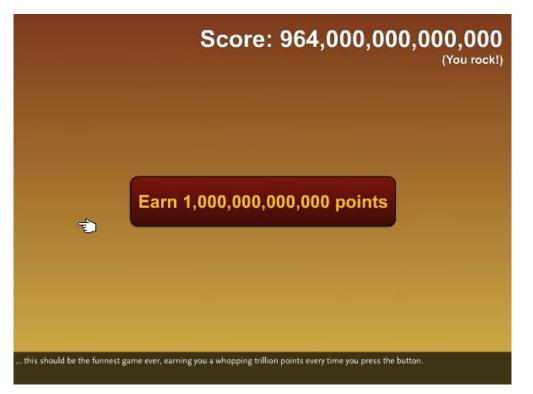
TACKLING THE MOTIVATION ISSUE THROUGH FEEDBACK LOOKING BEYOND THE OBVIOUS QUICK WINS Your language garden is about to dry out!





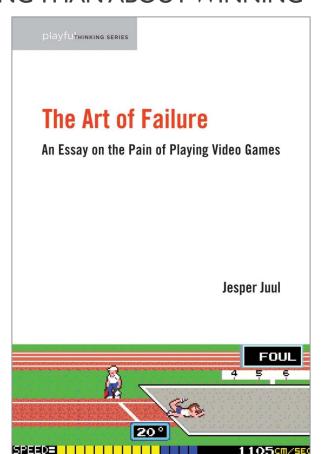
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TACKLING THE MOTIVATION ISSUE THROUGH FEEDBACK LOOKING BEYOND THE OBVIOUS QUICK WINS



Credits: Sebastian Deterding

WELL-DESIGNED GAMES OFTEN MORE ABOUT FAILING THAN ABOUT WINNING



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FAILURE STATES ARE FUN



Ravaja, N., Saari, T., Salminen, M., Laarni, J., & Kallinen, K. (2006). Phasic Emotional Reactions to Video Game Events: A Psychophysiological Investigation. *Media Psychology, 8*(4), 343–367.



POSITIVE FAILURE FEEDBACK

a vivid demonstration of the players' agency in the game



🔰 @avantgame



Reality Is Broken: Why Games Make Us Better and How They Can Change the World (2011)

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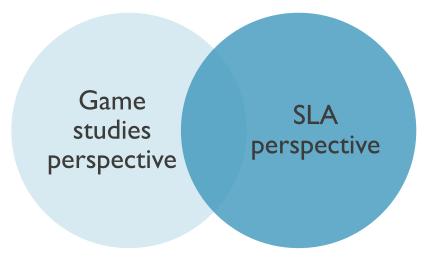
HOW TO EFFECTIVELY SUPPORT L2 LEARNER ENGAGEMENT ?

L2 learner engagement

intrinsically motivated

primarily focused on meaning

attention to linguistic form



NEGATIVE FEEDBACK IN INSTRUCTED L2 LEARNING IT CAN BE POWERFUL

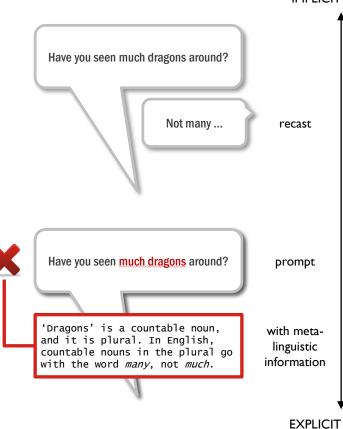
- Meta-analysis Hattie & Timperley, 2007:
 - Average effect of instruction: d = .40
 - Average effect of feedback: d = .79
- Meta-analyses on corrective feedback in SLA (Li, 2010; Lyster & Saito, 2010; Russell & Spada, 2006):
 - .6| < d < |.|
 - \rightarrow large variation between studies !
 - Type of environment (e.g. classroom vs. research lab)
 - Individual differences of learners
 - Type of corrective feedback

TYPES OF CORRECTIVE FEEDBACK

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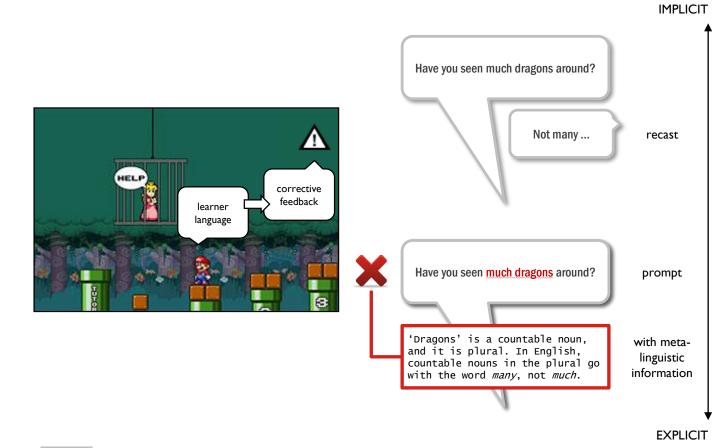
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IMPLICIT

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BUT DO WE REALLY WANT THIS IN GAMES ?



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GAMES AND INSTRUCTED L2 LEARNING

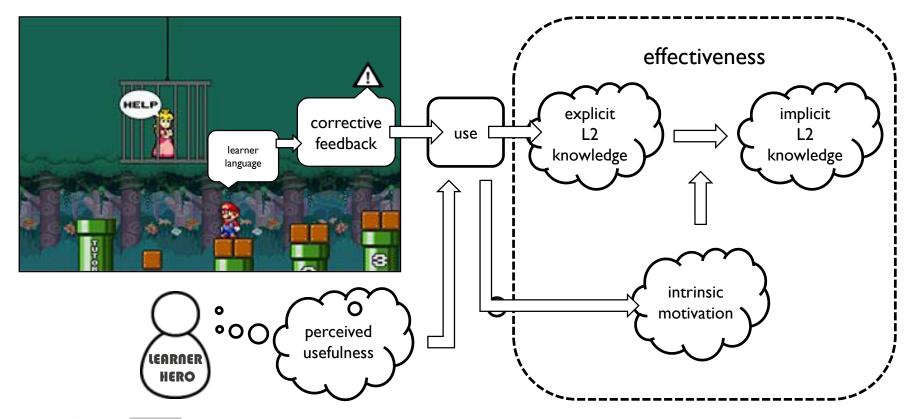
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Rather than choosing between subtle feedback mechanisms that are ineffective, and explicit feedback mechanisms that are jarring and intrusive, it is critical that game designers form creative feedback mechanisms that can be **both unabashfully explicit yet humorous** and playful enough to actually have a positive impact on the learner's experience when they 'make mistakes'

Purushotma, Thorne, and Wheatley, 2009

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EFFECTIVENESS OF GAME-BASED CORRECTIVE FEEDBACK KEY VARIABLES AND CRITERIA



KEY STUDIES ON GAME-BASED CORRECTIVE FEEDBACK

EFFECTIVENESS OF GAME-BASED CF: KEY CRITERIA

I – Learners must be sensitive to game-based corrective feedback.

2 – Learners must use it (and we must know why they don't).

3 – It must be usable (i.e. support learning).

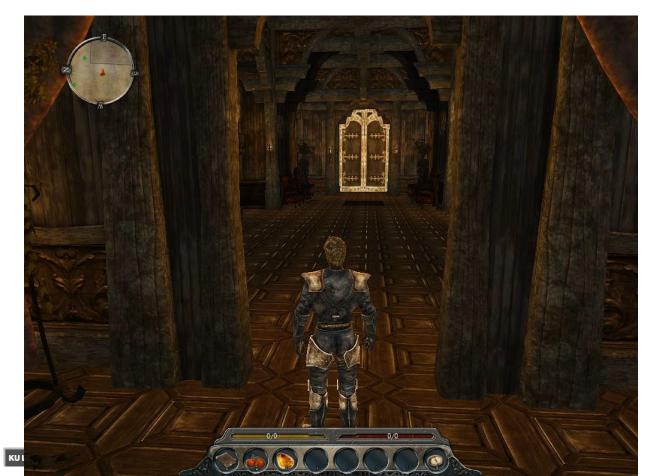
PLAYERS ATTEND TO LINGUISTIC FORM AND GIVE PEERS FEEDBACK

38. Meme:	do you get any exp off of these if yo	ou kill them? i	f so lets party			
39. Zomn:	lets for 3k					
40. Meme:	sounds good, so what did what i said	d before mean	?			
41. Meme:	i was just asking my friend from uki	raine what to	say			
42. Meme:	and don't know what it means					
43. Zomn:	it wasnt right but kinnda 'kiss my	ass'				
44. Meme:						
45. Zomn:	ahhh np :)))) [no problem]	53. Zomn:	:) dont u mind if i add u to friend list ?			
46. Zomn:	u can kill him now :))))	54. Zomn:	yeah :)			
47. Meme:	yeah, I will once I get home, he's in	55. Meme:	go ahead, i'll add you too and we can group again sometime			
48. Meme:	and I'm off at college	56. Zomn:	sure :))			
49. Zomn:	tell him that u got an interpriter now	57. Zomn:	nice too meet u //			
50. Meme:	will do haha	58. Meme:	you too, I forget how to spell goodbye in russian, dasvidania?			
51. Zomn:	is 'interpriter' right ? :((59. Meme:	Is that sort of close?			
52. Meme:	it's actually interpreter, but that was	60. Zomn:	it is right or just 'poka'			
		61. Meme:	alright, thanks			
		62. Meme:				

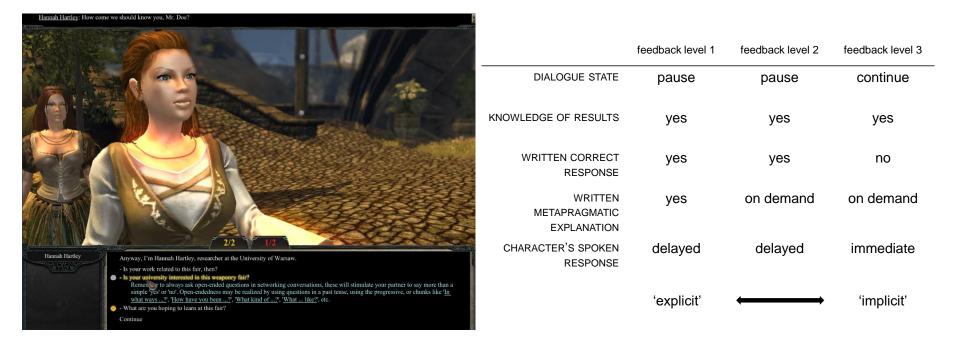
Thorne, S. L. (2008). Transcultural Communication in Open Internet Environments and Massively Multiplayer Online Games. In S. S. Magnan (Ed.), *Mediating Discourse Online* (pp. 305–327). Amsterdam: John Benjamins.

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MANIPULATING CF IN AN OFF-THE-SHELF RPG



MANIPULATING CF IN AN OFF-THE-SHELF RPG



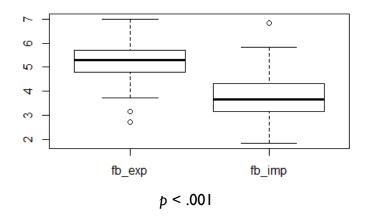
Cornillie, F., Clarebout, G., & Desmet, P. (2012). Between learning and playing? Exploring learners' perceptions of corrective feedback in an immersive game for English pragmatics. *ReCALL*, 24(3), 257–278.

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EXPLICIT CF DOES NOT INTERFERE WITH MOTIVATION

perceptions of explicit vs. implicit CF

correlations 'motivation' - explicit CF



	Ι.	2.	3.	4.
l.intrinsic goal orientation		.03	.14	.31 *
2. perceived competence		_	.26	.33 *
3. game experience			_	.34 *
4. perception of explicit feedback				

* *p* < .05

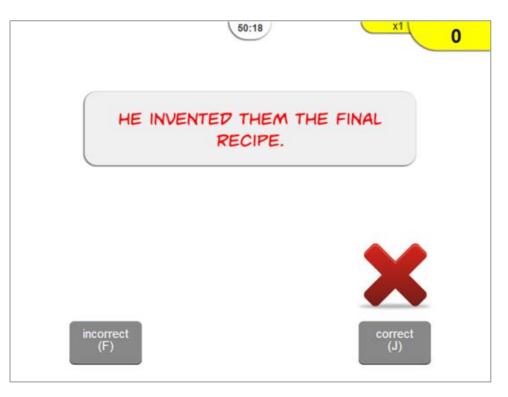
Cornillie, F., Clarebout, G., & Desmet, P. (2012). Between learning and playing? Exploring learners' perceptions of corrective feedback in an immersive game for English pragmatics. *ReCALL*, 24(3), 257–278.

EXPLICIT CF DOES NOT INTERFERE WITH MOTIVATION

I think a combination [of explicit and implicit CF] would be best ... when the NPC responds 'incorrectly', as this one does here, that shakes you up a bit.

Cornillie, F., Clarebout, G., & Desmet, P. (2012). Between learning and playing? Exploring learners' perceptions of corrective feedback in an immersive game for English pragmatics. *ReCALL*, 24(3), 257–278.

GAMIFYING EXPLICIT CORRECTIVE FEEDBACK



Cornillie, F., & Desmet, P. (2013). Seeking out fun failure: how positive failure feedback could enhance the instructional effectiveness of CALL minigames. In *Global perspectives on Computer-Assisted Language Learning. Proceedings of WorldCALL 2013* (pp. 64–68). University of Ulster.

EMBEDDING EXPLICIT CF IN A SAFE REPRESENTATIONAL CONTEXT



Cornillie, F., & Desmet, P. (2013). Seeking out fun failure: how positive failure feedback could enhance the instructional effectiveness of CALL minigames. In *Global perspectives on Computer-Assisted Language Learning. Proceedings of WorldCALL 2013* (pp. 64–68). University of Ulster.

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EMBEDDING EXPLICIT CF IN A SAFE REPRESENTATIONAL CONTEXT

The distinguishing feature of the emotions we feel in a representational context is that there is no threat of pain or harm in the real world.





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Brenda Laurel

Computers as Theatre (1993)

"

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CF IN A SAFE REPRESENTATIONAL CONTEXT AIDS MOTIVATION



Cornillie, F., & Desmet, P. (2013). Seeking out fun failure: how positive failure feedback could enhance the instructional effectiveness of CALL minigames. In *Global perspectives on Computer-Assisted Language Learning*. Proceedings of WorldCALL 2013 (pp. 64–68). University of Ulster.

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EFFECTIVENESS OF GAME-BASED CF: KEY CRITERIA

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2 – Learners must use it.

3 – It must be usable (i.e. support learning).

USE OF METALINGUISTIC HINTS IN SEMI-OPEN HCI DIALOGUES



Cornillie, F., Lagatie, R., Vandewaetere, M., Clarebout, G., & Desmet, P. (2013). Tools that detectives use: in search of learner-related determinants for usage of optional feedback in a written murder mystery. In P. Hubbard, M. Schulze, & B. Smith (Eds.), *Learner-Computer Interaction in Language Education*. San Marcos, TX: Computer Assisted Language Instruction Consortium (CALICO).

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LARGE VARIATION IN USE OF HINTS, AFFECTED BY PRIOR KNOWLEDGE

use of optional feedback = number of times clicked / number highlighted tokens M = .40; SD = .26; range between .03 and 1.02

Variable	1.	2.	3.	4.	5.	6.
1. usage of optional CF	—	08	.59**	.03	02	.03
2. perceived usefulness		_	05	23	.44	16
3. MKT			—	.09	.15	.26
4. GJT (ungrammatical items)				_	13	.02
5. task approach					—	.27
6. other approach						—

Table 6: Pearson's correlation coefficients for research question 3, adjusted for multiple comparisons using Holm's method (** $p \le .01$; * $p \le .05$)

Cornillie, F., Lagatie, R., Vandewaetere, M., Clarebout, G., & Desmet, P. (2013). Tools that detectives use: in search of learner-related determinants for usage of optional feedback in a written murder mystery. In P. Hubbard, M. Schulze, & B. Smith (Eds.), *Learner-Computer Interaction in Language Education*. San Marcos, TX: Computer Assisted Language Instruction Consortium (CALICO).

EFFECTIVENESS OF GAME-BASED CF: KEY CRITERIA

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IMPLICIT CORRECTIVE FEEDBACK IS NOT EFFECTIVE



Croquelandia

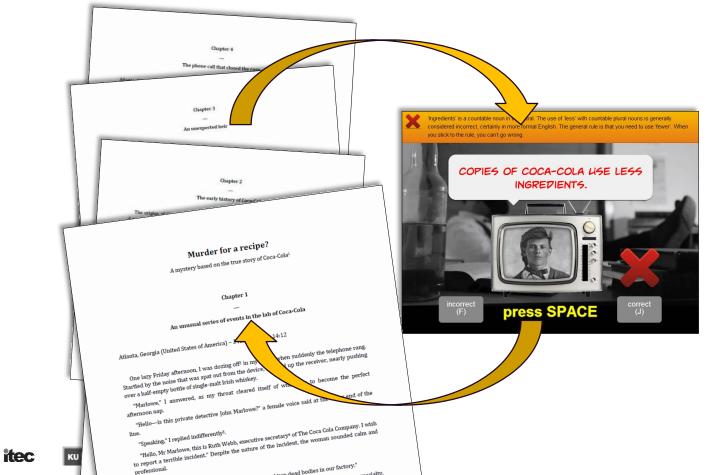
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"the branching mechanism used to interact with [non-player characters] may not have been sufficiently explicit for the learners to notice pragmatic differences"

Sykes, J. M. (2008). A dynamic approach to social interaction. Synthetic immersive environments & Spanish pragmatics. University of Minnesota.

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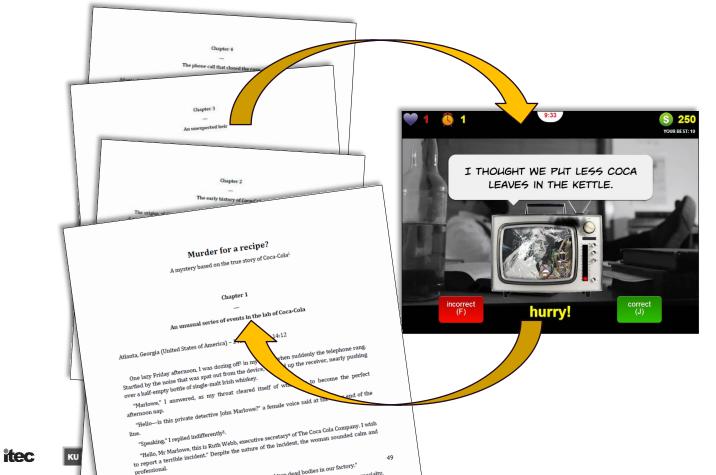
EXPLICIT CF IN MINI-GAMES EMBEDDED IN MURDER MYSTERY



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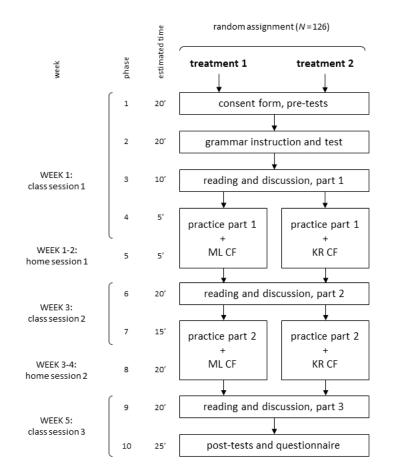
EXPLICIT CF IN MINI-GAMES EMBEDDED IN MURDER MYSTERY



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EXPLICIT CF IN MINI-GAMES EMBEDDED IN MURDER MYSTERY



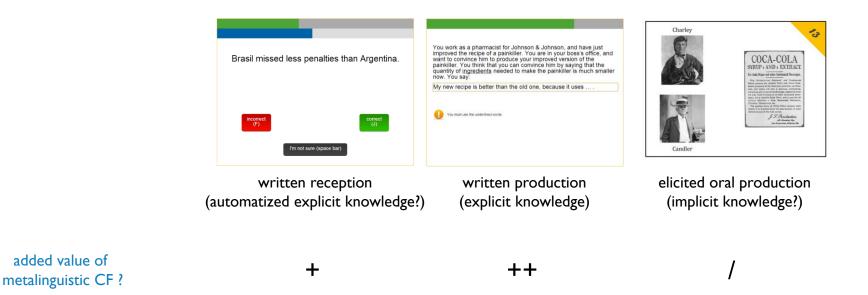
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TARGET CONSTRUCTIONS

- quantifiers (QNT)
 - no distinction between count-uncount nouns in Dutch
 - Copies of Coca-Cola use fewer ingredients / less sugar / ?*less ingredients.
 - Kopieën van het Coca-Cola recept gebruiken minder ingrediënten/suiker.
 - simple rule system
- verbs with two objects (V2O)
 - dative (to-) alternation and benefactive (for-) alternation
 - 'Latinate verb stem' constraint for double object construction has no equivalent in Dutch
 - *Pemberton revealed me the secret formula.
 - Pemberton onthulde mij het geheime recept.
 - complex rule system

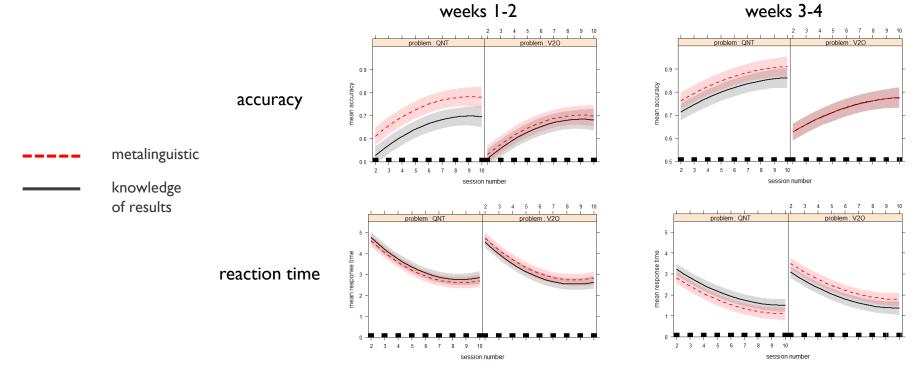
PRE-POSTTEST DATA METALINGUISTIC CF AFFECTS EXPLICIT KNOWLEDGE DEVELOPMENT



Cornillie, F., Van den Branden, K., & Desmet, P. (2015). From language play to linguistic form and back again. Lessons from an experimental study for the design of task-based language practice supported by games. In J. Colpaert, A. Aerts, M. Oberhofer, & M. Gutiérez-Colón Plana (Eds.), *Proceedings of XVIIth International CALL Conference. Task design and CALL. 6-8 July 2015. Tarragona, Spain* (pp. 214–222). Antwerp: Universiteit Antwerpen.

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PROCESS DATA METALINGUISTIC CF SPEEDS UP LEARNING OF SIMPLE RULES ONLY



Cornillie, F., Van den Noortgate, W., Van den Branden, K., & Desmet, P. (2017). Examining focused L2 practice: from in vitro to in vivo. Language Learning & Technology, 21(1), 121–145.

SUGGESTIONS FOR CROWDSOURCING-BASED L2 LEARNING



- If done well, corrective feedback can be very effective (for explicit knowledge development).
 - Consider involving L2 learners in its development, through implicit or explicit crowdsourcing ?
 - Gamification is more than pointsification.
 - Consider your player types !
 - Corrective feedback and gaming go well together.
 - Consider creative feedback options in order to support learner motivation.



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REFERENCES

Baltra, A. (1990). Language Learning through Computer Adventure Games. Simulation & Gaming, 21(4), 445-452.

- Cornillie, F. (2014). Adventures in red ink. Effectiveness of corrective feedback in digital game-based language learning. Unpublished doctoral dissertation. KU Leuven (University of Leuven).
- Cornillie, F., & Desmet, P. (2013). Seeking out fun failure: how positive failure feedback could enhance the instructional effectiveness of CALL mini-games. In *Global* perspectives on Computer-Assisted Language Learning. Proceedings of WorldCALL 2013 (pp. 64–68). University of Ulster.
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- Cornillie, F., Thorne, S. L., & Desmet, P. (2012). Digital games for language learning: from hype to insight? ReCALL, 24(3), 243–256. https://doi.org/10.1017/S0958344012000134
- Cornillie, F., Van den Branden, K., & Desmet, P. (2015). From language play to linguistic form and back again. Lessons from an experimental study for the design of task-based language practice supported by games. In J. Colpaert, A. Aerts, M. Oberhofer, & M. Gutiérez-Colón Plana (Eds.), Proceedings of XVIIth International CALL Conference. Task design and CALL. 6-8 July 2015. Tarragona, Spain (pp. 214–222). Antwerp: Universiteit Antwerpen.
- Cornillie, F., Van den Noortgate, W., Van den Branden, K., & Desmet, P. (2017). Examining focused L2 practice: from in vitro to in vivo. Language Learning & Technology, 21(1), 121–145.
- García-Carbonell, A., Rising, B., Montero, B., & Watts, F. (2001). Simulation/Gaming and the Acquisition of Communicative Competence in Another Language. Simulation & Gaming, 32(4), 481–491.
- Hattie, J., & Timperley, H. (2007). The Power of Feedback. Review of Educational Research, 77(1), 81–112. https://doi.org/10.3102/003465430298487
- Juul, J. (2013). The Art of Failure. An Essay on the Pain of Playing Video Games. Cambridge, MA: MIT Press.
- Kuppens, A. H. (2010). Incidental foreign language acquisition from media exposure. Learning, Media and Technology, 35(1), 65–85. https://doi.org/10.1080/17439880903561876
- Larsen-Freeman, D. (2003). Teaching language. From grammar to grammaring. Boston: Thomson/Heinle.
- Laurel, B. (1993). Computers as Theatre. Boston: Addison-Wesley Professional.

REFERENCES

Li, S. (2010). The Effectiveness of Corrective Feedback in SLA: A Meta-Analysis. Language Learning, 60(2), 309–365. https://doi.org/10.1111/j.1467-9922.2010.00561.x Lyster, R., & Saito, K. (2010). Oral Feedback in Classroom SLA. A Meta-Analysis. Studies in Second Language Acquisition, 32(02), 265–302.

- https://doi.org/10.1017/S0272263109990520
- Mawer, K., & Stanley, G. (2011). Digital Play. Computer games and language aims. Peaslake: Delta Publishing.
- McGonigal, J. (2011). Reality Is Broken: Why Games Make Us Better and How They Can Change the World. New York: The Penguin Press.
- Piirainen-Marsh, A., & Tainio, L. (2009). Other-repetition as a resource for participation in the activity of playing a video game. *Modern Language Journal*, 93(2), 153–169.
- Purushotma, R., Thorne, S. L., & Wheatley, J. (2009). 10 key principles for designing video games for foreign language learning. Retrieved from http://knol.google.com/k/ravi-purushotma/10-key-principles-for-designing-video/27mkxqba7b13d/2#done
- Ravaja, N., Saari, T., Salminen, M., Laarni, J., & Kallinen, K. (2006). Phasic Emotional Reactions to Video Game Events: A Psychophysiological Investigation. *Media Psychology*, 8(4), 343–367. https://doi.org/10.1207/s1532785xmep0804_2
- Russell, J., & Spada, N. (2006). The effectiveness of corrective feedback for the acquisition of L2 grammar: A meta-analysis of the research. In J. M. Norris & L. Ortega (Eds.), Synthesizing Research on Language Learning and Teaching (pp. 133–164). Amsterdam: John Benjamins.
- Steinkuehler, C., & Duncan, S. (2008). Scientific Habits of Mind in Virtual Worlds. Journal of Science Education and Technology, 17(6), 530–543. https://doi.org/10.1007/s10956-008-9120-8
- Sykes, J. M. (2008). A dynamic approach to social interaction. Synthetic immersive environments & Spanish pragmatics. University of Minnesota.
- Sylvén, L. K., & Sundqvist, P. (2012). Gaming as extramural English L2 learning and L2 proficiency among young learners. ReCALL, 24(03), 302–321. https://doi.org/10.1017/S095834401200016X
- Thorne, S. L. (2008). Transcultural Communication in Open Internet Environments and Massively Multiplayer Online Games. In S. S. Magnan (Ed.), *Mediating Discourse Online* (pp. 305–327). Amsterdam: John Benjamins.
- Thorne, S. L., Fischer, I., & Lu, X. (2012). The semiotic ecology and linguistic complexity of an online game world. *ReCALL*, 24(03), 279–301. https://doi.org/10.1017/S0958344012000158
- Zheng, D., Newgarden, K., & Young, M. F. (2012). Multimodal analysis of language learning in World of Warcraft play: Languaging as Values-realizing. *ReCALL*, 24(03), 339–360. https://doi.org/10.1017/S0958344012000183