La pedagogía de la enseñanza del pensamiento: Hacer visible el pensamiento

The Pedagogy of Teaching Thought: Making Thought Visible

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RESUMEN

La presente investigación tiene como principal objetivo sistematizar teóricamente las rutinas de pensamiento y su influencia en el pensamiento visible y crítico, para la formación de las competencias investigativas. Para el desarrollo de la misma ha prevalecido un enfoque cualitativo y se destaca la aplicación de métodos científicos, tales como: el histórico-lógico para la determinación de los principales fundamentos teóricos y metodológicos, antecedentes, conceptos, y definiciones de la investigación, como proceso sustantivo clave y que amerita de un tratamiento constante, sistemático y permanente en todas las asignaturas con un enfoque interdisciplinar, también se empleó la sistematización teórica y el método holístico.

Se aportan los antecedentes que sustentan la investigación como parte del artículo científico de corte teórico, así como las rutinas de pensamiento vinculadas con la estimulación del pensamiento visible y crítico. Las entrevistas a expertos, posibilitó la elaboración de la propuesta para brindar solución al problema científico relacionado con las limitaciones que se manifiestan en los estudiantes en la formación y estimulación del pensamiento, así como un mejor tratamiento teórico y fáctico.

Palabras clave: rutinas de pensamiento, estimulación, pensamiento visible, investigación científica, procesos de enseñanza y aprendizaje

ABSTRACT

The main objective of this research is to theoretically systematize thinking routines and their influence on visible and critical thinking for the formation of investigative competencies. For its development, a qualitative approach has prevailed, and the application of scientific methods, such as the historical-logical for the determination of the main theoretical and methodological foundations, antecedents, concepts, and definitions of research. Theoretical systematization and holistic methods were also used.

The antecedents that support the research are provided as part of the theoretical scientific article and the thinking routines related to visible and critical thinking stimulation. The interviews with experts made it possible to prepare the proposal to provide a solution to the scientific problem associated with the limitations manifested in students in the training and stimulation of thinking routines and a better theoretical and factual treatment.

Key words: thinking routines, stimulation, visible thinking, scientific research, teaching and learning processes

Introduction

The act of thinking is a function that is innate to all humans. However, focused instruction on "how" to engage in thinking is necessary to help individuals' thinking skills surpass basic automatic functioning and reach higher levels of development. Indeed, from an early age, children should be immersed in a culture of thought to develop skills in critical thinking, time management, understanding different points of view, and problem-solving (Perkins et al., 2018). Thinking also promotes understanding through observation and description, explanation and interpretation, and making connections (Richhart et al., 2011). For Ritchhart (2015), a culture of thought is an environment that "that bring[s] out the best in people, take[s] learning to the next level, allow[s] for great discoveries, and propel[s] both the individual and the group forward into a lifetime of learning," (p.6). As educators who are immersed in children's cognitive development from the start, teachers can establish a culture of thought in their classrooms that caters to students' development as thinkers while at the same time lending them a sense of agency (Goodman & Oglan, 2017). Providing students with opportunities for thinking and creating a classroom culture that values thinking and its associated processes can help students develop higher-order thinking skills that will be crucial to their success later in life.

Since thinking is essentially an invisible process, teachers assume an important role in providing activities and a stimulating environment that is conducive to externalizing students' thought processes (Dajani, 2016). Visible thinking encourages the development of students' thinking skills by establishing thinking routines that enable teachers to actively follow students' thinking processes (Dajani, 2016). The term 'visible thinking' encompasses any tangible or observable representation of a person's or group's thought processes (Pinedo et al., 2018). For example, mind maps, diagrams, lists, drawings, and other visual elements help observers gain insight into an individual's internal thought processes. In a classroom setting, teachers can cultivate visible thinking through the establishment of thinking routines that promote specific ways of thinking through repetitive cycles and patterns. Thinking routines can be tools for promoting thinking, patterns of behavior that achieve particular goals (e.g., visible thinking), and structures that help dictate classroom discussions (Ritchhart et al., 2011). When used regularly in classrooms, thinking routines help students understand what learning is and how it happens. By promoting visible thinking, teachers can better grasp what students understand and how they understand it (Linck et al., 2012).

The purpose of this article is to explore different ways of promoting visible thinking routines in classrooms. Taking as its conceptual framework the eight ways of developing a culture of thinking proposed by Ritchhart (2015), this study will investigate different methods for fostering visible thinking, namely inquiry dialogue (Reznitzkaya & Gregory, 2013) and Socratic questioning (Golding, 2011). The article will first turn to a more in-depth analysis of visible thinking before presenting the conceptual framework and methods for fostering visible thinking.

Making Thought Visible

In the educational field, capturing the object of learning with our senses dramatically facilitates the process of learning. For example, a high school student studying the cell will benefit from viewing a cell under a microscope so that they can more easily form a mental image that may collaborate with the construction of concepts. This is made more difficult when the object of learning is thought itself because both the object of study and the circumstances that cause it are at first imperceptible (Ritchhart et al., 2011). The challenge then becomes how to describe and work with the imperceptible and how to make perceptible the situations that provoke thought. The concepts of visible thinking and thinking routines can help externalize cognitive thought processes that generally remain hidden. As a framework for thinking, visible thinking helps foster skills, attitudes, and alertness that help students make their thinking more visible to become more engaged in the

classroom (Dajani, 2016; Ritchhart et al., 2011; Ritchhart et al., 2014). Visible thinking improves thinking skills through engagement and deepens content learning and helps increase students' understanding (Dajani, 2016). Visible thinking is also helpful for teachers as it allows them to discover students' prior knowledge, observe students' thinking processes, and the challenges they encounter during these processes (Ritchhart, 2015).

While typically applied in classroom settings, visible thinking has also been successfully utilized in diverse settings such as healthcare (Delany & Golding, 2014) and the military (Peterson, 2021). Part of what makes visible thinking such a broadly applicable tool is its use of thinking routines, which are repeatable sets of actions that isolate a particular type of thinking and provide tools for promoting this type of thinking (Ritchhart et al., 2011). Thinking routines can also be considered as structures that help students explore, manage, discuss, and document their thinking (Dajani, 2016). An example of a thinking routine is the "Plus, Minus, and Interesting" method, in which students document the positives, negatives, and exciting aspects of a certain concept (Nikijuluw & Puspitasari, 2018). By making a routine or habit out of these actions, students can eventually unconsciously engage in expansive and inclusive thinking. According to Delany and Golding (2014), three critical pedagogical principles underpin thinking routines. The first is that thinking routines involve simplifying knowledge to reduce cognitive load (Dhaliwal, 2013). The second is that student learning can be facilitated by participation in activities where teachers or other role models use modeling and discussion to extend knowledge (Ajjawi & Higgs, 2008). Finally, thinking routines allow educators to engage in reflexive and metacognitive thinking (Delany & Golding, 2014). This, in turn, can help teachers develop a better sense of their own thinking behaviors, which will help them more effectively teach students "how to think."

Creating Cultures of Thinking

Aside from implementing thinking routines, creating a culture of thinking is

another way that teachers can cultivate the practice of visible thinking. Like other cultures, a culture of thinking has a particular system of language or patterns that arise from its beliefs and values (Andersen, 2018). In this case, a culture of thinking establishes a "language" of thinking that encourages the externalization of thought processes. Cultures of thinking can be installed and promoted at different levels, from the individual and classroom levels to larger community-wide and state-wide scales (Andersen, 2018). Ritchhart (2015) developed a conceptual framework for establishing such a culture in which eight forces shape cultures of thinking: (a) expectations, (b) language, (c) time, (d) modeling, (e) opportunities, (f) routines, (g) interactions, and (h) environment. For example, a culture of thinking requires the expectation that acquiring a more profound understanding is prioritized over gaining knowledge. That independence and a mindset of growth are valued over-dependence and a fixed mindset. It also means that time and a specific language of thinking are used in such a way so that students have the opportunity to acquire these values. Teachers also need to serve as analytical thinking and innovation models while shifting the focus from "doing work for the teacher" to applying new skills and challenging misconceptions. Thinking routines, the establishment of norms that dictate respectful classroom interactions, and the creation of an environment that is conducive to thinking and dialogue are also important factors driving the development of cultures of thinking (Ritchhart, 2015). Using this as a conceptual framework for guiding the development of visible thinking, the article will now turn to a discussion of different methods that can be useful for the cultivation of visible thinking skills.

Inquiry Dialogue

Dialogue can be a powerful tool for facilitating the development of visible thinking. It emphasizes verbal exchange in which truth is formed between people who are searching for truth rather than being passed down from an instructor to pupil. Dialogue can be defined as "a continuous, developmental, communicative interchange through which [participants] stand

to gain a fuller appreciation of the world, [themselves], and one another" (Burbules, 1993, p.8). Dialogic classrooms encourage the collective pursuit of truth through an interactive verbal exchange (Reznitskaya & Gregory, 2013). As a pedagogical approach, dialogic teaching "involves students in the collaborative construction of meaning and is characterized by shared control over the key aspects of classroom discourse" (Reznitskaya & Gregory, 2013, p.). Teachers in dialogic classrooms engage students in a two-way dialogue instead of instructing students using conventional top-down approaches that involve controlling the content and format of communication. Regarding Ritchhart's (2015) framework for a culture of thinking, dialogic classrooms promote visible thinking by enabling environments and opportunities for dialogic interactions typified by an equal exchange.

Inquiry dialogue is one method of teaching visible thinking in dialogic classrooms. Through structured inquiry, wondering, and discussion, inquiry dialogue assists in the development of shared understandings (Chappell, 2016). Individuals engaged in inquiry dialogue guide and prompt one another and build on each other's contributions to the conversation. Inquiry dialogue moves beyond simple information transactions by drawing on participants' life experiences and creating new meaning and language through collective processes of thinking and speaking (Chappell, 2016). Its focus is on reaching conclusions collaboratively rather than convincing others to accept a specific position (Reznitskaya & Gregory, 2013). Inquiry dialogue has been implemented in classrooms at different levels of education to facilitate meaningful dialogue about an array of issues. For instance, Wells & Sprott (2020) documented how high school students could use inquiry dialogue to move past binary conceptions about controversial topics such as oil and gas to develop a deeper appreciation for the complexity of the issue. Students in this study fostered agency through their lived experiences and came to a deeper understanding of the multitude of problems tied into oil and gas exploitation (Wells & Sprott, 2020). As Chappell (2016) observed, inquiry dialogue is naturally accompanied by creative flow, enabling students

to transcend stereotypical ways of framing specific issues and dig deeper into a topic in the pursuit of truth.

Socratic Questioning

Socratic questioning, in which students are encouraged to think for themselves rather than being led by a teacher to knowledge, is another method for developing visible thinking (Golding, 2011). By facilitating dialogue between students and teachers, Socratic questioning promotes critical thinking, which seeks to cultivate a more rigorous way of thinking that is belied by thinking logically and abstractly (Paul, 1993; Sahamid, 2016). Socratic questioning can also be regarded as a thinking routine because it trains the mind to think confidently by repeatedly using the same principles to guide thinking. Classrooms that engage in Socratic questioning help establish a culture of thinking because they enable students to engage in higher-level "thinking out-loud" processes actively.

Similar to Ritchhart's (2015) culture of thinking, there are eight 'Elements of Reasoning' that guide Socratic questioning: questions of purpose, questions of information, questions of interpretation, questions of assumption, questions of implication, questions of point of view, questions of concept, and questions of the question itself (Paul & Elder, 2001). These types of questions help students define the task, scrutinize the quality of information, examine how they are giving information meaning, discover what they are taking for granted, and follow where their thinking is leading while considering other viewpoints (Sahamid, 2016). In doing so, Socratic questioning gives thinking a direction and a focus. When employed as a thinking routine, Socratic questioning can help students become more confident and proficient at thinking critically. In a qualitative action study conducted by Sahamid (2016), high school students who utilized Socratic questioning as a thinking routine gradually developed higher-level critical thinking skills and became more confident at using these skills. Outside of the classroom, Braun et al. (2015) demonstrated a more practical application of Socratic questioning when they observed that Socratic questioning

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predicted symptom change in depressed adults engaged in cognitive therapy. Therefore, Socratic questioning can alter how people think about objects and processes that are external to them and how they perceive themselves.

Conclusion

As an internal process, thinking can be hard to teach. Externalizing thinking processes or making thinking visible, can help individuals engage in higher-level thinking processes that cultivate critical thinking. Engaging in thinking routines that call for the repetition of certain ways of thinking to become second nature can help students engage in visible thinking. Teachers can also help this process by promoting a culture of thinking that values acquiring a deeper understanding and independence over gaining knowledge and dependence. Inquiry dialogue and Socratic questioning are two thinking routines that have been shown to improve participants' visible thinking abilities. Inquiry dialogue enables students to engage in two-way conversations in which they build on one another and draw on life experiences to create shared meaning and knowledge collectively. Socratic questioning involves a more structured dialogue in which students develop higher-order thinking skills that enable them to at once think both logically and abstractly while critically questioning their sources of information. Teachers can draw on the lessons learned from these methods to help facilitate visible thinking in their own classrooms while also creating new thinking routines.

References

Ajjawi, R. & Higgs, J. (2008). Learning to reason: a journey of professional socialization. Advances in Health Science Education, 13(2), 133-150. 10.1007/s10459-006-9032-4.

Andersen, G.G. (2018). Teacher perceptions of a culture of thinking. Advanced Education Programs Faculty Publications, 3, https://scholars.fhsu.edu/aep_facpubs/3.

Braun, J.D., Strunk, D.R., Sasso, K.E., & Cooper, A.A. (2015). Therapist use of Socratic questioning predicts session-to-session symptom change in cognitive therapy for depression. Behaviour Research & Therapy, 70, 32-37. https://doi.org/10.1016/j.brat.2015.05.004.

Burbules, N. (1993). Dialogue in teaching: Theory and practice. New York, NY: Teachers College Press.

Chappell, P. (2016). Creativity through inquiry dialogue. In R.H. Jones & J.C. Richards (Eds.). Creativity in language teaching: Perspectives from research and practice. Routledge. (pp.130-146).

Dajani, M.M.J. (2016). Using thinking routines as a pedagogy for teaching English as a second language in Palestine. Journal of Educational Research and Practice, 6(1), 1-18. 10.5590/JERAP.2016.06.1.01.

Delany, C., Golding, C. (2014). Teaching clinical reasoning by making thinking visible: an action research project with allied health clinical educators. BMC Med Educ, 14, 20. https://doi.org/10.1186/1472-6920-14-20.

Golding, C. (2011). Educating for critical thinking: thought-encouraging questions in a community of inquiry. Higher Education Research & Development, 30(3), 357-370. 10.1080/07294360.2010.499144

Goodman, J.R. & Oglan, V.A. (2017). Making the invisible visible: Creating and fostering a classroom culture of thinking. SCAMLE Journal, 47-53. https://d1wqtxts1xzle7.cloudfront.net/54130966/099b858d361f620bd5c05bbdea2ff87f-with-cover-page-v2.pdf?Expires=1624425985&Signature=gMKQ-tKhECRNLGU-MoB6Back1qayHtkgqRqKoH3lyCB7vVm168QvUCXRAKf73974vgs1YIuz5hpISR4aYOYZD5TPr15fUlgKt~jvH35WwvubCPcJHNb0F8aIy39ZJmkdDOcoWAduw5Cd~lcI2gfsAIXMEl8GbyoCx1bjK~adq4gtuddTTQVg9J~MKB3I8Q5mBga16mxtEkA2HdPvaoLPp8knRHDQzbyiwqAzvENyxeu7HYhrRxKKaOsUwgaqUfxxdrwuePw~F0Ff~ibEhQApIFyZ5WoSYag

9X00hoqizUFqFm35YaEz-ciG-CQLUD
A4lz~71byf2kHubSLFBG2G7pA__&K
ey-Pair-Id=APKAJLOHF5GGSLRBV4
ZA#page=48.

Linck, L.J., Wolberg, R.I., & Salmon, A.K. (2012). Creating a culture of thinking that cultivates the perspective-taking disposition. In M. S. Plakhotnik, S. M. Nielsen, & D. M. Pane (Eds.), Proceedings of the 11th Annual College of Education & GSN Research Conference (pp. 99-104). Miami: Florida International University. Retrieved from http://education.fiu.edu/research_conference/.

Nikijuluw, R.C.G.V. & Puspitasari, D. (2018). The influence of plus, minus, and interesting (PMI) strategy towards students' speaking ability in an Indonesian private secondary school. International Journal of Language Education, 2(2), 113-121. https://files.eric.ed.gov/fulltext/EJ1245033.pdf.

Paul, R. (1993). Critical thinking: What every person needs to survive in a rapidly changing world. Rohnert Park, CA: Center for Critical Thinking and Moral Critique, Sonoma State University

Peterson, J.J. (2021). Visible thinking: A distributed cognitive process to self-manage cognitive load. United States Army Research Institute for the Behavioral and Social Sciences. https://apps.dtic.mil/sti/pdfs/AD1124593.pdf.

Perkins, D., Tishman, S., Jay, E. (2018). A classroom for thinking: Learning and teaching in a culture of thought. Buenos Aires. Aique.

Pinedo, R., Garcia, N., & Cañas, M. (2018). Thinking routines across different subjects and education levels. Proceedings of INTED2018 Conference, 5577-5580. https://www.researchgate.net/profile/Ruth-Pinedo/publication/323826530_Thinking_routines_across_different_subjects_and_educational_levels/links/5aacc5c1a6fdcc1bc0b8f35a/

Thinking-routines-across-different-subjects-and-educational-levels.pdf.

Reznitskaya, A. & Gregory, M. (2013). Student thought and classroom language: Examining the mechanisms of change in dialogic teaching. Educational Psychologist, 48(2), 114-133. 10.1080/00461520.2013.775898

Ritchhart, R., Church, M., & Morrison, K. (2011). Making thinking visible: How to promote engagement, understanding, independence for all learners. California: Jossey-Bass.

Ritchhart, R., Church, M., Morrison, K. (2014). Make the thought visible. Buenos Aires: Paidós. Internet Visible Thought. http://www.pz.gse.harvard.edu/visible_thinking.php.

Ritchhart, R. (2015). Creating cultures of thinking. The 8 forces we must master to truly transform our

schools. California: Jossey-Bass.

Sahamid, H. (2016). Developing critical thinking through Socratic Questioning: An Action Research Study. International Journal of Education & Literacy Studies, 4(3), 62-72, http://dx.doi.org/10.7575/aiac.ijels.v.4n.3p.62.

Wells, C.L. & Sprott, R.A. (2020). Oil-land: An investigation into inquiry, dialogue, and action. Journal of Curriculum and Pedagogy, https://doi.org/10.1080/15505170.2020.1793436.