Using academic notebooks to support achievement and promote positive environments in differentiated classrooms

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Using Academic Notebooks to Support Achievement and Promote Positive Environments in Differentiated Classrooms

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This article reflects the following This We Believe Characteristics: Value young adolescents – Challenging curriculum - Varied assessments – School environment
Picture the following: Actively engaged 7th graders, accessing resources that they created, using notebooks to prepare for their upcoming interviews with local community members who played a role in the Civil Rights Movement. Students work in small groups, leafing through their oft-used academic notebooks to find detailed information about people and events that relate to who they will soon interview. Students take excellent care of their notebooks; they keep them organized and leave them in a designated location so the notebooks are easily found when needed. If you ask one of these students about the value of their notebook, they speak emphatically about the wealth of information they contain, visibly showing pride in their creations. These notebooks connect students to the material, to the classroom and to each other.

Given the call throughout the last decade to create opportunities for all students to be successful through differentiated instruction, teachers increasingly need descriptions of specific materials and tools that support learning in heterogeneous classrooms. As depicted in the opening vignette, in this article we examine how a specific type of notebook – academic notebooks - can help accomplish differentiation by describing how they were used with a diverse 7th grade history class engaged in a multi-month investigation of the Civil Rights Movement. We employed academic notebooks in this unit as one of several targeted classroom practices designed to support a group of English language learners, students with IEP’s, as well as those performing above grade level: of the 21 students, five were newly mainstreamed ELL students, two were identified as in need of special education services, and three were considered gifted and talented. This classroom mirrored the overall demographics of the school: of the 560 students, 56% received Free and
Reduced lunch; 26% were foreign born, and across the school 29 different languages were spoken.

Described elsewhere as a tool for building background knowledge (Marzano, 2004), academic notebooks can also be expanded to allow students to organize and develop content, engage in the process of tracking their progress, and support students’ participation in classroom discussions. The purpose of this article is to show how academic notebooks can be used as a successful tool for supporting differentiated instruction, particularly in complex curricular units involving heterogeneous students.

According to Tomlinson and Imbeau (2010), an essential component of successfully differentiating instruction in any classroom is an explicit interconnectedness among four key instructional elements: learning environment, instruction, curriculum, and assessment. When teachers actively build relationships among these elements, they can more effectively provide differentiated instruction. Academic notebooks, when used well, act as a kind of “cross-over tool,” helping create and maintain a classroom in which the four elements of curriculum, instruction, assessment, and environment mutually support each other.

In this article, we tell the story of academic notebooks within a specific context and setting – at King Middle School, in Portland, Maine. Since 1993, King Middle School has implemented an innovative, whole-school reform model called Expeditionary Learning. At the heart of this model are units called learning expeditions: in-depth, interdisciplinary investigations that require students to engage in meaningful research, work with professionals and citizens of the local community, and create high quality products that are shared with authentic audiences. The
expedition discussed in this article, called *Small Acts of Courage*, was a semester-long inquiry during spring 2010 into the important people, events, and concepts behind the Civil Rights Movement. The guiding questions were: (1) What role did individuals play in the Civil Rights Movement? and (2) What role did economics, leadership, political power, and communication play in the Civil Rights Movement? Students interviewed local citizens about their role in the this movement and created professionally-bound oral histories that were given to the interviewees and donated to a local university’s African American special library collection.

The content of this article is based on the synergy of our perspectives (1) as a teacher implementing notebooks in this way for the first time, and (2) as researchers studying student motivation during collaborative learning. Although academic notebooks were not the original focus of the research, over the course of this expedition we began to notice how integral these tools were in helping each individual student both engage deeply with academic content and make meaningful contributions to the overall project; it became impossible to imagine student motivation and engagement *without* paying attention to their use of academic notebooks. And, upon closer study of the video, audio, and interview data we collected, it became apparent that academic notebooks also served as a key tool in differentiating instruction. In what follows, we outline four different themes related to how teacher-directed, student-created academic notebooks supported differentiation, elaborating each theme with examples of student work as well as student perspectives captured throughout the expedition.
Theme #1: Collecting and retrieving Information – a.k.a. the notebook as a “Goldmine”

I thought that the pages [of my notebook] where we wrote down definitions were helpful because we have the definitions of movement, and segregation, and discrimination and primary and secondary sources. [This was helpful] because not only are they on tests, but really to understand civil rights you need to know the basic vocabulary. If I was trying to understand how to bake a cake and I didn’t know what flour was you can’t make the cake.

In the above quote, a student articulates why his academic notebook was important to him, comparing the information contained in his notebook to the ingredients needed to bake a cake. This analogy is a useful way to understand the first theme: academic notebooks used as a way to collect and retrieve information about the content being studied.

The most prevalent use of more traditional notebooks is as a place for students to record information delivered in class via lecture, classroom discussion or independent work. A primary reason teachers ask students to use notebooks is to capture and organize information. In many cases students are expected to use these tools with little direction, follow-through, or support; they are solely responsible for deciding what to put in their notebook, managing and caring for it, and knowing how and when to use its contents. For students unsure of how to do this independently, conventional notebooks can actually be a barrier to learning in a differentiated classroom. One challenge we therefore tried to address through our implementation of academic notebooks was proper scaffolding: How can middle school students be best supported in the efficient and organized use of notebooks in the specific context of the expedition, and as a crucial resource for learning in general? The answer laid in employing explicit, teacher-driven strategies and
structures, in the form of academic notebooks, to help students organize and make sense of their learning.

Our video recordings captured messages given to students about how and why to use their academic notebooks. Students were repeatedly cued when to go to their academic notebooks both to add and to retrieve information. For example, during a class early on in the expedition, the teacher of this expedition said:

First off, let’s do a review. We have a goal. What is the goal that we’ve been talking about? What was the goal of the Civil Rights Movement? I like the way people are using their academic notebooks if you don’t remember.

In this whole-class discussion, students – though they at first appeared slightly confused by the question – quickly started to participate by flipping through their academic notebooks and raising their hands to provide answers. On another occasion, the teacher referred to students’ academic notebooks as their “goldmine” – a resource to be mined for content-based gems.

In this expedition, the academic notebooks served as a place where students captured critical vocabulary, key concepts, and records of pivotal events. In this way, they were consistent with Marzano’s (2004) suggestion that academic notebooks be used to help build background knowledge. But they also became a foundation upon which students continuously developed knowledge about the Civil Rights Movement.

As students engaged in the process of building background knowledge, we noticed how important it was for them to have easily retrievable information for their ongoing development of civil rights concepts. A key feature of scaffolding is the use of prior knowledge. Accordingly, in addition to being a place where they captured new learning, the academic notebooks served as a way for students to refer to prior learning and to add new insights and concepts (Marzano, 2007). This allowed them
to build bridges between old and new ideas. Without using the academic notebooks in this way, the process would have been more about accumulating facts rather than organizing information to serve wider project goals.

A key to differentiated instruction, according to Tomlinson and Imbeau (2010), is providing students with “access to what they will need as they work in a way that maximizes efficiency and minimizes disruption” (p. 96-97). Academic notebooks were so impactful because of two teacher-directed structures: (1) all information needed to be stored in one place; and (2) the notebooks never left the classroom. They thus became a predictable part of classroom routines for each student. The amount of time saved by supplying students with the materials they needed, when they needed them, cannot be overstated; using notebooks in this way eliminated time that otherwise would have been wasted on logistics and allowed more time for teaching and learning.

One example of academic notebooks being used within the ‘goldmine’ theme was the key idea of ‘roadblocks.’ For students to understand the Civil Rights Movement they needed to explore the struggles and obstacles faced by people who worked to end racial discrimination. One attempt to help them understand these struggles was to guide students in constructing a page in their academic notebook that visually conveyed these physical and ideological roadblocks. Starting with a blank page, students glued a piece of ‘road’ into their notebook which represented the journey toward freedom (see Figure 1, Example of Student Work #1)\(^1\). Throughout the expedition, as their knowledge about the movement developed, students periodically were asked to identify new roadblocks and add them to their note...
academic notebooks. This roadblocks page was a resource that linked to all of their learning about the Civil Rights Movement and thus was not only a place for accumulating information but was also used as a reference for ongoing research and classroom discussions. The notebooks became a tool to identify with the movement and also to apply and think critically about key vocabulary and concepts.

Many of our findings in this theme align with Tomlinson and Imbeau’s (2010) features of effective differentiated classrooms. For example, the authors emphasize the importance of making a variety of materials accessible to all students in ways that meet different individual needs. Although the teacher provided strong guidance on the organization and use of the notebooks, they also reflected individuals’ creativity. Tomlinson and Imbeau also highlight the need for predictable routines, which, in this expedition, students learned to manage on their own.

In the end, academic notebooks supported building background knowledge, storing that content in easily retrievable ways, and creating classroom lessons that required each student to use the content throughout the flow of the project.

Theme # 2: Using Academic Notebooks to ‘Do History’

We did the whole ‘getting ready for being a historian’ with the primary sources, photographs and the secondary sources when we cut them out of magazines. Then we learned what movement was and segregation. We learned the key words. And then…I feel like the roadblock sheet was where we really started learning about the Civil Rights Movement.

Differentiation is fundamentally about finding ways to engage each student in thinking critically about content—not just making sure everyone can accumulate information and retrieve facts. In our case, academic notebooks served as a specific, tangible resource that enabled students to not only think like historians but also take
on the role of these professionals. In this theme’s opening quote, a student describes how she used her notebook to build the skills needed to act like a historian -- distinguishing between types of evidence and making connections across factual information.

Throughout the Small Acts of Courage expedition, students used their academic notebooks for critical thinking about historical events. Using multiple resources contained in their notebooks, students made predictions (also documented in their notebooks) and then assessed the accuracy of their insights by analyzing relationships among people, places, events and perspectives—a key component of the Maine state curriculum frameworks. For example, students learned about the U.S. Supreme Court’s ruling in the Brown vs. Board of Education case and were asked to make predictions about how people around the country would react. Later students reviewed and discussed their predictions, then watched clips from the documentary *Eyes on the Prize* with a purposeful eye toward comparing their predictions with what actually happened. Through classroom discussion and independent reflection, students then used their academic notebooks to record thoughts about their initial predictions. This was critical because students were able to refer to previously covered content information and utilize it as a reference to effectively make and assess predictions. The academic notebook thus supported metacognition—the process of thinking about their thinking—among all students. See Student Work Example #2 for one student’s work.

Academic notebooks were also instrumental in allowing students to make original contributions to historical knowledge through their interviews and subsequent oral histories. The academic notebook was not just a collection of facts
about the Civil Rights Movement – it was a resource that helped students think like historians (Levstik & Barton, 2005). For example, the notebooks prepared students to be able to make meaningful connections between their interviewees’ first-hand accounts and historical events and abstract concepts covered in class. In the months leading up to the interviews, each student used his or her academic notebook to develop his or her ability to make predictions and connections. Individual students applied these skills effectively, helping them connect individual stories to larger concepts about the Civil Rights Movement. Even though the notebooks were not physically present in the interviews, they still helped each student to think, which was evident in reviewing transcripts of the interviews.

As in the first theme, students also received clear messages about ‘doing history’ in their notebooks. The teacher said on one day,

Is there a place where we could go to remind ourselves about some of the roadblocks that we’ve identified? In your notebook, right? So, we’ve already identified some roadblocks, so you could go back and see. I’m looking for new roadblocks. I’m looking to make connections to some of the new learning since we last identified roadblocks.

In the above example, students were guided in how to use their academic notebooks as a means for making inferences across content they had previously studied.

In our case, academic notebooks established the ground upon which students could apply their learning to doing historical research. By capturing untold stories of real people in their local community, the notebooks helped students to make a real contribution to a historical body of knowledge. This sense of creating new knowledge – of fulfilling a need within their own community – connects with Tomlinson and Imbeau’s (2010) principle about the importance of engaging students through a “sense of need” (p. 17). But our work also extends these author’s ideas in
an important direction. Although they acknowledge that “students must have a support system in the form of teachers and/or peers that will help them,” (p. 17) we also assert that student-developed materials—in this case academic notebooks—are also a necessary part of a classroom system especially when applying content knowledge to complex, substantive projects. In our case, academic notebooks allowed students to hone independent thinking skills and to process information that was shared in class, and thus were a significant resource in supporting all students to 'do history'.

**Theme # 3: Tracking Progress Over Time**

One student, when asked at the end of the expedition, “What would you show from your notebook to help someone understand how and what you learned about the Civil Rights Movement?” said enthusiastically,

I would show my whole notebook...mainly the learning goals assessments, because they were really assessing our thinking about different events and people...I think it shows a lot of what we've been learning because we have important things that happened and how it was a part of the civil rights movement. How did segregation play a part, integration, discrimination and racism? We had to write those all down.

Differentiated instruction rests upon a teacher knowing each student’s capabilities and growth areas as well as providing the opportunity for them to demonstrate their learning in a variety of ways. In our case, academic notebooks served as a record of growth and learning, so teachers and students could assess progress and the teacher could continuously collect data and adapt instruction (Ruiz-Primo & Li, 2004). Academic notebooks were a tangible, dynamic resource for those assessments, making them readily accessible to both students and teachers. These notebooks were a tool for effective formative assessment, which necessitates finding
out “where each student is”, meeting each student where she is, and involving each student in the process of her own growth. As Tomlinson and Imbeau (2010) say, “It’s not difficult to know who has mastered what in a differentiated classroom as long as the teacher is clear about the essential learning goals and has a system for monitoring student growth toward these goals” (p. 132).

Academic notebooks can be a basis for such a system with thoughtful planning by the teacher (Aschbacher & Alonzo, 2006). For example, students glued brightly colored pieces of paper into their notebooks that contained the expedition’s guiding questions and a rubric of the learning targets. This was referenced periodically throughout the expedition as a way to help students keep track of their own progress. Additionally, formative assessments and learning activities were used to continuously collect data on each student’s progress. These became permanent parts of each student’s academic notebook, which allowed students not only to assess progress in the moment, but also to capture his or her progress over time. Thus, academic notebooks helped each student identify areas where she or he needed improvement, his or her areas of proficiency, and unique opportunities for taking additional challenges. Students were also asked to share feedback about which instructional strategies allowed them best to learn the content, thus providing the teacher with focus areas for adjustment of future instruction.

One specific instance was the Learning Goals Assessment, which was used four times in different ways to assess student progress on the overall goals of the expedition. The third use of this assessment required students to recall information about four key events and then to make connections to the role that leadership, economics, political power and communication played in each specific event. After
receiving feedback from the teacher about areas in which they needed additional information, students used their notebooks to fill gaps and then present their revised work in one-on-one conferences. Because this Learning Goals Assessment was housed in each student’s notebook, assessments were connected across time, creating a visual record of growth and learning. See Student Work Example #3 for one student’s LGA.

As in the other themes, messages embedded in daily instruction were given to students about the value of their academic notebooks:

I love Ms. Reynolds over here, she’s like ‘I know we did this, I know we did this [snapping her fingers]’ we have pictures that we cut out and put in our academic notebooks. That’s why we use these, boys and girls, because they are a record of what we’ve learned. And we don’t just learn what a primary source is and leave it at the door. We’re going to keep talking about it.

The above quote conveyed to students one of the major functions of the academic notebook: that their efforts will be connected to bigger and better things. The academic notebook provided a record of what students had learned as well as a means for specifically re-using and sharing this information. Thus, students were more likely to see their work as purposeful, a key dimension of motivated learning (Magnifico, 2010).

Academic notebooks helped each student engage in the process of assessment and of thinking about the progress of their own learning (Stiggins, Arter, Chappuis & Chappuis, 2007). The notebooks also assisted the teacher in better tailoring instruction to meet the needs of all learners, an essential aspect of assessment. The academic notebook provided a way for students and teachers to share responsibility for this process. The notebooks also allowed for each student to learn at different paces while still contributing to the project. Using notebooks to
track progress established clear connections between curriculum and assessment as in assessment for learning rather than assessment of learning (Black & Wiliam, 1998).

**Theme # 4: Supporting a Social Classroom Culture**

Although academic notebooks might appear to solely serve content-related goals, we found that they in fact mutually supported the academic and the social nature of the classroom. It is especially important in middle school classrooms to not only recognize how students exist simultaneously in their academic and social worlds, but also to provide tools that support both (Jarvela, Volet & Jarvenoja, 2010). We found that academic notebooks were one way of doing this.

An effective classroom is one that creates an environment in which each student feels safe and is seen as a valued member of his or her community. Although academic notebooks alone did not create an environment conducive to learning, they were a critical component in maintaining positive classroom norms. In this way, notebooks helped “‘make room’ for all kinds of learners to succeed academically” (Tomlinson and Imbeau, 2010, p. 75). Tomlinson and Imbeau go on to call this an “orderly, enabling learning environment” in which students are able to access and interact with content through a “wide range of routines and instructional strategies” (p. 76, emphasis in the original). The academic notebooks became an important part of the academic and social environment in the classroom as they supported all students in learning and having access to the essential knowledge of the expedition.

When watching the hours of video, we noticed many instances of students using their notebooks as a resource for participating more fully in whole-class and small-group discussions. For example, as students gained knowledge about the Civil
Rights Movement, whole-class conversations were used as a way to review and build on content. Students often had their academic notebooks open in front of them. As students were questioned, some did not need their notebooks and instantly raised their hand to answer. Other students would only raise their hand after leafing through their notebook to find the needed information. Two practices in particular helped encourage widespread participation in class discussions: (1) continually emphasizing that all students should use their academic notebooks as a resource—thus making it ‘normal’ for everyone to have their notebooks out; and (2) allowing sufficient wait time for reluctant students to access information from their notebooks. These practices created a way for each student to contribute no matter how quickly he or she recalled information. As Tomlinson and Imbeau (2010) note, it is critical for students to feel a sense of belonging and connection to others, and the notebooks were a resource that supported students as a way for all to make meaningful contributions.

The notebooks also encouraged students to socially construct knowledge in the following ways: by talking about what they had in their own notebook; by building off what fellow students shared from their notebooks; and by making contributions not just to individual learning, but to the class-as-a-whole. We found that academic notebooks provided a way for students to be contributing members of the classroom, helping them have a voice and be seen by their peers as a valuable participant. These notebooks also enabled students to feel secure enough to share, and, in turn, gain confidence when their contributions were taken up by teacher and peers.
Through modeling how and when to use academic notebooks, the teacher provided scaffolding that ensured each student would include important material in their notebook thus making it available for future use in whole-class and small-group collaborative work. For example, when watching a segment of *Eyes on the Prize*, students were asked to write one quote in their notebook that helped them understand the overall goals of the Civil Rights Movement. Afterwards, students shared these quotes with the class. The teacher captured many of these quotes on a white board in the front of the room and said, “If you didn’t write a quote down, here’s one for your notebook.” The task of listening to the movie, picking out a quote, and writing it down was beyond the level of English proficiency of several students. It was important that students had this information on a content level, but because this information would soon be used in small-group discussion it was critical for each student to have captured this to be a full participant. In this way, notebooks served an important social function, leveling the playing field for more reluctant students.

In many ways this theme conveys the essence of differentiated instruction: teaching practices that help all students access the resources needed to engage meaningfully with academic content as well as the social life of the classroom. It is critical that each student have a supportive environment in which to work, interacting positively with their peers and contributing to the overall progress of the class and the common goals shared by all students.
Implications for Practice

While we understand that there is no single strategy or tool that provides the answer to effective differentiation, we believe that academic notebooks are a key resource for supporting differentiated instruction. By adjusting practice to meet one’s own teaching needs and style and by making a concerted effort to meet the needs of individual students, academic notebooks can be a flexible tool that supports many aspects of differentiated instruction. Based on our close examination of this case, and taking into account our presentation of the four themes, here we share our ‘best practices’ in implementing academic notebooks.

1. **Academic notebooks are a way to establish norms for gathering, organizing and using information.** Used in this way notebooks scaffold good habits and can eliminate many of the ubiquitous comments typically heard from middle school students such as, “I can’t find my work.” “I don’t remember what we did in the last class.” “I left it on the bus.” This includes having predictable ways for students to easily access materials they will need to build their notebooks.

2. **Think of materials as supporting both academic and social goals.** Particularly as a tool for helping hesitant learners participate more fully, they can be used to support a positive social climate and community building.

3. **Putting these structures in place takes time.** To be effective, students need to be intentionally taught and walked-through the process. However, it is a trap to think that there is not time to build the structure; instead, like a cabinetmaker crafting a jig before making cuts on a saw, the time spent custom-building good tools should be considered an investment in quality and ultimately is a time saver.
Also, be prepared to go through multiple iterations of the notebooks, adjusting as you go.

4. *Academic notebooks are not the perfect tool for all situations.* The structure of the Small Acts expedition lent itself to using an academic notebook: students genuinely needed to house, organize, and use information over an extended time to jointly address a complex problem. In other cases, however, a more manually adjustable, portfolio-type collection might be appropriate. Make adjustments depending on the content and student needs.

5. *Academic notebooks are not a stand-alone resource.* In our case, notebooks functioned in relation to the content/guiding questions as well as the other materials in the classroom such as: a bulletin board that grew progressively more complex over time as it captured the collective learning of the class and ‘expedition folders’ that were a collection of student-produced artifacts.

**Conclusion**

In this article we presented a rationale and supporting evidence for employing a certain type of notebook in middle school classrooms. Particularly in differentiated classrooms, we are arguing for a shift away from the open-ended expectations tacitly given to middle school students about how to use a notebook. Conventional uses of notebooks can often end in disorganization, lack of clarity about expectations, and an overall lack of purpose to learning content. They also can favor students who are already skilled in using notebooks. *Academic notebooks,* as we have described them, instead functioned as a key component in a system of differentiation that supported curriculum, instruction, assessment and overall environment of the classroom. Ultimately, we found that notebooks provided this
classroom of diverse learners with routines “that balance[d] student needs for guidance and freedom” (Tomlinson & Imbeau, 2010, p. 22, our emphasis) while also engaging students in rigorous academic content in meaningful ways. Importantly, notebooks provided a way for each individual to ask and answer the question, “Where am I/where are we at in this journey?” which helped to establish ownership not just for content, but also for the process of learning.

Figure 1: Example of Student Work #1 – Roadblocks page, as developed over time.
Figure 2: Example of Student Work #2 – A page from a notebook showing a student making predictions about Brown vs. Board of Education and analyzing those predications.

Figure 3: Example of Student Work #3 – Page from notebook Learning Goals Assessment; yellow highlighting shows teacher's acknowledgement of student's progress.
References:


