Codebook

Grouped codes							
Code name:	**Definition:**	**Keywords:**	**Example line:**	**Frequency (N) of rows in the dataset (= 680):**	**Kappa (K > .9) - level of agreement H1/AC**	**Kappa (K > .9) - level of agreement H1/H2**	**Kappa (K > .9) - level of agreement H2/AC**
Technology.Software	Application software that directs the computer to execute commands given by the user. The definition includes programs that processes data for a user[1]	Google, Spotify, Slojdportfolio, Website, Bingel, Internet, NE.se,Wikipedia, Classroomscreen, Gmail, Browser, Widgit, Seterra, Movie, Studi, Videoclip, Youtube, Technology, App-wrote, Film, Padlet, Whatsapp, Powerpoint, Notes-document, Vimeo	"I first went into Google document and wrote, and I thought I used it pretty well I write a lot, I used a tablet. I went to Spotify, Google Classroom."	190	.99**	.97**	.97*

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[1] Https://www.britannica.com/technology/software

Codebook

Category/code name:	Definition:	Keywords:	Example line:	Frequency (N) in the dataset (TN = 494):	Kappa (k) - level of agreement: H1/AC	Kappa (k) - level of agreement: H1/H2	Kappa (k) - level of agreement: H2/AC
Actions	Grouped code for primary, secondary, and tertiary levels of mediation in use of DVUIs	Access, type, orientation, tap, confirm, click, retrieve, project, navigate, exit, activate, open, press, play-in, stir, drag, shut, control, download, turn, log in, commit, search, view, touch, add, inscribe, position, swipe, adjust, leave, verify, delimit, time, share, receive, hover, seek, discover, direct, scroll, display, submit, terminate, shift, select, minimize, switch, sign up, insert, enclose, separate, distance, erase, appl, correct, frame, guide, distinguish, replace, zoom	"Student access Google apps by clicking on the dotted button, and by hovering on the apps icons in Google apps with the mouse pad and cursor and the Gmail gets defined. The student access Gmail by clicking."	355	.99**	.99**	.99**
Representation.of. functions	Grouped code for all symbolically and physically manifested representations of functions	Horizontal, virtual, password, button, home, symbol, badge, recent app, window, plus, pop-up, rename, field, record, prediction, toolbar, underline, center, shortcut, clock, circle, cursor, hourglass, icon, box, slide bar, link, post-it, notice-board, notification, page, message, mouse, mouse pad, keyboard, real, hotkey, tangent	"Yes, because I know where all the letter tangents are like, I can just go in …"	265	.98 **	.97**	.95*
Semiotic. Properties	Semiotic properties used in modes of representation	Picture, passcode, blotch, emoji, headline, space, suggestion, small, large, visibly, capital, letter, near, sound, section, moving, brightness, white, green, shade, color, dark, nuance, big, size, tight, pink, black, proximity, font, layout, number, yellow, bold, superimposed, bullet, template	"Mmmm, maybe a bigger monitor. It's a pretty small size on them [means Laptop] but you can use them but a little bigger then, so you distinguish a little more."	107	.97**	.96*	.99**
Modes.of. Representation	Meaning-making conveyed by students into modes of representation	Writ, speech, gaze, text, spell, voice, talk, describe. hand, answer, inquire, conversation, oral, move	"The result was quite good. We could have had more text [in PowerPoint] and a little more mixed information."	209	.98**	.99**	.99**
Activities	All activities related to learning	Subject, Swedish, lesson, purpose, explain, instruct, introduction, assignment, sloyd, science, math, English, music, geography, mountain, map, Europe, task, topic, attention, question, information, weather, sun, meteorology, physical education, story, watch, listen, individual, compose, read, quiet, practice, evaluate, discuss, group, creating, tell, reason, each other, collaboration	"It felt like it was the same information in the text that we write."	229	.96**	.97**	.99**

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Refined codes

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Category/code name:	Definition:	Keywords:	Example line:	Frequency (N) in the dataset (TN = 494):	Kappa (k) - level of agreement: H1/AC	Kappa (k) - level of agreement: H1/H2	Kappa (k) - level of agreement: H2/AC

Codebook

Technology software	**Software categorized according to the foregrounded modality in use.**						
Software.Multimodal	Software where several modalities are foregrounded in use	Slojdportfolio, Bingel, Classroomscreen, Studi, Whatsapp	"We use Bingel.se quite often, because it is good, it is in Swedish and Math, everyone thinks it is good because you get PP so you can buy clothes and hair and accessories."	41	.99**	.99**	.99**
Software.Visual	Software where mainly the visual modality is foregrounded in use	Widgit, film, Powerpoint, Seterra, videoclip, movie, Youtube, Vimeo	"As for example in Seterra.com - it can be easier to do it in the laptop because then you see more than in the book."	46	.99**	.99**	.99**
Software.Other	Software where there is no direct tie to any foregrounded modality in use	Technology, website, internet, browser	"So, the result was good because you can write things down and so on. And I like technology and those subjects and stuff."	15	.99**	.99**	.99**
Software.Linguistic	Software where mainly the linguistic modality is foregrounded in use	Padlet, Google, document, App-wrote, Notes-document, NE.se, Wikipedia, Gmail	In the beginning then we would open a document [Google documents] and do what she showed now and in the middle of the lesson then you have written a bit and then at the end you were about half done so I have a hard clarifying thing you only finish first in the lesson."	78	.99**	.99**	.99**
Software.Repository	Repository software such as learning management systems	Google classroom, Google apps	"Google Apps, right? That was the first step, right? Or you had a recent apps that you used where you tapped in right away, right? Yes."	28	.99**	.96*	.96*
Functional properties	**Functional properties categorized according to the taxonomy (Wartofsky, 1973).**						
Functional. Properties. Primary	Functions on the DVUIs that are mediated through the primary level of actions such as preforming work and production.	Access, type, orientation, tap, confirm, click, retrieve, project, navigate, exit, activate, open, press, play-in, stir, drag, shut, control, download, turn, log in, commit, search.	"That's what happens with the laptop then, for example Seterra.com, and there you have to click and then you get a result [pop-up] and how much time it took."	205	.99**	.99**	.99**
Functional. Properties. Secondary	Functions on the DVUIs that are mediated through the secondary mediating level of action such as organizing and structuring	View, touch, add, inscribe, position, swipe, adjust, leave, verify, delimit, time, share, receive, hover, seek, discover, direct, scroll, display, submit, terminate, shift, select, minimize, switch, sign up, insert	"Then I access to the XX- unit and check what I am going to write and then I just tap there again and swipe to Notes and write."	156	.99**	.99**	.99**

Codebook

Functional. Properties. Tertiary	Functions on the DVUIs that are mediated through the tertiary level of higher order actions such as learning	Enclose, separate, distance, erase, appl, correct, frame, guide, distinguish, replace, zoom	"Because you e.g., asked how I got it was mostly to change, because I can play-in things that happen on the tablet Ehm…and then I can resolve things, by correcting where it is red underlined or at the virtual keyboard there a little above."	49	.99**	0.96*	0.96*
Representation of functions (RoF)	**Representation of functions categorized from their foregrounded meaning when integrated in actions.**						
RoF.Symbolic	Representation of functions that are symbolically manifested on DVUIs	Virtual, horizontal, password, button, home, symbol, badge, recent app, window, plus, pop-up, rename, field, record, prediction, toolbar, page, message, underline, center, shortcut, clock, circle, cursor, hourglass, icon, box, slide bar, link, post-it, notice-board, notification	"Yes, for example then in the Google Classroom there are boxes then as it says and if it had not said anything then it would have been quite difficult to know what to go into."	235	0.98**	.99**	.97**
RoF.Physical	Representations of functions that are physically manifested on DVUIs	Mouse, mouse pad, keyboard, real, hotkey, tangent, horizontal	"So, mouse pad and keyboard and the programs it is important that you see what it says."	45	.99**	0.96*	0.96**
RoF Symbolic. Overviews	Overviews (e.g., folders, centers) that direct, and are an intermission or gateway to access other pages, windows etcetera	Badge, page, recent, app, op-up, center, shortcut	"Assignments and exercise are organized in the Google classroom through different designation badges and window tabs."	69	.99**	.99**	.99**
RoF.Symbolic.Entries	Entries (e.g., a message, an email) that facilitates actions on a response	Message, toolbar, underline, link, horizontal	"Because occasionally when you spell it wrong, it becomes red underlined underneath."	33	.99**	.92*	.92*
RoF.Symbolic.Buttons	Buttons (e.g., a virtual push button on the DVUIs) that facility the act of pressing, tapping, clicking	Virtual, plus, home, button, symbol, slide bar, circle, icon	"A button that you press to submit and then you cannot adjust what you have submitted so that the teacher can view and so on. It is good."	118	.99**	.99**	.99**
RoF.Symbolic. Guiding	Functions that are directly coupled to further actions	Prediction, clock, cursor, hourglass	"I mostly use the predicting thing [word prediction]. Yes, e.g., to that star thing, if you wanted to explain what it looked like."	36	.94*	.92*	.99**
RoF.Symbolic. Lists/notes	Functions where lists are generated or created digitally	Record, post-it, notice-board, notification	"We usually mostly use it in mathematics and when we are going to sign up for the help record, then you sign up your name then the teacher comes and helps us in that order."	9	.99**	.99**	.99**

Codebook

RoF.Symbolic.Lines	Functions for typing such as a search field or a password line	Password, rename, field, box	"If you go in like on Google and then there is the quest box there, there is a microphone there."	17	.99**	.99**	.99**
Modes of representation (MoR)	**Modes of representation categorized from their foregrounded modalities in representation.**						
MoR.Linguistic	MoR where linguistic modes are foregrounded such as writing, texts, spelling, and descriptions	Writ, text, spell, descri.	"In Swedish you would discuss and write a text and it is quite good in the [Google] classroom because then you can submit and share and so in case you need or so."	174	.99**	.97**	.97*
MoR.Auditory	MoR where auditory modes are foregrounded in using the oral apparatus	Voice, Talk, Speech, Answer, Inquire, Conversation, Oral	"But for example, when I talk I can kind of give them tips and they can give me tips and I can write and then I can gaze at their laptop and then I can control and so and display."	35	.99**	.99**	.99**
MoR.Bodily	Bodily conveyed modes of representation	Hand, gaze, move	For example, with the technology then with my gaze…I gaze at the monitor then, the mouse I can memorize, the keyboard I have to gaze at so that I press the right letter tangent."	22	.99**	.96*	.96*
MoR. Multimodal	MoR where multiple modes are foregrounded simultaneously	Writ, talk, text, conversation, oral, describe	When the student talks and tries to reason about what the others are saying, the student writes at the same time and organizes the document automatically based on the division of assignment questions."	181	.99**	.99**	.99**
Activities	**Activities salient in the learning setting in which students' make meaning using technologies.**						
Activities. Consumption	Activities related mainly to consumption undertakings	Projected, projecting, view, select, explain, instruct, introduction, assignment, task, practice, watch, listen, read, delimit, share, display	"I might have wanted to go to studi.se and watch a movie and run a quiz and then maybe there are some good videoclips on YouTube as well."	118	.98**	.99**	.99**
Activities.Production	Activities related mainly to production undertakings	Type, erase, distance, activate, enclose, separate, add, inscribe, task, assignment, submit, tell, reason, insert, story, compose, practice, correct, writ, talk, describe, hand, answer, inquire, conversation, evaluate, discuss, creating	"So yes, for this with colors if you verify right or wrong it can be quite good because then you know that you were wrong on it and that you need to practice more on it."	192	.99**	.95*	.95*
Activities.Individual	Individually undertaken activities	Story, watch, listen, individual, compose, read, quiet, practice, evaluate	"I read the text to be able to write another part of it for the PowerPoint presentation."	78	.99**	.99**	.99**
Activities. Collaborative	Collaboratively undertaken activities	Each other, collaboration, discuss, group, creating, tell, reason	"And then there was group work and then you have to discuss in your group to get a good text together."	51	.99**	.96*	.96*
Activities.Language	Language learning lesson	English, Swedish	English and math. Eee… in science… we usually do not use it [Bingel.se] in but it is in science so you can."	14	.99**	.94*	.94*

Codebook

Activities.Swedish	Content related to the subject Swedish	Swedish	"In Swedish you would discuss and writing a text and it is quite good in the [Google] classroom because then you can submit and share and so in case you need or so."	13	.99**	.99**	.99**
Activities.Math	Content related to the subject math.	Math	"We usually mostly use it in mathematics and when we are going to sign up for the help record, then you sign up your name then the teacher comes and helps us in that order."	3	.99**	.99**	.99**
Activities. Social science	Content related to the subject social science	Geography, mountain, map, Europe, country, earth, explore	It has visibility and there are such stripes and so are the names and in the book it's just colors and a little darker nuance where the mountains are and stripes on what they are called."	30	.99**	.99**	.99**
Activities.Science	Content related to the subject science	Nebula, supernova, experiment, weather, sun, meteorology, science	"I do not think there is such a huge difference because at science we have used because we would write about nebulae and such and supernovae, I do not think there is such a huge difference."	15	.99**	.98**	.98**
Activities.Aesthetic/ practical subjects	Content related to aesthetic/practical subjects	Sloyd, Physical education	"Well, in sloyd there is one thing, because in the end when we have done it, we have to write down what we have done on the Slojdportfolio.nu, it is a website."	3	.99**	.99**	.99**

*rho ≤ 0.05, **rho < 0.01