Annotated Bibliography: Adult Learners and the Successful Application of Metacognition in an eLearning Environment

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Peer-Reviewed Journal Article

Burin, D.I., Gonzalez, F.M., Barreyro, J.P., & Injoque-Ricle, I. (2020). Metacognitive regulation contributes to digital text comprehension in E-learning. *Metacognition and Learning, 15*(3). 391-410. https://doi.org/10.1007/s11409-020-09226-8

Summary

This research focused on how metacognition and a digital delivery method impacted students' ability to comprehend something they read and how they performed on a quiz related to the content. The study was completed by 219 undergraduate students in their most frequently-used elearning environment (home, dorm room, etc). For metacognition, the researchers used a self-reporting tool called MARSI (Metacognitive Awareness of Reading Strategies Inventory, developed by Mokhtari and Reichard in 2002) that surveyed what metacognitive activities the participants performed while doing the reading comprehension and assessment activity. The researchers correlated reading comprehension performance with verbal ability, working memory, and internet experience as well to account for performance variations outside metacognition. The study supported a correlation between metacognition, internet experience, and verbal ability with reading comprehension, but working memory was not correlated.

Assessment

The research was performed by Psychology faculty at the University of Buenos Aires, the primary author having several publications under her name, several specifically focused on elearning. The article was (likely) translated and went through the peer-review process to get published in the *Metacognition and Learning* journal published by Springer. It was published within 5 years so it is pretty current. The goal of the study was to assess what is frequently an analog experience (reading text comprehension) and see if the existing data correlating

metacognition and self-regulating skills with reading comprehension would hold up when reading comprehension was moved to a digital learning environment. For each item that the researchers thought might impact participant reading comprehension, they used existing validated survey tools with minimal adjustments. The researchers correlated each survey item with each other item, and broke down the MARSI results into two separate subsections to see if that skewed the results in any direction, which was all very thorough.

Reflection

The participant base in this study were undergraduate psychology students, mostly women, which is typical of a lot of research but not a direct translation for adult learners in technical fields. The research was performed in 2019 and published in 2020, so it was done before the 2020 lockdown forced much of education to go digital, so it would be interesting to see a repeat of this study done with a post-lockdown student body. This is helpful to the topic of metacognition in adult learners because it offers a correlation between self-regulation and comprehension of a topic that the participants were likely uninterested in, and the MARSI tool is something that may aid in how to approach education design in this area. The subcategory of the MARSI data (referred to as Global/Monitor activities) were heavily correlated with performance, and more research into which metacognitive activities fall under that subcategory may be helpful here.

Popular News Source

Sword, R. (2021, March 17). *Metacognition in the Classroom: Benefits & Strategies.* High Speed Training. https://www.highspeedtraining.co.uk/hub/metacognition-in-the-classroom/

Summary

The purpose of this article is to introduce primary school teachers to the concept of metacognition and why it is helpful to include metacognitive activities in lesson planning. The author analyzes a literature review on metacognition and breaks the information down into four sections: What it is, why it's important, how to teach

it, and a list of examples in practice. The information is delivered in conversational language to be easier to understand, and the author offers 12 example activities that can be brought into a classroom immediately.

Assessment

High Speed Training is an organization that builds corporate elearning programs for teachers, most of which support regulatory certifications and are accredited or assured by regulatory agencies and professional consensus standards-type organizations. The author is a Learning Designer with a graduate level degree and a background in developmental education who has written several articles for the website. The data the author pulled from for this article was a literature review commissioned by a charity organization that assists low-income families with putting their children through education programs.

Reflection

What is helpful about this article is the author provided tools and framework examples instead of just explaining concepts. The “You/Plan/Do/Review (KWL chart)” tool is a practical and easy-to-implement application of metacognition in lesson planning. This was written for an audience of grade school classroom teachers, so tools and theory are explained in a conversational manner, which makes it easier to comprehend and apply to the reader’s learning design in turn. The theory and tools are applicable outside an in-person classroom environment. With “teachers” being the primary audience and the author having a learning design background, the information is delivered at a higher level than an introductory article would, but breaks down a very complicated concept into chunks that are easier to understand and apply. Since the tools are pulled from a grant-funded literature review, the tools and frameworks mentioned in this article are likely tested and proven successful.

Book or Book Chapter

Clark, R. C. (2008). Chapter 14. Metacognition, Self-Regulation, and Adaptive Expertise. In *Building expertise: cognitive methods for training and performance improvement* (3rd ed., pp. 313-336). John Wiley & Sons. https://doi.org/10.1002/pfi.4140390213

Summary

This book is a literature review that has been written out narratively for a common audience. The author reviews ways to evaluate metacognition and self-regulation in learning and offers direct examples of applying metacognition to learning design. The author cites research that supports the claims that metacognition, competency, and self-regulation is not accurately represented in self-evaluations by learners, but lists examples of instructional design that measure these factors correctly. A frequent example used throughout the chapter as a measurable application of metacognition is developing problem-solving strategies in the learner base.

Assessment

The intended audience for this book are professional educators and human resources professionals. The author is a highly-cited professional with a doctoral degree in education and several publications alongside other major names in the instructional design and technical training industry. This is not the first book they have published. And it has been revised and updated as more research has been completed, making the content more trustworthy and current.

Reflection

The author's background in instructional design and specifically technical training in the workplace is extremely applicable to the research topic. The topic of elearning as an instructional platform is mentioned in this chapter, but the focus is more on the design of the education and tools that can be used to develop metacognitive skills in the learners.The intention of the book is for use in a professional training environment indicating adult learners and focusing on techniques that are effective with this learner base.

Conference Paper, Presentation, or Webinar

Balcaen, P. (2013, June). *Attending to Competency Based Education: New Challenge for e-Learning, Pitfalls and Possibilities* [Conference paper]. International Conference on eLearning, Kidmore End, United Kingdom. https://link.ezproxy.neu.edu/login?url=https://www.proquest.com/conference-papers-proceedings/attending-competency-based-education-new/docview/1380700113/se-2?accountid=12826

Summary

Competency-based education is a professional development approach most frequently seen in medical education, but defined here as a measurable data point that is an important factor to educational design. The author reviews several pitfalls and areas that require further research as the majority of the article. The author supports a competency cluster approach taken from The National Academies Research Group in a 2012 publication that measures "deep learning" and competent critical thinking using three competency domains. The author lists other tools that are conceptually sound and focused on measuring critical thinking in learners, but does not have substantial data to measure whether the listed tools have been proven effective or not. The author makes several recommendations on how to apply critical thinking tools to elearning design and reinforces the importance of a critical thinking approach to design for competency assessments.

Assessment

The author is a highly-published professional in the field of elearning instructional design, and while this publication is not particularly recent, it is more of a literature review than a study so the information remains applicable. The author is a professor at the University of British Columbia and presented this information at an international conference of experts in the field, implying a peer-selection process was involved to choose this presentation for this conference. References in the paper also include biographies of the presenting authors.

Reflection

The author is very credible, and a conference presentation at an industry conference brings credibility to the presentation content. The focus of the article is mostly on the pitfalls and difficulties of bringing competency

based education into the elearning environment, which is relevant to the topic when the other research presented here supports critical thinking as a measurable application of metacognition. Competency-based assessments are often used to assess whether a learner has fully absorbed a process or skill and can apply that skill to real-world problems and determine the correct path forward. In a technical training environment, a competency assessment would involve the learners completing a task successfully using information they had learned as part of the learning experience.

Dissertation

Yang, B. N. (2019). *Exploring e-Learning Experiences in a Dynamic Organizational Learning Environment: An Interpretative Phenomenological Analysis of Organizational e-Learners in a Multicultural Consulting Firm in Hong Kong* (Order No. 13814774) [Doctoral dissertation, Northeastern University]. ProQuest One Academic. https://repository.library.northeastern.edu/files/neu:m044cb72s/fulltext.pdf

Summary

The focus of this article is to understand the lived experience of a professional working within an organization focusing on motivation in a self-regulated learning environment, and how does that experience tie into professional and organizational performance. The theories used were Self Regulated Learning by Pintrich in 2005 and Organizational Learning model by Nonaka in 1994. The theories were connected to one another and to the research study through a focus on metacognition, motivation, behavior, and context - all concept groups included in Self Regulated Learning theory. The research involved interviewing participants and analysis the interview results using Interpretive Phenomenological Analysis (IPA), a research method often used in psychology research. The author identified six themes that are consistent indicators of successful learning in a corporate elearning environment and listed recommendations for learning designers building education for similar audiences.

Assessment

The study used a case study approach with a pool of only 8 participants, but the analysis theory used (IPA) is an intricate and in-depth process and an interesting approach to a learning design study. This being a dissertation, there was a huge amount of background information and a full literature review included in the one publication, providing a very solid knowledge base for the design of the research itself. Since the author was submitting this paper as part of a doctoral thesis in education, it was most likely reviewed by a panel of peers before being approved and published to the database, and was written with oversight by an existing doctor of education.

Reflection

Metacognition ties into self-regulated learning very tightly, and this article focused on an organization of adult employees and their elearning environment and effectiveness, which was an audience missing in most of the available research. Since this research is focused on professionals and an elearning environment, and this article is directed towards instructional designers and technician trainers, it ties tightly into the intended research. Using a psychological research method to collect data and the list of themes that correlate with a positive and successful elearning experience is a unique way to bring a holistic perspective into education design instead of just following published theories.

Video or Podcast

UCD Teaching & Learning. (2021, October 15). *Leveraging the Virtual Learning Environment to Develop Metacognitive Skills in Students* [Video]. YouTube. https://www.youtube.com/watch?v=DFIpiBwjz_k

Summary

This video is an overview of the research and academic work completed by a fellowship of professors at the University College Dublin (UCD). The fellowship was focused on the projected future of skill development and informed by the Covid-19 pandemic and the rise of virtual learning environments. The fellowship built a metacognitive design framework for blended learning based on five “pillars,” or primary metacognitive skills, and applied using a four-step pneumonic and flowchart for designers. The university applied the framework to a

digital education platform used by the university and recorded data on metacognitive skills and student performance before, during, and after the launch of the new design. There was a marked improvement in student performance and feedback after applying the framework and the university now offers a community of practice for other educational institutions to apply the approach to their digital learning environments.

Assessment

The video has a very professional and polished production level and was financed by the university to highlight the success of the project. It is organized similar to a research publication, introducing the problem the fellowship was addressing, how they researched and developed their framework, how they applied the framework, and the data from implementing the framework with their student base. The university posted the video to their professional YouTube page and the members of the fellowship present the material themselves and include student feedback, showing support for the project from the institution. The fellowship consists of four well-educated and experienced associate professors, and the video includes a summary of the data they collected as well as a link to a Padlet with more details about the project and several conference presentations and webinars where the information was presented.

Reflection

This video leans heavily into how the framework was applied to a digital learning environment, which was one of the primary points of focus. The fellowship's work confirms the importance and effect of metacognition and metacognitive-focused education when designing education for a digital environment, and offers a direct framework and set of tools that can be applied to any digital learning design.