Mindfulness Training and Teachers' Professional Development: An Emerging Area of Research and Practice

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ABSTRACT—*This article focuses on how mindfulness training (MT) programs for teachers, by cultivating mindfulness and its application to stress management and the social-emotional demands of teaching, represent emerging forms of teacher professional development (PD) aimed at improving teaching in public schools. MT is hypothesized to promote teachers' "habits of mind," and thereby their occupational health, well-being, and capacities to create and sustain both supportive relationships with students and classroom climates conducive to student engagement and learning. After defining mindfulness and its potential applications in teacher education and PD, this article discusses emerging MT programs for teachers, a logic model outlining potential MT program effects in educational settings, and directions for future research.*

KEYWORDS—*mindfulness; effective teaching; teacher professional development; habits of mind; stress reduction; occupational health; classroom climate*

Improving public education involves, in significant measure, improving the quality of teaching through teacher selection, education, mentorship, and ongoing professional development (Darling-Hammond & Bransford, 2005; Pianta & Hamre, 2009). Human services professions like education are often resistant to change, however, because reform necessitates that these professionals make fundamental changes in longstanding mindsets and skill sets that guide how they care for, interact with, and—in the case of schools—educate other human beings (Sarason,

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1990). Furthermore, even when human services professionals consciously recognize the need to change their longstanding habits of practice, powerful and often unconscious personal and institutional commitments to traditional practices can render them "immune to change" (Kegan & Lahey, 2009).

EFFECTIVE TEACHING AND HABITS OF MIND

Teacher educators and professional development (PD) specialists have identified three key domains of professional knowledge and skills necessary for improving teachers' classroom teaching: (a) subject-matter or content knowledge (such as mathematics); (b) pedagogical knowledge concerning how and when to teach the subject matter (e.g., how to teach the concept of a statistical "average"); and more recently, (c) developmental knowledge concerning how and when to teach content to students of different ages (e.g., how to teach averages to 10- vs. 18-year-olds) (e.g., Darling-Hammond & Bransford, 2005; Pianta, Hitz & West, 2010). Others have posited a fourth domain of skills relevant to effective teaching, which some refer to as "professional dispositions" (e.g., Dottin, 2009; National Council for the Accreditation of Teacher Education, 2006) but we call "habits of mind." Habits of mind are defined as "those dispositions toward behaving intelligently when confronted with problems, the answers to which are not immediately known" (Costa & Kallinick, 2011, p. 1). Such habits include tendencies to gather data through all of the senses, to be aware of and reflect on experience in a nonjudgmental manner, to be flexible when problem solving, to regulate emotion and be resilient after setbacks, and to attend to others with empathy and compassion (e. g., Jennings & Greenberg, 2009; National Council for the Accreditation of Teacher Education, 2006). In this article, we describe a new generation of teacher PD programs that aim to cultivate such habits of mind through the practice of mindfulness, a particular way of deploying attention and awareness in

the present moment in a nonreactive and nonjudgmental manner that facilitates emotion regulation, stress reduction, and healthy social interactions (see Kabat-Zinn, 1994; Mind & Life Education Research Network (MLERN), in press).

TEACHING AS UNCERTAIN, EMOTIONAL, AND ATTENTIONALLY DEMANDING WORK

Why are habits of mind necessary for effective teaching? Human service occupations like teaching, because of their social nature, involve high levels of uncertainty, emotion, and attention to others, and thus require habits of mind associated with mental flexibility, emotion regulation, and relationship management skills (Helsing, 2007; Schutz & Zembylas, 2009; [2] Zapf, 2002). Furthermore, given that social relationships inevitably engender conflict, human service professionals also require habits of mind associated with working with conflict creatively, being resilient after conflicts, and practicing forgiveness and relationship reengagement after conflict.

As a case in point, teachers' work lives are saturated with interactions with students, colleagues, administrators, and parents—interactions that require significant attentional and emotional resources and their effective regulation through habits of mind. For instance, teachers must often shift the focus of their attention in the classroom from particular students and their cognitive and emotional needs, to an overview of the entire classroom, and back again. By cultivating the habit of being flexibly attentive, teachers may be better able to respond to students' needs proactively, a key contributor to effective classroom management (Marzano, Marzano & Pickering, 2003). In addition, teachers must problem solve "on the fly" as they interact with students of varying levels of maturity and readiness to learn. To do this in a manner that avoids unequal treatment and opportunities to learn among students with different backgrounds requires great awareness, empathy, and mental flexibility. Furthermore, in all of their interactions at work, teachers must use age-appropriate language and nonverbal behavior. They must recruit and express a range of socially appropriate emotions (such as enthusiasm, interest, or intentionally expressed displeasure) and, at the same time, they must regulate more distressing emotions like frustration or fear that can arise in such interactions (e.g., Chang, 2009). Emotion regulation is especially important because if teachers become overly stressed in the classroom, they cannot leave in order to compose themselves, but must self-regulate in the presence of the class and the stressor itself (such as a student's disruptive behavior).

Given these kinds of routine demands, it is unsurprising that research has shown teaching to be a very stressful occupation (Johnson et al., 2005). Between 25 and 30% of teachers rate their jobs as either very or extremely stressful (Kyriacou, 2001; Unterbrink et al., 2007). Studies of teacher burnout—emotional exhaustion, low personal accomplishment,

and depersonalization of students—reveal that teachers in developed countries have similar rates of burnout (e.g., Bauer et al., 2006; Borg, 1990). Occupational stress seems particularly grueling for teachers early in their careers, with rates of leaving the profession estimated to be as high as 46% in the first five years (Jalongo & Heider, 2006). However, even teachers who remain in the profession show the cumulative effects of stress and burnout. In Germany, for instance, only 26% of teachers—compared to 54% of other public employees—continue to work until the normal retirement age (Statistisches Budesamt, 2005). Research shows that 52% of early retirements among teachers are caused by psychiatric and/or psychosomatic disorders (Weber, Weltle & Lederer, 2002, 2004). In other developed countries, teachers demonstrate similar relationships between chronic occupational stress and symptoms of mental and physical health problems (e.g., Johnson et al., 2005; Kyriacou, 1987; McCarthy, Lambert, O'Donnell & Melendres, 2009; Montgomery & Rupp, 2005).

Given the uncertain and emotionally demanding nature of teaching, when teachers do not develop the habits of mind to manage relevant resources and demands effectively, it can lead to problems that undermine teacher well-being and instructional practice. Such negative outcomes have consequences in education, both economic and student-related. Unmanaged stress not only undermines teacher well-being, it engenders health care and human resource costs associated with teacher illness, absenteeism, and leaving the profession. And teachers who have not developed the kinds of habits of mind we are discussing here may not be reaching their full potential to create emotionally supportive classroom climates for student learning (Briner & Dewberry, 2007; Jennings & Greenberg, 2009).

Surprisingly, neither teacher education nor PD programs currently prepare teachers for these kinds of job demands (Jennings & Greenberg, 2009) even though, as Hargreaves (2000) notes, "teaching, learning and leading may not be solely emotional practices, but they are always irretrievably emotional in character, in a good way or a bad way, by design or default" (p. 812). Given studies showing that mindfulness training (MT) with adults can help with stress reduction, emotion regulation, health, and prosocial dispositions (see Fredrickson, Cohn, Coffey, Pek & Finkel, 2008; Grossman, Niemann, Schmidt, & Walach, 2004; Mind & Life Education Research Network (MLERN), in press; Shapiro, Oman, Thoresen, Plante, & Flinders, 2007), there has been growing interest in using MT to help teachers develop habits of mind so that they are better prepared to meet the demands of their jobs. Furthermore, given their position in society in affecting the development of so many young people, teachers seem ideally suited for becoming expert in such habits of mind and imparting them to their students as well through role modeling and direct instruction (e.g., Partnership for 21st Century Skills, 2008).

MINDFULNESS TRAINING AND THE CULTIVATION OF TEACHERS' HABITS OF MIND

Kabat-Zinn (1994) defined mindfulness as "paying attention in a particular way: on purpose, in the present moment, and non-judgmentally" (p. 4). As such, mindfulness can be understood as involving three interrelated mental skills and dispositions: (a) concentrating attention intentionally on the here and now; (b) perceiving the present moment in a calm, clear, and veridical manner; and (c) experiencing each moment just as it is, without biasing mental reactions or judgments (Young, 2011). Mindfulness is traditionally taught through structured contemplative practices in which attention is focused intentionally and non-judgmentally on present-moment somatic and mental experience in the form of bodily sensations, feelings, mental images, and thoughts (Young, 2011). Such practices can include body scans, in which participants focus their attention progressively throughout the body to bring awareness to somatic experience; meditation on the breath to develop concentration; and meditation on present-moment experience to bring awareness to the body, feelings, images, and thoughts and to develop insight and equanimity with regard to all facets of present-moment experience (Kabat-Zinn, 1994). A fourth closely related practice, loving-kindness meditation, uses focused attention in the service of cultivating positive emotion toward oneself and others (Salzberg, 1995).

In addition to these contemplative practices, MT programs for teachers such as those listed in Table 1 also include explicit instruction on emotions and stress, and on how to use mindfulness to regulate emotions and stress more effectively (Bishop et al., 2004; Chambers, Gullone & Allen, 2009). In these kinds of MT programs, the application of mindfulness skills to the specific demands of teaching is supported throughout by weekly meetings involving group mindfulness practice and discussions of practice, by listening to recordings of prescribed home mindfulness practices, and by homework assignments in which teachers are invited to apply the skills of mindfulness to some aspect of their teaching and report back to the group. For instance, in one program, teachers keep a mindful emotion diary for one week, documenting their emotions, "emotional triggers," and ways of coping in the classroom. They then discuss these diaries in a subsequent meeting and explore how mindfulness might help. During other weeks, teachers are invited to offer thoughts of kindness and compassion to their most challenging student and to a student whom they rarely pay attention to, and to observe the effects of doing so on their understanding of and relationships with those students over time.

Figure 1 presents a logic model describing the hypothesized effects of such MT programs on teachers. The model holds that mindfulness training, through its effects on the cultivation of teachers' mindfulness and related habits of mind (such as tolerance for uncertainty, attentional focus, cognitive flexibility, and emotion regulation), improves teachers' occupational health and well-being. Increased health and well-being among teachers should lead to greater occupational engagement and satisfaction and lower rates of absenteeism, occupational burnout, health care use, and leaving the profession because of stress and burnout. Teachers' mindful habits of mind, in conjunction with their greater occupational health, well-being, and engagement, should then support the formation of positive dyadic relationships between teachers and students and provide teachers with the attentional and emotional resources and regulatory control they require to create and maintain emotionally supportive classroom climates in which all students can learn.

Supportive teacher-student relationships and classroom climates for learning, in turn, should promote students' feelings of belonging in the classroom and thereby enhance their levels of participation and engagement in learning. When students have supportive relationships with teachers, feel they are valued members of a learning community, and are positively involved in classroom activities, we hypothesize that they will be less likely to be disruptive, oppositional, or silently alienated and therefore will require fewer disciplinary referrals. At the same time, students in such environments should learn more because of their greater engagement and on-task behavior. As Figure 1 shows, there are also two sets of hypothesized feedback loops in our model, in which positive student outcomes should contribute over time to (a) even more supportive teacher-student relationships and positive classroom climates, and (b) increased teacher occupation health, well-being, engagement, and satisfaction. Taken together, these processes should form self-amplifying "virtuous" cycles, characterized by positive reciprocal relationships between teachers' and students' enjoyment, engagement, and satisfaction with teaching and learning together.

FUTURE DIRECTIONS FOR RESEARCH ON MT FOR TEACHERS

The logic model in Figure 1 leads to a series of tractable scientific research questions that require empirical scrutiny. First and foremost, do MT programs designed for teachers actually lead to the kinds of habits of mind that we describe here? If so, do mindfulness and related habits of mind actually affect the teacher outcomes, classroom outcomes, and student outcomes specified downstream in the model? What kinds of methodologies and research designs are needed to assess the hypothesized chains of effect in this logic model? How can the field produce rigorous research evidence that speaks to the educational community's need for consumption and translation of research into practice? These kinds of questions are at the heart of an emerging research agenda focused on MT programs for teachers and their potential direct effects on teachers and indirect effects on classrooms and students. We highlight a few issues that seem particularly important to address in the near term as practice and research in this area continue to grow.

Table 1
Sampling of current mindfulness-based programs for teachers

Program	Program focus
Cultivating Awareness and Resilience in Education (CARE for Teachers) http://www.garrisoninstitute.org/care **11**	4 day, 36-h program held over the course of 5–6 weeks with intersession coaching provided to participants by phone to support the application oh CARE skills.It is also offered as a week-long retreat at the Garrison Institute. CARE utilizes three primary instructional components: (a) emotion skills instruction, (b) mindfulness and stress reduction pratices, and (c) listening and compassion exercises. Program components are linked to specific strartegies for improving classroom managment, teacher-student relationships, and instructional strartegies
Stress Management and Relaxation Technicques (SMART-in Education) http://www.smart-in-education.org/	8-week, 34.5-h program and 15-min daily home practice. Promotes skills sets (e.g., regulation of attention and emotion) and mindsets (e.g., dispassionate curiosity, compassion and forgiveness for self and others) associated with mindfulness that are conductive to occupational health and well-being and teachers capacity to become a more effective teacher. The traning includes group discussions, dyadic exercise, didactic presentations and practices such as breath awareness mediation, mindfulness mediation, loving-kindness and forgiveness mediations, a progressive "body scan" and mindful movement
Inner Resilience http://www.innerresilience-tidescenter.org/	Promotes the skills of self-regulation, and caring for others through residential retreats for school staff, professional development workshops, individual stress reduction sessions, and parent workshops at school sites
Mindfulness, Courage, and Reflection for Educators http://www.umassmed.edu/	A blend of mindfulness-based stress reduction (MBSR) programing and the Courage to Teach Program
Mindful Schools http://www.mindfulschool.org/	On-line and live training for educators and administrators in the form of courses, curriculum trainings, and customized mindfulnessworkshops
Passsageworks Soul of Education Course for Teachers http://passageworks.org/	This 2.5-day program focuses on building heart, spirit and community in the classroom. The program covers the theory of social and emotional; learning, the integration of play, ritual, stillness, expressive arts and community building, developing reflection and "teaching presence" and creating classroom environment

Research Designs and Methods

Research on the effects of MT on teachers, classrooms, and students should take advantage of a variety of methodologies, including case studies, longitudinal studies, and randomized controlled trials (RCTs). Because the field is so new, "phenomena finding" investigations that use rich ethnographic descriptions, case studies of exemplars, and other forms of qualitative assessment of mindfulness and MT in education seem particularly important.

In addition, given that most research on teacher development uses cross-sectional designs with relatively small samples of convenience, we also need longitudinal designs with representative samples to ascertain the antecedents and consequences of various forms of PD, including MT, on teachers' development across their occupational life courses (Schonfeld, 1992). Using longitudinal designs to examine the long-term effects of MT on teacher outcomes such as work attendance, health care utilization, and leaving the profession, as well as student engagement, achievement, and equity, seems particularly important given that these potential outcomes are likely to manifest on different timescales and that both teacher and student outcomes are of relevance to school districts and states today.

Also key in future research is the use of RCTs to determine MT's effectiveness in producing the results in the outcomes specified in Figure 1 compared to waitlist or active control groups. RCTs are particularly important for establishing the efficacy and effectiveness of these kinds of programs across different geographical areas and populations of teachers and students,
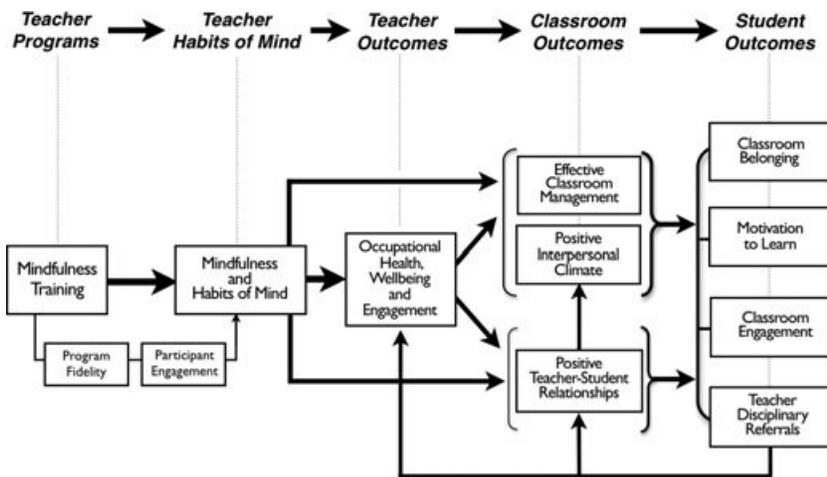
Figure 1. Logic model of hypothesized mindfulness training effects on teachers, classroom environments, and students.

as well as for elucidating issues of program fidelity and feasibility that are critical to evaluating the long-term prospects of scaling and sustaining these kinds of programs in schools.

Research Measures

Multimethod, multitrait, and multi-informant measures are needed to establish the empirical and practical significance of MT programs and to capture all the outcomes specified in Figure 1. To assess the proximal habits of mind hypothesized to result from mindfulness training, we need the kinds of rigorous, third-person cognitive-behavioral measures used in experimental studies of executive functioning. To assess outcomes such as teachers' stress, burnout, and general health, we need measures of biological factors (such as cortisol, inflammatory cytokines, or heart-rate variability). To get at outcomes such as teacher well-being, perceived stress and burnout, and job satisfaction, we need first-person self-report measures. Self-report measures are also useful for gathering students' perceptions of their teachers and their relationships with them before and after MT. Students, as well as principals or spouses, represent important third-person "key informants" on the effects of training on teachers. Third-person, observational measures of classroom teaching behavior are also critical to this work in order to move it beyond individual outcomes toward an understanding of mindfulness in the classroom. Finally, official school records are important for assessing teacher attendance, health care utilization, office referrals of students, and student achievement in objective ways.

Dose-Response Relationships

Another important issue concerns a determination of dose-response relationships, or how much mindfulness training is feasible and efficacious to produce effects on teachers, classrooms, and students. MT programs often require a significant time commitment from teachers who already have hectic work lives. Some evidence suggests that shorter programs can still engender sig-

nificant effects for adults (e.g., Klatt, Buckworth & Malarkey, 2009). What is the optimal feasible amount of training that is effective? In our own work (SMART and CARE, see Table 1), we have been experimenting with programs of various durations (length in hours) delivered over various periods of time (5 vs. 8 weeks). Using similar measures to compare programs of different lengths is one way to address the dose-response relationship in these programs.

Contexts of Reception or Rejection

Finally, we think it is critical for researchers to carefully attend to the factors that facilitate or hinder the introduction of mindfulness programs into teacher education and PD in school districts and various communities. What kinds of changes going on in education today might provide unique opportunities to introduce MT for teachers (e.g., McDonald & Shirley, 2009)? What do states and school districts need, and how might this particular kind of training be useful in addressing such needs? Are there any risks associated with these kinds of programs?

In our work, we have found that current concerns about teacher stress and health care costs represent one way MT can enter school systems, and concerns about enhancing student engagement and achievement represent a second possible entry point. Also, concerns about disproportionate rates of school suspensions and expulsions by student race and ethnicity, and the related desire among educators to foster greater educational equity, represent another possible point of entry.

Teacher Programs, Student Programs

In this article, we discussed MT programs for teachers that may have indirect effects on students. However, as Greenberg et al. (in press) discuss, there are a number of new MT and yoga [3] programs for students at the elementary and secondary school levels. The question arises, how should practitioners and researchers think about linking teacher- and student-focused

MT programs? If districts adopt MT programs, should they consider offering programs for teachers first, and then train their own teachers to deliver MT to students? We believe this "systems approach" is likely to be the most effective (e.g., Sarason, 1990), but RCT studies that assess the effects of combining MT for teachers and students versus the effects of teacher programs only, student programs only, or active controls should examine this conjecture directly in the future.

CONCLUSION

Improving public education involves, in significant measure, the improvement of the quality of teaching and teachers' professional development. We have outlined how certain dimensions of teachers' work, including its uncertain and emotionally demanding nature, make habits of mind a particularly important part of being an effective teacher. MT is only beginning to be used to foster teachers' habits of mind and thereby to help them to meet and succeed in the context of the demands of teaching in the 21st century (see Table 1), and the research base is still nascent. An empirical exploration of MT for teachers as one piece of an overall effort to support the development of teachers and the improvement of public education seems warranted. We look forward to the expansion of this area educational theory, research, and practice in the future.

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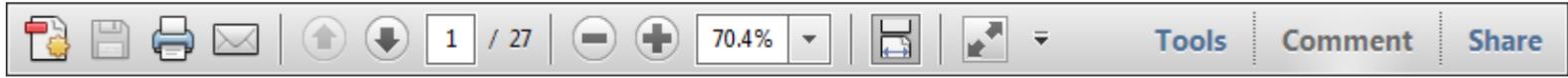
This will open up a panel down the right side of the document. The majority of tools you will use for annotating your proof will be in the Annotations section, pictured opposite. We've picked out some of these tools below:
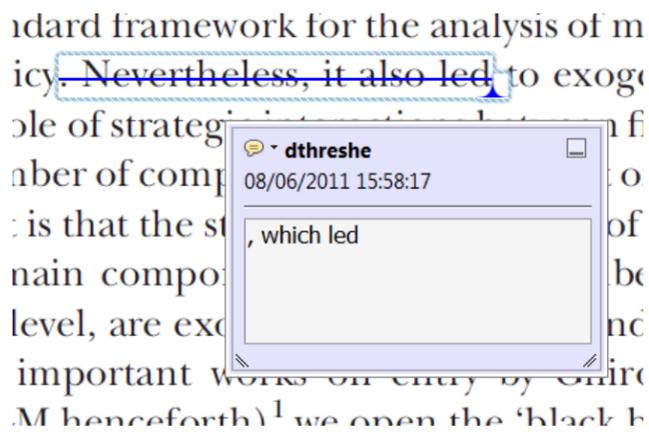
▼ Annotations

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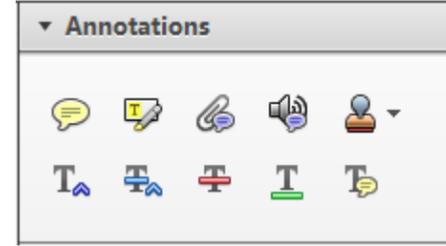
1. Replace (Ins) Tool – for replacing text.

Strikes a line through text and opens up a text box where replacement text can be entered.

How to use it

- Highlight a word or sentence.
- Click on the Replace (Ins) icon in the Annotations section.
- Type the replacement text into the blue box that appears.

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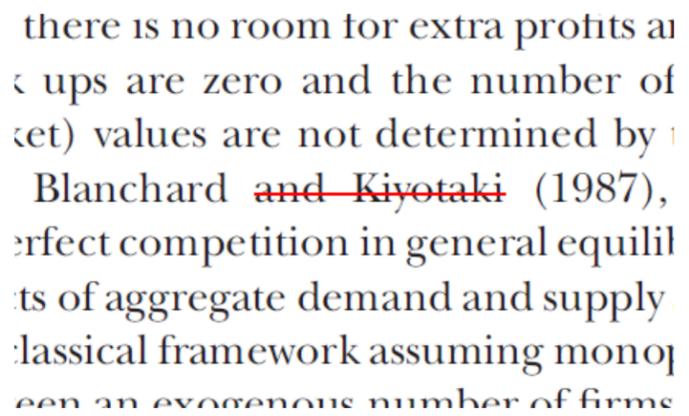### 2. Strikethrough (Del) Tool – for deleting text.

Strikes a red line through text that is to be deleted.

How to use it

- Highlight a word or sentence.
- Click on the Strikethrough (Del) icon in the Annotations section.

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Blanchard ~~and Kiyotaki~~ (1987),
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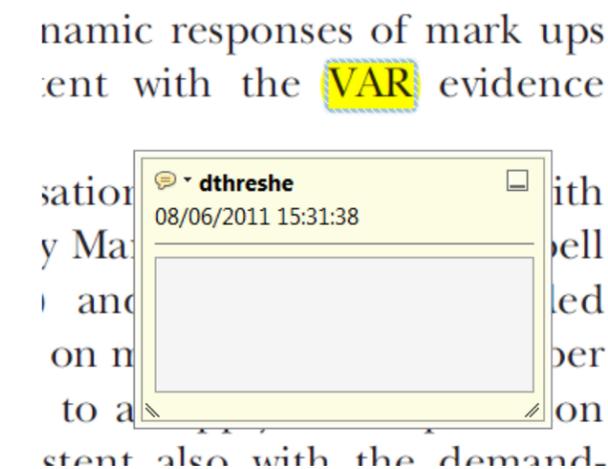lassical framework assuming monop
een an exogenous number of firms

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3. Add note to text Tool – for highlighting a section to be changed to bold or italic.

Highlights text in yellow and opens up a text box where comments can be entered.

How to use it

- Highlight the relevant section of text.
- Click on the Add note to text icon in the Annotations section.
- Type instruction on what should be changed regarding the text into the yellow box that appears.

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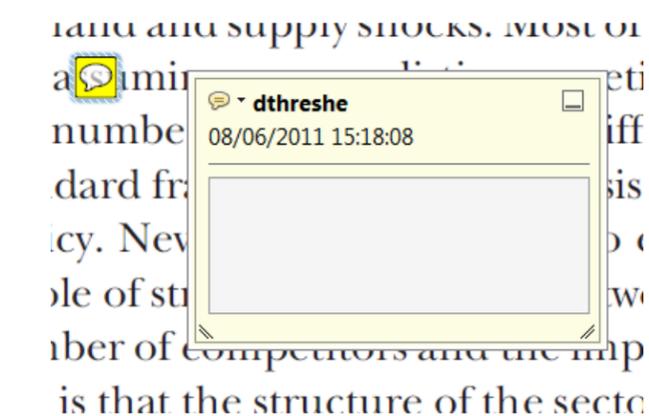### 4. Add sticky note Tool – for making notes at specific points in the text.

Marks a point in the proof where a comment needs to be highlighted.

How to use it

- Click on the Add sticky note icon in the Annotations section.
- Click at the point in the proof where the comment should be inserted.
- Type the comment into the yellow box that appears.

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5. Attach File Tool – for inserting large amounts of text or replacement figures.

Inserts an icon linking to the attached file in the appropriate pace in the text.

How to use it

- Click on the Attach File icon in the Annotations section.
- Click on the proof to where you'd like the attached file to be linked.
- Select the file to be attached from your computer or network.
- Select the colour and type of icon that will appear in the proof. Click OK.

END

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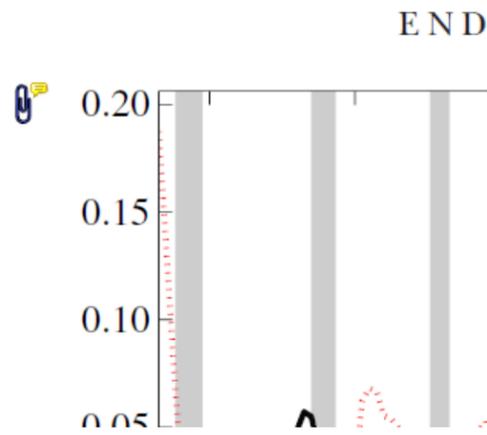
6. Add stamp Tool – for approving a proof if no corrections are required.

Inserts a selected stamp onto an appropriate place in the proof.

How to use it

- Click on the Add stamp icon in the Annotations section.
- Select the stamp you want to use. (The Approved stamp is usually available directly in the menu that appears).
- Click on the proof where you'd like the stamp to appear. (Where a proof is to be approved as it is, this would normally be on the first page).

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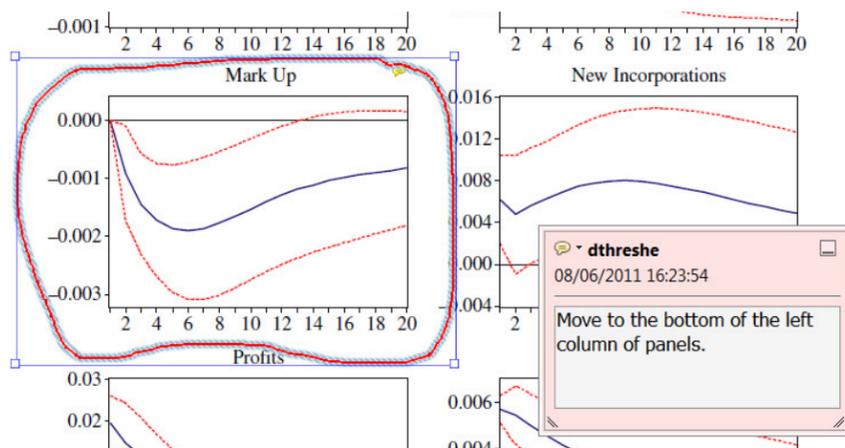
APPROVED

7. Drawing Markups Tools – for drawing shapes, lines and freeform annotations on proofs and commenting on these marks.

Allows shapes, lines and freeform annotations to be drawn on proofs and for comment to be made on these marks..

How to use it

- Click on one of the shapes in the Drawing Markups section.
- Click on the proof at the relevant point and draw the selected shape with the cursor.
- To add a comment to the drawn shape, move the cursor over the shape until an arrowhead appears.
- Double click on the shape and type any text in the red box that appears.

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Profits

For further information on how to annotate proofs, click on the Help menu to reveal a list of further options:

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