

Teacher Feedback and Student Learning: Investing the Use of Interactive Notebooks

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With the focus of many schools on e-learning and implementing technology into instruction, the purpose of this article is to reflect on the practice of instruction and the benefits of using an Interactive Notebook (INB) as an effective tool to engage critical thinking in an organized format. An INB is a tool that bridges students' learning through a collection of notes from reading, listening and discussions. Carter, Hernandez, & Richison, (2009) propose a shift from students taking notes for the purpose of rote memorization for a future summative assessment to a stimulating practice of daily journaling to include both reflective and metacognitive responses students make on their own notes. The literature on brain research, multiple intelligences, and note taking all support the classroom use of interactive notebooks and by implementing the INB teachers can use the strategies to improve student progress and attainment in all subjects (Wist, 2015). By implementing the INB teachers can use the strategies to improve student progress and attainment in all subjects.

Introduction

The role of a teacher can be described as facilitators of learning in order to provide students with information they need to master a subject. An educator, also a teacher, creates an environment for students to develop their personal academic confidence intellectually, morally and socially. Fifty years ago, John Dewey (1968) opened the eyes of many teachers, shifting them to the level of an educator by sharing students learn best from personal experiences and then reflecting on the experiences. In the 21st century these words echo wisdom, affirming that our educator intuition is correct to personalize our students learning, to tap into their true potential, believing there is no limit to what they can achieve. Educators evaluate students on their skills, knowledge and learning styles to prepare their students learning experiences and reflection. Beyond these statistics and data an educator understands they cannot truly reach their students if they do not know them on a personal level, fostering a genuine rapport that bridges instruction to learning.

The INB is a teacher-directed, student created hands-on approach to teaching, replacing worksheets with an effective and personalized review-study guide. ELL teachers using INBs will support the diverse needs of our students, to promote language acquisition and therefore ELL success (Echevarria & Graves, 2005). Marzano, Pickering, and Pollack (2001) are among many leaders in education that believe, in order to foster higher-order thinking, instructional activities must call on learners to restructure their prior knowledge and link it to new information. A crucial aspect of this brain-based activity is that students use their own "voices and perspectives" as they construct personal meaning. For the teacher and student this requires organization that is flexible enough to meet the needs of different ability students and also providing support to include encouragement and next steps to improve or enrich work.

Collectively, at the end of the year, students have created an individualized textbook of their learning and personal growth, and for teachers the INB is evidence of learning (i.e. the student's personal portfolio). "Students treasure their interactive notebooks because they are personal and reflective; teachers value them because they represent a simple yet powerful method for helping students learn" (Waldman and Crippen, 2009).

The Set-Up - Organization

Using a spiral bound exercise book, students set up their INB following an agreed structure for continuity and simplicity. First, students write Title Page, their name, subject, teacher and school name. Added next is the Table of Contents (TOC), very similar to a book with three columns, each line with page number, title and date. A replica of the INB TOC is posted prominently on the wall and is added to daily informing students of work added if they were absent. Students number each page in the book after the TOC. The left side of the INB is for odd numbers, the right side even numbers, clearly marked on the upper outer margin of each page to locate information quickly, again like a book. The structure to the INB on the right side is for the teacher's input. Using a blue/black pen or pencil the teacher adds pertinent class information including class information/notes, lab activities, functional text, vocabulary, film or video notes, answers to posed questions. The left side is for students and is known as the output. The student completes this side using color to add their learning notes including concept maps, brainstorming, group activities, flowcharts, mind maps, summaries, drawings, data and graphs, assessments, reflections, Review and Preview (RAP), Work it Out (WIO) and Words of Wisdom (WoW). This interaction is not directed by the teacher in any way other than a list of possible options for the various methods from which a student may want to choose" (Ludewig, 2006). The students' INB format is the first step in organization, the second is the information recorded from teacher instruction and student output.

Let us now briefly turn to the three key mechanisms that are foundational to the implementation of the INB, namely Note Taking, Higher Level Thinking and Feedback/Feed Forward.

Note Taking

The prominent skill students develop is the writing of authentic notes, not copying from texts, but recording information that has meaning and value. The Cornell method is systematic and a great way for students to organize their learning. Researchers Pauk & Owen (2005) report that students choosing to not write any notes forget 60% within two weeks, however if some notes are taken the recall and long-term memory increases to 60%. Using the Cornell method, the percentages increase to 90-100%, with indefinite recall. In 1949 Pauk, frustrated with students' low-test scores, began to analyze the problem and determined note taking was the culprit. He found with students' notes being words on a page they studied to pass a test proved to be an ineffective method (Pauk & Owen, 2005). Pauk developed a simple format for all students to follow, dividing the page into three sections, one for class notes, one for questions and one for summary. This format has been adjusted for the INB as the right page is the teacher input and left page is the student side, output. Following the structure of Cornell Notes, the last five lines on the right side is for the plenary with students writing either a summary or answer the Essential Questions, similar to an exit slip.

Writing and taking notes:

“for students, becomes an active process. These notebooks invite students to become engaged in their learning. Students will spend some time passively recording ideas from the board, but most of their time doing something with ideas-putting them into their own words, searching for implication or assumptions, transforming words into visuals, finding the main point of a political cartoon, etc. This is especially true of the left side of the notebook, which is reserved for their active exploration of social studies ideas”. (“Overview for interactive notebook,” n.d.)

In respect to student note taking, research suggests the pen is mightier than the laptop, with writing by hand being a necessary tool for students’ motor development (James & Gauthier, 2006; James, 2010; Berninger, 2012) and children consistently write better, faster and more with a pen (Berninger, 2012). However, the INB is not to replace a laptop. The research of how students learn, and the benefits of cathartic writing go beyond the skill of forming letters and tapping keys. Saperstein Associates (2012) state that handwriting is a foundational skill that can influence students reading, writing, language use and critical thinking.

Higher Level Thinking

For students to understand and think through content, teachers’ instruction needs to be driven by questioning at varied levels to reach all students’ academic levels. Despite the potential of questioning to increase students’ cognitive engagement, several studies indicate that the vast majority of classroom questioning hovers at the lower rungs of cognitive demand (Barba and Cardinale 1991; Özerk 2001). The art of questioning is not as easy as many teachers believe. The importance of the question or inquiry is the interaction between the content taught – characterized by factual, conceptual, procedural, and metacognitive knowledge – and the thought processes used in learning (Hess, Jones, Carlock & Walkup, 2009). Ken Huges (n.d) compares Blooms, Costa and Webb inquiry practices and outlines there is a clear correlation of levels and can be categorized by:

1. low: gather information,
2. mid-level: process information, and
3. high: to apply information gained in a new way.

Kuhn (2005) poses the argument that students must develop skills of inquiry and of argument as a way of becoming independent thinkers and learners. Students’ learning to think critically is to not only responding to higher level questions, but to ask higher levels of questions. These higher-level questions posed by peers in small groups are a different level of engagement as student conversation extends to foster students’ social skills.

The link between student’s emotions and learning is a link to students’ long-term memory learning. Teachers do not have to be experts on the six sections of the brain or know that neurons affect the dendrite to the synapse, but they do need to understand that they have about 15 seconds to move the information from short-term memory to long-term memory before it is discarded (Tileston, 2004).

There are three elements to accomplish student long-term memory: planning, discussion, and reflection. Firstly, teacher planning Essential Questions that require students to use both sides of their brain to make sense and find meaning. By tapping into the emotions of real-life experiences, the short-term information will shift to long term memory. Secondly, student interaction with their peers through small groups facilitate discussion. Examples of these discussions include the Socratic Seminar, discussion on reading, Philosophical Chairs, a two-sided debate and Four Corners debate. The third element is reflection, a synthesis of when students connect the learning to find new meaning, taking the input from the right side to output on the left side. For some students, this may be isolated in one subject, however the true goal would be for students to make connections across multiple curriculum areas. All three elements in action are what make the INB interactive and help students shifting from short-term memory to long-term memory learning.

It is true we, still to this day, we do not truly understand the brain and all its capacities. However, neurosciences have helped with understanding the learning process and how teachers can improve instruction with a better awareness of how the brain learns. Patricia Wolfe (2012) states with the current research of how the brain works, we can effectively match teaching practice with brain function. Every teacher would benefit from reading Wolfe's (2010) book *Brain Matters* to study the brain, including the anatomy, physiology and biology of the brain into context with teaching and learning, including examples of real classroom applications.

Feedback and Feedforward

Sheffield University has reviewed many studies on the impact of teacher feedback to students and the research tells us only one approach works, to include feedback with feedforward (Sheffield Hallam University, 2017). Feedback has many forms. Typically, it is providing to students' accuracy of their work, one-way disclosure. Feedforward is a constructive and supportive step that develops a relationship with the student as a means to develop their skills. Introduced this year students and teachers used editing symbols for students to correct their own errors and misconceptions. Students also corrected their own formatives, to again work through their thinking, discuss the content and, through writing, move the learning to long-term memory. The role of feedback in the INB takes many forms including student accountability to participate in their learning by making improvements to their work, teachers empowering students to intrinsically learn for their own benefit. The key feature with including feedback with feedforward comments provide students with significant appraisal experience as part of the pedagogical design (Sadler 1989). This changes the relationship of receiving only passive feedback with students to directly involving them in their development, understanding different levels of quality of work and how to achieve the next step.

Findings and Implications

The response to the INBs in Middle School was positive by both teachers and students. Identified early by teachers, students lacked skills in notetaking, other than copying from the board. It was a transition for students to write simplified notes, questions to the instruction and summarizing at the end of class. Students reported they like the format with a TOC, as it is easy to identify when entries and possible missed work. Cornell note format, which was a new format for students, proved to be easy to adapt and many students implemented into other

subjects not using the INB format. Teacher's stated that the process of setting up and teaching the format was a challenge. However, now noting some of this was due to their understanding of the INB, many staff believe this process will go smoother next year as it will start at the beginning of first week of school with all teachers expected to use it daily use. Everyone involved in the INB project is unanimous is using one format of the INB to make the use consistent and students to take more responsibility of their learning. Teachers in their next year planning have included the INB, the set-up and lessons on Learning Outcomes. The INB contract to be signed by students, parents and teachers has been translated. It explains to parents the purpose and benefit of the INB. With the inconsistency of the use of the INB during 2016/2017, the one component that will help drive accountability in using the INB is building towards sharing it as part of the student-parent conferences next year.

Conclusion

At its best, an interactive notebook provides a varied set of strategies to create a personal, organized, and documented learning record, in addition to presenting techniques for design, implementation, and assessment (Crippen et al., 2009). Interactive notebooks are designed to foster thinking, writing, and documenting learning in a variety of formats. Working within the interactive notebook, students become aware of the knowledge and skills required to control their learning—an understanding that can contribute to confidence and feelings of empowerment (Pajares, 1996). Students with the support of their teacher and peers will link their learning to real world applications, essential questions and long-range goals, especially when it is culturally relevant. “Children learn best when they are actively involved in their subject matter; they want to have the opportunity to work directly with materials and media; and in the arts, these strengths and inclination almost always translate into the making of something” (Gardner, 1993). For a successful implementation of the INB teachers need to have training of how to incorporate the INB into instruction time through thoughtful planning. The research demonstrates there is immense support for students to use the INB for its personalized learning, balance of input and output, encouraging group work and can be effective in classroom management. All can agree that the INB teaches students organization and to take pride in their work, their progress and success throughout the year.

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