

Table A1. The coding of the reviewed papers according to Context, Purpose (A=awareness, SM=reflection and sense-making, ACT=action), Stakeholders involved in the design (T=teachers, LS=learning scientists or instructional designers, LA=LA researchers, E=engineers or interface designers), Level of involvement of stakeholders (II=initial input, FP=feedbacking prototypes, IP=prototype design), Deployment stage (P=low-fidelity prototype, HFP=high-fidelity prototype, PL=pilot, CU=classroom use) and Evaluation level (R=reaction, L=learning, B=behaviour, RS=results).

Year	Title	Authors	Dashboard Name	Context	Purpose	Privacy& ethics	Stake holders	Level	Implement ation stage	Evaluation	Outlet
2019	"I Spent More Time with that Team": Making Spatial Pedagogy Visible Using Positioning Sensors	Roberto Martinez-Maldonado		HEI	A	Yes	-		PL	R	conference
2019	A handheld classroom dashboard: Teachers' perspectives on the use of real-time collaborative learning analytics	Roberto Martinez-Maldonado		HEI	A, SM, ACT	Yes	T	FP	PL	R, L, B	journal
2019	A Learning Analytics Dashboard to Analyse Learning Activities in Interpreter Training Courses	Davide Taibi Francesca Bianchi Philipp Kemkes Ivana Marenzi		HEI	A, ACT	-	T, LA		PL	R, L	conference
2016	A learning analytics tool with hybrid graphical and textual interpretation generation	Daniel Amo Filvà, Marc Alier, María José Casany, and Enric Mayol		HEI	SM, ACT	-	-		PL	R	conference
2021	A Teacher-facing Learning Analytics Dashboard for Process-oriented Feedback in Online Learning	Raphael A Dourado, Rodrigo Lins Rodrigues, Nivan Ferreira, Rafael Ferreira Mello, Alex Sandro Gomes, and Katrien Verbert		HEI	A, SM, ACT	-	T, E		P	R	conference
2021	Affective Teacher Tools: Affective Class Report Card and Dashboard	Ankit Gupta Neeraj Menon William Lee William Rebersky Daniell		K-12	A	-	T, E	FP	P	R, L	conference

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		e AllesioTom MurrayBeverly WoolfJacob Whitehillvon Arroyo									
2020	An Actionable Orchestration dashboard to Enhance Collaboration in the Classroom	I. Amarasinghe; D. Hernv ^o ndez-Leo; K. Michos; M. Vujovic		HEI	A, ACT	-	T	II, FP	PL	R, B, RS	journal
2021	Beyond First Encounters with Analytics: Questions, Techniques and Challenges in Instructors' Sensemaking	Qiuji Li, Yeonji Jung, and Alyssa Friend Wise		HEI	A	-	-		CU	R	conference
2021	Collaborative learning in mathematics classrooms: Can teachers understand progress of concurrent collaborating groups?,	Baruch B. Schwarz, Osama Swidan, Naomi Prusak, Alik Palatnik,	SAGLET	K-12	A, SM, ACT	-	-		HFP	L	journal
2012	Course signals at Purdue: using learning analytics to increase student success	Kimberly E. Arnold and Matthew D. Pistilli.	Signals	HEI	SM, ACT	-	-		CU	B	conference
2019	Designing Narrative Slideshows for learning analytics	Q. Chen; Z. Li; T. -C. Pong; H. Qu		MOOC	SM, ACT	-	T, LS	II	HFP	R	conference
2017	Developing a MOOC experimentation platform: insights from a user study	Vitomir Kovanović, Srećko Joksimović, Philip Katerinopoulos, Charalampos Michail, George Siemens, and Dragan Gašević	MOOCito	MOOC	SM, ACT	-	-		HFP	R	conference

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2020	Development and evaluation of learning analytics dashboards to support online discussion activities	M Yoo, SH Jin		HEI	A	-	LS, LA, E	FP, IP	PL	R	journal
2015	Digitally enhanced assessment in virtual learning environments	Enrica Pesare, Teresa Roselli, Veronica Rossano, Pierpaolo Di Bitonto,		HEI	A, ACT	Yes	-		PL	R	journal
2021	Do Teachers Find Dashboards Trustworthy, Actionable and Useful? A Vignette Study Using a Logs and Audio Dashboard	Reet KasepaluPankaj ChejaraLuis P. PrietoTobias Ley	Cotrack	K-12	A, SM, ACT	-	T	II, FP	HFP	R	journal
2017	Effects of a Dashboard for an Intelligent Tutoring System on Teacher Knowledge, Lesson Plans and Class Sessions	François Beska XhakajVincent AlevinBruce M. McLaren	Luna	K-12	A, ACT	-	T	II, FP	PL	B	conference
2017	Effects of a Teacher Dashboard for an Intelligent Tutoring System on Teacher Knowledge, Lesson Planning, Lessons and Student Learning	François Beska XhakajVincent AlevinBruce M. McLaren	Luna	K-12	ACT	-	T	II, FP	PL	L	conference
2017	EMODA: a tutor oriented multimodal and contextual emotional dashboard	Mohamed Ez-zaouia and Elise Lavoué	EMODA	HEI	A	-	-		PL	R	conference
2020	Emodash: A dashboard supporting retrospective awareness of emotions in online learning,	Mohamed Ez-zaouia, Aurélien Tabard, Elise Lavoué,	Emodash	HEI	A	-	T, E	II, FP	PL	B	journal
2019	Empowering online teachers through predictive learning analytics	Herodotou, C., Hlostá, M., Boroowa, A., Rienties, B.,	OU Analyse	HEI	SM, ACT	-	-		CU	R	journal

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		Zdrahal, Z., and Mangafa, C.									
2021	Evaluating a Learning Analytics Dashboard to Visualize Student Self-Reports of Time-on-task: A Case Study in a Latin American University	Isabel Hilliger, Constanza Miranda, Gregory Schuit, Fernando Duarte, Martin Anselmo, and Denis Parra		HEI	A	-	T	II	PL	L	conference
2020	Evaluating the scaling of a LA tool through the lens of the SHEILA framework: A comparison of two cases from tinkerers to institutional adoption,	Vigentini, Lorenzo and Liu, Danny YT and Arthars, Natasha and Dollinger, Mollie	SRES	HEI	ACT	Yes	T, LA, E			RS	journal
2020	Evaluation of a learning analytics tool for supporting teachers in the creation and evaluation of accessible and quality open educational resources	Avila, C., Baldiris, S., Fabregat, R., and Graf, S. (ATCE	HEI	ACT	-	-		PL	R	journal
2017	Examining Instructor Use of Learning Analytics	Suzanne L. Dazo, Nicholas R. Stepanek, Aarjav Chauhan, and Brian Dorn.	TrACE	HEI	A	-	-		PL	R	conference
2021	Examining the Use of a Teacher Alerting Dashboard During Remote Learning	Rachel DicklerAmy AdairJanice GobertHuma Hussain-AbidiJoe OlsenMariel	Inq-Blotter	K-12	SM, ACT	-	-		HFP	R, RS	conference

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		O,ÃBrienMichael Sao Pedro									
2021	Experiences in the use of an adaptive intelligent system to enhance online learners' performance: a case study in Economics and Business courses	Ana-Elena Guerrero-RoldvnM. Elena Rodrv#iguez-GonzvlezDavid Bav#eresAmal Elasi-EjjaberiPau Cortadas	LIS	HEI	SM, ACT	-	-		PL	R, RS	journal
2021	Facilitators First: Building a Tool With Facilitators to Foster a More Collaborative Makerspace Community Through Movement Traces	L#onore V. Guillain and Bertrand Schneider.		K-12	SM, ACT	-	T	II, FP	HFP	R	conference
2020	From Data to Insights: A Layered Storytelling Approach for Multimodal Learning Analytics	Roberto Martinez-Maldonado, Vanessa Echeverria, Gloria Fernandez Nieto, and Simon Buckingham Shum		HEI	A, ACT	Yes	-		HFP	R	conference
2020	From theory to action: developing and evaluating learning analytics for learning design	Korah J. Wiley, Yannis Dimitriadis, Allison Bradford, and Marica C. Linn.		K-12	SM, ACT	-	T, E	II, FP	PL	R	conference

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2020	Helping Teachers Assist Their Students in Gamified Adaptive Educational Systems: Towards a Gamification Analytics Tool	Kamilla Tennrio, Geiser Chalco ChalcoDiego DermevalBruno LemosPedro NascimentoRodrigo SantosAlan Pedro da Silva	GamAnalytics	HEI	A, ACT	-	-		PL	RS	conference
2019	Intelligent analysis and data visualisation for teacher assistance tools: The case of exploratory learning	Mavrikis, M., Geraniou, E., Gutierrez Santos, S., and Poulouvassilis, A.		HEI	A, SM, ACT	-	T	II, FP	HFP	R	journal
2019	Investigating the Impact of a Real-time, Multimodal Student Engagement Analytics Technology in Authentic Classrooms	Sinem Aslan, Nese Alyuz, Cagri Tanriover, Sinem E. Mete, Eda Okur, Sidney K. D'Mello, and Asli Arslan Esme.	SEAT	HEI	SM, ACT	Yes	T, LS	II, FP	PL	RS	conference
2016	iSAT: a visual learning analytics tool for instructors	Rwitajit MajumdarSridhar Iyer	iSAT	HEI	A, SM	-	-		HFP	R	journal
2021	Learning analytics dashboards for adaptive support in face-to-face collaborative argumentation,	Jeongyun Han, Kwan Hoon Kim, Wonjong Rhee, Young Hoan Cho,	FCA	HEI	A, SM, ACT	Yes	-		HFP	RS	journal
2016	Lernanto: Using an Ambient Display During Differentiated Instruction	Erik van Alphen and Saskia Bakker	Lernanto	K-12	A, ACT	-	-		HFP	R	conference

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2018	Maestro: Designing a System for Real-Time Orchestration of 3D Modeling Workshops	Volodymyr Dziubak, Ben Lafreniere, Tovi Grossman, Andrea Bunt, and George Fitzmaurice	Maestro	K-12	A, SM, ACT	-	-	FP	HFP	L	conference
2018	OARS: exploring instructor analytics for online learning	Jonathan Bassen, Iris Howley, Ethan Fast, John Mitchell, and Candace Thille	OARS	HEI	A, SM, ACT	Yes	T	II	PL	R	conference
2019	PerformanceVis: Visual analytics of student performance data from an introductory chemistry course,	Haozhang Deng, Xuemeng Wang, Zhiyi Guo, Ashley Decker, Xiaojing Duan, Chaoli Wang, G. Alex Ambrose, Kevin Abbott,	Performance Vis	HEI	A, SM, ACT	-	LS, E	II	PL	L	journal
2021	Self-regulation and emotion matter: A case study of instructor interactions with a learning analytics dashboard,	Juan Zheng, Lingyun Huang, Shan Li, Susanne P. Lajoie, Yuxin Chen, Cindy E. Hmelo-Silver,	HOWARD	HEI	A, SM	-	-		HFP	L	journal
2018	Sensei: Sensing Educational Interaction	Nazmus Saquib, Ayesha Bose, Dwyane George, and Sepandar Kamvar	Sensei	K-12	A, SM, ACT	Yes	T, LS	II, FP	HFP	L	conference

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2018	Specification and evaluation of an assessment engine for educational games: Empowering educators with an assessment editor and a learning analytics dashboard,	Yaëlle Chaudy, Thomas Connolly,	EngAGe	K-12	ACT	-	T	II	HFP	R	journal
2018	Supporting awareness in communities of learning design practice,	Konstantinos Michos, Davinia Hernández-Leo,	inILDE	K-12	A	-	T	II, FP	PL	R	journal
2018	Supporting Differentiated Instruction in Programming Courses through Permanent Progress Monitoring	Nuno Gil Fonseca, Luís Macedo, and António José Mendes	CodeInsights	HEI	A, ACT	Yes	-		PL	RS	conference
2017	Teacher Dashboards in Practice: Usage and Impact	Inge MolenaarCaroli en Knoop-van Campen	Snappet	K-12	A	-	-		CU	R	conference
2015	Teacher regulation of cognitive activities during student collaboration: Effects of learning analytics,	Anouschka van Leeuwen, Jeroen Janssen, Gijsbert Erkens, Mieke Brekelmans,	Concept Trail	HEI	A, SM, ACT	-	-		HFP	R, L, B	journal
2021	The engagement of university teachers with predictive learning analytics,	Christothea Herodotou, Claire Maguire, Nicola McDowell, Martin Hlosta, Avinash Boroowa,	Early Alert	HEI	SM, ACT	-	-		CU	R, B	journal
2020	Towards fine-grained reading dashboards for online course revision	Madjid SadallahBenovÆt EncelleAzze-Eddine	CoReaDa	Informal learning	ACT	-	-		HFP	R	journal

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2020	UserFlow: A Tool for Visualizing Fine-grained Contextual Analytics in Teaching Documents	Shaveen Singh, Bernd Meyer, and Michael Wybrow	UserFlow	HEI	ACT	-	T, LS, LA	II, FP	PL	R	conference
2015	Using Learning Analytics to Visualise Computer Science Teamwork	Hamid Tarmazdi, Rebecca Vivian, Claudia Szabo, Katrina Falkner, and Nickolas Falkner		HEI	A, SM, ACT	-	-		PL	R	conference
2019	What information should CSCL teacher dashboards provide to help teachers interpret CSCL situations?	Anouschka van LeeuwenNikol RummelTamara van Gog		K-12	A, SM, ACT	-	T	II	HFP	R, L	journal