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Attentional Allergies and Ecological Ramps: A Special Pedagogical Model for Onlife Self-Regulation Beyond the Myth of Digital Detox

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Abstract: This focused, theory-driven scoping synthesis examines educational responses to digital attentional demands beyond abstinence. A selected corpus of 26 sources maps individual susceptibility, reduction and design interventions, and inclusive educational design. Adolescent findings show heterogeneous associations that duration alone cannot explain. Detox outcomes vary, and predominantly adult intervention evidence does not establish durable school-age self-regulation. Notification scheduling and interface changes can modify use or proximal attention, but educational transfer remains uncertain. We propose "attentional allergy" as a non-clinical metaphor for person–environment mismatch, and "ecological ramps" as adjustable interface, temporal, spatial, relational and metacognitive supports within Universal Design for Learning. Italian smartphone provisions illustrate the need to coordinate restriction with authorised accessibility functions. The model connects protected attention to guided participation and strategy transfer, distinguishing published evidence from proposed mechanisms. It has not been evaluated as a combined intervention. A future school-based agenda specifies attention, learning, belonging, accommodation fidelity and transfer outcomes rather than treating reduced use as sufficient evidence of improvement.

Keywords: Special Pedagogy; Onlife Self-Regulation; Universal Design for Learning

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1. Introduction[1]

Digital media shape learning and belonging within an onlife condition of intertwined online and offline experiences (Floridi, 2014). Devices can support communication and accessibility while interrupting tasks. Education must therefore examine learner, task, affordance and context: device absence does not establish better attention, learning or autonomy.

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Aggregate screen time captures only part of that encounter. In a large specification-curve analysis, digital-technology use explained at most 0.4% of variation in adolescent wellbeing (Orben & Przybylski, 2019). An umbrella review of 25 reviews described predominantly weak or inconsistent associations between social-media use and adolescent mental health (Valkenburg et al., 2022). These findings do not imply harmlessness: average duration can conceal consequential differences in content, developmental sensitivity and individual response.

Through a focused scoping synthesis, we propose a Special Pedagogy model of "attentional allergy", a non-clinical hypothesis about person–environment susceptibility, and "ecological ramps", adjustable supports preserving participation. We examine heterogeneity, reduction and design-intervention evidence to formulate a testable school model. The combined intervention has not been evaluated.

2. Conceptual Framework

2.1. Attention and Person–Environment Fit

Notifications, feedback and absent stopping cues can obstruct disengagement. Which cue affects which learner and task remains an empirical question. Reward sensitivity, comparison and exclusion may contribute to vulnerability (Orben et al., 2024), with age- and sex-specific associations cautioning against a uniform account of adolescence (Orben et al., 2022). We analyse mismatch between learner resources, environmental demands and task requirements, rather than presume weak willpower or a sufficient diagnostic explanation.

2.2. A Non-Clinical Heuristic within Inclusive Pedagogy

"Attentional allergy" denotes adverse response to a configuration, not a disease or intrinsic defect. It has no assumed psychometric validity and does not prescribe avoidance. Its usefulness must be compared with neutral "attentional mismatch" language and abandoned if it produces stigma or clinical misunderstanding.

Inclusive pedagogy challenges teaching for an imagined average followed by supplementary provision (Florian & Black-Hawkins, 2011). Ignoring cues and recovering after interruption can become hidden access requirements. Attention protection must therefore be designed with accessibility, not added as an identical restriction.

Universal Design for Learning (UDL) prioritises purposeful, reflective learner agency (CAST, 2024). Reviews suggest learning benefits but an uneven evidence base (King-Sears et al., 2023; Ok et al., 2017) and implementation difficulties (Zhang et al., 2024). Each ramp therefore needs a specified barrier, mechanism, accessibility safeguard and outcome.

3. Materials and Methods

3.1. Scope and Corpus

We mapped selected evidence on heterogeneous digital-media effects, reduction and design interventions, and inclusive education, published from 2016 to 1 October 2026, with earlier conceptual anchors. The 26-source corpus comprises 11 syntheses, nine primary studies, four methodological or conceptual sources and two Italian policy documents. These are corpus categories, not database screening counts.

This theory-driven synthesis is not an exhaustive systematic review. Selection prioritised relevance, identifiable populations and designs, and interpretable outcomes. Adult studies inform mechanisms and intervention design, not direct school-age effects. Institutional documents supply UDL guidance and Italian policy context.

3.2. Charting and Interpretation

Charting distinguished population, setting, intervention, outcome and inference boundary, separating proximal attention/use from wellbeing, learning and transfer (Table 1). Overlapping reviews were not pooled or counted as independent votes. PRISMA-ScR informed transparency (Tricco et al., 2018), without a claim of full compliance: preregistration, a complete search log, screening flow and independent duplicate selection are unavailable.

The model translates evidence theoretically; its components have differing support and have not been tested together. Published findings are separated from interpretation and proposed research. No new participants or experimental outcomes are reported. Italian administrative documents are not impact evaluations.

4. Results

4.1. Heterogeneity in Adolescent Experience

Beyens et al. (2020) analysed 2,155 experience-sampling assessments. Passive social-media use was unrelated to immediate affective wellbeing for approximately 44% of adolescents, positively associated for 46% and negatively associated for 10%. These proportions describe that study, not universal response classes. They demonstrate why an average association can be a poor guide to an individual educational need.

In a 100-day diary study of 479 adolescents, higher depressive symptoms were not accompanied by more posting or longer scrolling, but by greater insecurity after scrolling, rejection in communication and preoccupation with feedback (Janssen et al., 2025). Duration would miss those differences. Together with developmental evidence (Orben et al., 2022, 2024), this suggests examining the meaning of an activity and pre-existing vulnerability. Observational associations remain subject to selection and reverse causality.

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4.2. Detox and Exposure Reduction

Detox designs and outcomes vary (Radtke et al., 2022). Ansari et al. (2024) and Ramadhan et al. (2024) report selected benefits. Liu et al. (2025), pooling 20 randomised trials and 56 effects, found small wellbeing benefits. Conversely, Lemahieu et al. (2025), covering ten abstinence studies and 4,674 participants, found no significant effect on positive affect, negative affect or life satisfaction. These syntheses examine differing interventions and outcomes; neither establishes durable educational transfer.

Evidence of short-term benefit should nevertheless be retained. Pieh et al. (2025) tested a three-week reduction to no more than two hours of daily smartphone time in healthy university students and reported improved mental-health outcomes. This trial supports a bounded claim about a particular intervention and adult population, not schoolchildren or durable self-regulation. Zimmermann and Sobolev (2023), in a field experiment involving 112 postgraduate students, found that grayscale reduced daily use by about 50 minutes; goal-setting effects developed more gradually. Neither finding demonstrates transfer to classroom learning.

4.3. Modifiable Affordances and Proximal Attention

Fitz et al. (2019) randomly assigned 237 adults to notification conditions over two weeks. Receiving notifications in three daily batches improved selected wellbeing outcomes compared with usual delivery; complete suppression carried costs, including anxiety and fear of missing out. The result supports testing temporal organisation, not assuming that maximal interruption removal is always preferable. Adult findings also require developmental and contextual adaptation before school implementation.

Fournier et al. (2026), studying 180 university students, found transient cognitive slowing after social-media notifications, lasting approximately seven seconds. Notification relevance and habitual interaction patterns mattered more than a simple duration account. This is a proximal experimental finding, not a demonstrated long-term effect on attainment. It helps identify an adjustable cue architecture, while leaving educational transfer and effects in minors unresolved.

The mere-presence literature illustrates another inference boundary. Ward et al. (2017) reported reduced available cognitive capacity in experimental conditions involving participants' own phones. Hartanto et al. (2024) subsequently synthesised 166 effects from 53 samples and 33 studies and found no significant overall cognitive effect ($d = -0.02$, 95% CI [−0.06, 0.01]). Device parking may suit particular tasks, but a universal claim that proximity itself impairs cognition is not supported by that meta-analysis.

Table 1. Evidence domains and implications for educational design

Domain	Representative evidence	Inference for design
Individual variability	Beyens et al. (2020); Janssen et al. (2025)	Assess responses and activity meaning, not duration alone
Development	Orben et al. (2022, 2024)	Consider age and context; avoid uniform vulnerability assumptions
Abstinence and reduction	Radtke et al. (2022); Liu et al. (2025); Pieh et al. (2025)	Benefits depend on intervention and outcome; school transfer is untested
Interface and timing	Fitz et al. (2019); Zimmermann and Sobolev (2023)	Test adjustable supports while monitoring access and wellbeing
Cognitive distraction	Fournier et al. (2026); Hartanto et al. (2024)	Distinguish specific cue effects from mere-presence claims
Inclusive design	King-Sears et al. (2023); Zhang et al. (2024)	Specify mechanism, accessibility and implementation fidelity

4.4. Italian Smartphone Rules and Contextual Duality

Ministerial Note no. 5274/2024 restricts smartphones in the first cycle, including educational use, while recognising specified exceptions, including needs documented in individualised educational or personalised teaching plans. Circular no. 3392/2025 extends restriction across school hours in the second cycle and retains specified exceptions, including requirements of certain technical and vocational pathways (Ministero dell'Istruzione e del Merito [MIM], 2024, 2025). These provisions recognise that device functions are not educationally interchangeable.

Phones can interrupt tasks or support communication, text-to-speech and memory. This does not exempt every educational use from applicable rules. Schools should implement authorised accommodations and assess comparable access through alternatives. The acts define obligations, not demonstrated attention or wellbeing effects: protection requires coordination with inclusion.

5. The Ecological Ramps Model

5.1. Definition and Design Principles

An ecological ramp adjusts an interface, routine, space or relationship to reduce a specified attentional barrier without excluding participation. Its mechanism must be explicit: batching targets interruptions; endpoints support stopping; planning supports initiation or re-entry. The environment is changed, rather than requiring tolerance of every demand.

Five principles guide the proposal: specify the barrier; make the support proportionate; involve learners in its interpretation; protect necessary access; and assess transfer before fading support. Table 2 provides candidate components, not a validated package. Co-design makes it possible to identify unintended inconvenience or stigma. Fading means increasing strategic control where feasible; it does not require removing an enduring accessibility accommodation.

Table 2. Candidate ecological ramps and accessibility safeguards

Ramp	Example and target	Safeguard
Interface	Grayscale or simplified view to reduce cue salience	Preserve contrast, readability and required functions
Interruption	Batch non-essential notifications to reduce switching	Retain urgent and assistive communication
Temporal	Focus periods and visible endpoints to support stopping	Adjust duration and allow meaningful breaks
Spatial	Task-specific device parking to reduce competing cues	Provide authorised compensatory access
Relational	Shared rules and non-punitive discussion to support co-regulation	Respect privacy and legitimate autonomy
Metacognitive	Planning and reflection to support strategy selection	Evaluate transfer rather than demand compliance alone

Adult and learner identify a barrier, select an adjustment and discuss its effects. Reflection can compare perceived distraction with task completion without intrusive monitoring. Supports remain revisable: reduced checking that obstructs collaboration or assistive communication fails the inclusion criterion. Less use alone is insufficient.

5.2. Evaluation and Transfer

Testing requires a goal, specified barrier, selected ramp, baseline and outcomes beyond use duration, followed by assessment in a new task or with relaxed support. Measures could include interruptions, persistence, re-entry and independent strategy selection. Learning, wellbeing, belonging and perceived legitimacy require separate assessment.

A future cluster study could compare protected-attention rules alone, rules with ramp instruction, and provision with family co-regulation. Baseline and repeated measures, prespecified outcomes, accommodation fidelity and attrition reporting are essential. This is a research proposal, not a completed trial.

Task completion under external control may show protection, not autonomous regulation. Transfer requires appropriate strategy selection across tasks, including help or accommodation. Age, disability, emotional needs, resources and assistive device functions warrant attention. Interviews can distinguish experienced access from stigma or disproportionate control.

6. Discussion

6.1. Special Pedagogy and Attentional Justice

The evidence supports contextual design, not universal abstinence. Restriction may relieve a specific burden without teaching regulation. Ecological ramps pair protection with opportunities to understand and manage demands. Their mechanisms offer testable targets; superiority over existing approaches has not been demonstrated.

Attentional justice concerns unequal costs where environments assume effortless inhibition and recovery. Identical rules can protect some pupils while removing others' support. Inclusive design makes demands and authorised accommodations explicit. This is a normative argument, not a measured detox-trial result.

6.2. Engagement and Digital Nourishment

For Engaging Education, protected attention matters when it enables meaningful involvement in inquiry, dialogue, creation and collaboration. Engagement also includes belonging, cognitive investment and agency. A quiet classroom or absent phone does not establish these outcomes. The model therefore asks whether a support improves access to a purposeful activity and whether learners can explain and adapt the strategy, rather than merely obey it.

Digital nourishment addresses experience quality, activity composition and developmental support alongside quantity. Italian school boundaries could be combined with attention routines, accessible alternatives, accommodations and family dialogue. These are proposals to evaluate, not demonstrated implementation benefits.

7. Limitations

The synthesis is selective and lacks the search and screening documentation required for an exhaustive scoping review. Several intervention studies involve adults, brief follow-up and outcomes other than learning. Reviews overlap, definitions vary, and proximal effects cannot establish durable school transfer. The theoretical model combines components that have not been evaluated together. "Attentional allergy" has no diagnostic or measurement status; neutral terminology may prove preferable. Future research must test both the proposed mechanisms and the language's acceptability.

8. Conclusions

Digital self-regulation involves susceptibility, environmental demands and participation. Specific reductions can help, without establishing a universal abstinence-to-wellbeing pathway. Ecological ramps connect protection, accessibility and strategy development as a testable proposal. Their value depends on outcomes, transfer and equitable access. Digital nourishment concerns improving experience as well as regulating its amount.

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References

Ansari, S., Iqbal, N., Azeem, A., & Danyal, K. (2024). Improving well-being through digital detoxification among social media users: A systematic review and meta-analysis. *Cyberpsychology, Behavior, and Social Networking, 27*(11), 753–770. https://doi.org/10.1089/cyber.2023.0742

Beyens, I., Pouwels, J. L., van Driel, I. I., Keijsers, L., & Valkenburg, P. M. (2020). The effect of social media on well-being differs from adolescent to adolescent. *Scientific Reports, 10*, Article 10763. https://doi.org/10.1038/s41598-020-67727-7

CAST. (2024). *Universal design for learning guidelines version 3.0* [Graphic organizer]. https://udlguidelines.cast.org

Fitz, N., Kushlev, K., Jagannathan, R., Lewis, T., Paliwal, D., & Ariely, D. (2019). Batching smartphone notifications can improve well-being. *Computers in Human Behavior, 101*, 84–94. https://doi.org/10.1016/j.chb.2019.07.016

Florian, L., & Black-Hawkins, K. (2011). Exploring inclusive pedagogy. *British Educational Research Journal, 37*(5), 813–828. https://doi.org/10.1080/01411926.2010.501096

Floridi, L. (2014). *The fourth revolution: How the infosphere is reshaping human reality*. Oxford University Press.

Fournier, H., Fournel, A., Osiurak, F., Koenig, O., Pâris, F., Gaujoux, V., & Ringeval, F. (2026). Attention hijacked: How social media notifications disrupt cognitive processing. *Computers in Human Behavior, 179*, Article 108926. https://doi.org/10.1016/j.chb.2026.108926

Hartanto, A., Lua, V. Y. Q., Kasturiratna, K. T. A. S., Koh, P. S., Tng, G. Y. Q., Kaur, M., Quek, F. Y. X., Chia, J. L., & Majeed, N. M. (2024). The effect of mere presence of smartphone on cognitive functions: A four-level meta-analysis. *Technology, Mind, and Behavior, 5*(1), Article 1. https://doi.org/10.1037/tmb0000123

Janssen, L. H. C., Valkenburg, P. M., Keijsers, L., & Beyens, I. (2025). A harsher reality for adolescents with depression on social media. *Scientific Reports, 15*, Article 10947. https://doi.org/10.1038/s41598-025-89762-y

King-Sears, M. E., Stefanidis, A., Evmenova, A. S., Rao, K., Mergen, R. L., Owen, L. S., & Strimel, M. M. (2023). Achievement of learners receiving UDL instruction: A meta-analysis. *Teaching and Teacher Education, 122*, Article 103956. https://doi.org/10.1016/j.tate.2022.103956

Lemahieu, L., Vander Zwalmen, Y., Mennes, M., Koster, E. H. W., Vanden Abeele, M., & Poels, K. (2025). The effects of social media abstinence on affective well-being and life satisfaction: A systematic review and meta-analysis. *Scientific Reports, 15*, Article 7581. https://doi.org/10.1038/s41598-025-90984-3

Liu, Y., Mohamad, E. M. W., Azlan, A. A., & Tan, Y. (2025). Am I happier without you? Social media detox and well-being: A meta-analysis of randomized controlled trials. *Behavioral Sciences, 15*(3), Article 290. https://doi.org/10.3390/bs15030290

Ministero dell'Istruzione e del Merito. (2024, July 11). *Disposizioni in merito all'uso degli smartphone e del registro elettronico nel primo ciclo di istruzione – A.S. 2024–2025 (Nota n. 5274)* [Provisions on smartphone and electronic-register use in the first school cycle, school year 2024–2025]. https://www.mim.gov.it/en/-/nota-n-5274-dell-11-luglio-2024

Ministero dell'Istruzione e del Merito. (2025, June 16). *Disposizioni in merito all'uso degli smartphone nel secondo ciclo di istruzione (Circolare n. 3392)* [Provisions on smartphone use in the second school cycle]. https://www.mim.gov.it/documents/7673905/8783413/m_pi.AOODPIT.REGISTRO%2BUFFICIALE%28U%29.0003392.16-06-2025.pdf

Ok, M. W., Rao, K., Bryant, B. R., & McDougall, D. (2017). Universal design for learning in pre-K to grade 12 classrooms: A systematic review of research. *Exceptionality, 25*(2), 116–138. https://doi.org/10.1080/09362835.2016.1196450

Orben, A., Meier, A., Dalgleish, T., & Blakemore, S.-J. (2024). Mechanisms linking social media use to adolescent mental health vulnerability. *Nature Reviews Psychology, 3*, 407–423. https://doi.org/10.1038/s44159-024-00307-y

Orben, A., & Przybylski, A. K. (2019). The association between adolescent well-being and digital technology use. *Nature Human Behaviour, 3*(2), 173–182. https://doi.org/10.1038/s41562-018-0506-1

Orben, A., Przybylski, A. K., Blakemore, S.-J., & Kievit, R. A. (2022). Windows of developmental sensitivity to social media. *Nature Communications, 13*, Article 1649. https://doi.org/10.1038/s41467-022-29296-3

Pieh, C., Humer, E., Hoenigl, A., Schwab, J., Mayerhofer, D., Dale, R., & Haider, K. (2025). Smartphone screen time reduction improves mental health: A randomized controlled trial. *BMC Medicine, 23*, Article 107. https://doi.org/10.1186/s12916-025-03944-z

Radtke, T., Apel, T., Schenkel, K., Keller, J., & von Lindern, E. (2022). Digital detox: An effective solution in the smartphone era? A systematic literature review. *Mobile Media & Communication, 10*(2), 190–215. https://doi.org/10.1177/20501579211028647

Ramadhan, R. N., Rampengan, D. D., Yumnanisha, D. A., Setiono, S. B. V., Tjandra, K. C., Ariyanto, M. V., Idrisov, B., & Empitu, M. A. (2024). Impacts of digital social media detox for mental health: A systematic review and meta-analysis. *Narra J, 4*(2), Article e786. https://doi.org/10.52225/narra.v4i2.786

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., … Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine, 169*(7), 467–473. https://doi.org/10.7326/M18-0850

Valkenburg, P. M., Meier, A., & Beyens, I. (2022). Social media use and its impact on adolescent mental health: An umbrella review of the evidence. *Current Opinion in Psychology, 44*, 58–68. https://doi.org/10.1016/j.copsyc.2021.08.017

Ward, A. F., Duke, K., Gneezy, A., & Bos, M. W. (2017). Brain drain: The mere presence of one's own smartphone reduces available cognitive capacity. *Journal of the Association for Consumer Research, 2*(2), 140–154. https://doi.org/10.1086/691462

Zhang, L., Carter, R. A., Jr., Greene, J. A., & Bernacki, M. L. (2024). Unraveling challenges with the implementation of Universal Design for Learning: A systematic literature review. *Educational Psychology Review, 36*, Article 35. https://doi.org/10.1007/s10648-024-09860-7

Zimmermann, L., & Sobolev, M. (2023). Digital strategies for screen time reduction: A randomized field experiment. *Cyberpsychology, Behavior, and Social Networking, 26*(1), 42–49. https://doi.org/10.1089/cyber.2022.0027