Comparing notes:
Success in the college classroom

Maximizing student engagement and achievement with note-taking technology - a guide for faculty
About Sonocent

Sonocent’s mission is to reimagine note taking to help people achieve more. As a company, we are dedicated to helping students learn better, by transforming the way they capture and utilize information from their classes.

Sonocent was founded by Dr. Roger Tucker. After obtaining his PhD in 1984, Roger lectured at Aston University, UK, was a Technical Lead with Hewlett-Packard Research Labs, and was Director of the Local Language Speech Technology Initiative, before founding Sonocent in 2007.

Our team brings together a wealth of experience in audio engineering, software development, study skills, and accessibility. Together we explore how technology can enhance the way we access and interact with spoken information - and improve learning outcomes for students, and their organizations.

Sonocent has been implemented as note-taking support by more than 200 two- and four-year colleges in the past year alone.

"Effective note taking is too often overlooked as a route to student success. At Sonocent we believe - and a growing number of colleges are telling us - that it has the power to transform students' learning. Sonocent was founded to help students with disabilities get more value from their classes. As our user base has grown, so has our belief in the need for educational tools that help all students learn in the way that is most effective for them. Our technology not only helps develop skills for the future, but breaks down barriers to learning equality, relieves anxiety and boosts confidence for our users."

Dave Tucker, Sonocent CEO
Note taking: a critical but complex skill

Note taking has a direct impact on course outcomes and GPA:

Better notes lead to better grades. Since the advent of serious academic research into note taking in the 1970s, numerous studies have highlighted the strong correlation between quality of class notes and student achievement. Likewise, the research attests to the fact that students who struggle with note taking in class have lower GPAs, may be more likely to enter academic probation, and are at increased risk of retention failure (Titsworth & Kiewra, 2004; cf. Boyle, 2001; Lipsky & Ender, 1990; Mann et al., 2004).

"Good note-taking... can lead to efficient study practices, better course outcomes, and improved retention of content beyond a course’s conclusion.”

(Friedman, 2014)

Note taking is a complex cognitive activity:

Note taking in lectures requires "meticulous processing of complex input" (Al-Musalli, 2015). Lecturers speak at a pace of approx. 2 - 3 words per second, while the average student can only write about 0.3 - 0.4 words per second (Piolat et al., 2005). In addition, students must typically process visual input in the form of lecture slides, images or lecturer annotations on a whiteboard or smartboard.

Students report adopting widely differing approaches to cope with this complexity: some will frantically attempt to write or type verbatim what is said; others will seek to summarize the key points; yet others abandon the notebook altogether in the hope that by actively listening and engaging with the content they will be able to commit the key points to memory.

Many students lack note-taking skills:

Lectures are still the primary means of information-delivery in postsecondary contexts, so note taking in lectures is a fundamental study skill for college students. Students and educators alike often assume that note taking is an “intuitive” skill that students either have or will learn through “trial and error” over the course of their education (Friedman, 2014; Van der Meer, 2012). However, numerous studies indicate that this is far from the reality: note taking is an acquired skill, that students often do not have when they arrive on campus (Al-Musalli, 2015; Friedman, 2014; Kiewra, 2002).

“Many college students are poor note takers and review activities focused on the resulting incomplete or poorly structured notes suffer as a consequence.”

(Grabe, 2005)

Note-taking guides aimed at students almost universally recommend summarizing lecture content as "best practice". And, naturally, educators and skills advisors aspire for each individual to leave class with a concise, personally meaningful outline of the lecturer’s most important points. But this is no mean feat - summary note taking involves a range of “higher-order cognitive skills” including decision-making, interpretation, evaluation, and summarization (Gur et al., 2013; cf. Al-Musalli, 2015). For many students, this is just too much to do at once within the time-pressured setting of the lecture hall.

For this reason, research studies tend to present a more nuanced view of what might be considered ‘optimal’ or ‘effective’ note taking.

“Notetaking and review are positively related to academic achievement, but many students record too few notes to benefit fully from these activities.”

(Kiewra, 1987)

1 Self-reported student behaviour gathered through 1-on-1 interviews with 21 undergraduate students at UK universities conducted by Sonocent Ltd. between May-June 2018. These findings are supported by the literature, e.g. Bui et al., 2013; Chen, 2013.
The tradeoff of traditional note taking:

Research identifies that lecture note taking serves two core, but competing, functions: “encoding” and “external storage” (Di Vesta & Gray, 1972). The “encoding” (or “process”) function refers to the act of taking notes as a method by which students translate information into their understanding. This function is best served by a summarizing approach.

The “external storage” (or “product”) function refers to the process of capturing information for later study and review. This function is best served by a transcription approach - capturing as much information as possible.

“Note-taking is a fundamental knowledge management system of the individual … enabl[ing] us to extend our abilities by offloading information from our mind to external devices.”

(Dror et al., 2011)

Studies show that both the process of recording notes and the production of notes for subsequent review are positively related to student achievement (Bui et al., 2013; Luo et al., 2016; Kiewra, 1989), and that “utilizing both aspects of note taking in conjunction provides a more potent learning tool than either aspect on its own” (Kiewra, 1985). However, given the cognitive complexity of coordinating these two functions, researchers recognize that there is almost always a tradeoff between comprehension and the production of notes: students must strike “a balance between listening, processing, and notetaking” (Williams & Eggert, 2002; cf. Piolat et al., 2005).

Unfortunately, students often struggle to find this balance. The notes taken by college students typically include just one-third of important ideas (Friedman, 2014; Bui et al., 2013; Titworth & Kiewra, 2004).

Consequently, students are often left with insufficient material for effective further study - limiting their learning outcomes and academic achievement (Baker & Lombardi, 1985; Crooks et al., 2007; Lou et al., 2016).

“The potential productivity of reviewing notes is often limited by the quality of the encoding function.”

(Grabe, 2005)

A tilted playing field:

This tradeoff between comprehension and note taking is further amplified by a variety of factors, including: subject-area knowledge, learning style, language proficiency, working memory capacity and other individual differences (Grabe, 2005; Kiewra, 1989; Leadbeater et al., 2013; Nordmann & McGeorge, 2018) - see figure on pp. 5-6.

For example, note taking depends enormously on working memory - the ability to temporarily store, manipulate, and transform incoming information. Learners with limited working memory capacity - including students with Learning Disabilities - struggle to hold and manipulate lecture information simultaneously, so by trying to summarize as they listen, they end up with poor quality notes (Boyle et al., 2015).

Instead, research suggests these students should aim for “note completeness”, i.e. capture as much information as possible in the classroom, to study from later at their own pace (Bui et al., 2013; Friedman, 2014).

However, this approach introduces multiple points of risk in the students' learning process: firstly, as they forgo encoding to focus on transcribing lecture content, and again when they study their own inaccurate or incomplete notes after class.

Note taking in lectures is a complex activity, the output of which directly impacts students' grades. Learning outcomes suffer when students resort to zero-sum compensatory strategies: transcribing everything while understanding nothing; or focusing on listening and understanding, whilst taking no record of the class for later study. Clearly, there is no "one-size-fits-all" strategy for taking effective notes - so how can institutions better support learners to maximize their academic success?

“Difficulty taking notes presents a major problem for students' success.”

(Boyle, 2001)
### Common barriers to traditional note taking & their prevalence among undergraduate students*

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<thead>
<tr>
<th>Mental Health &amp; Anxiety</th>
<th>Learning / Modality Preference</th>
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<tr>
<td>Psychological distress is widespread among college students: at any given time, 31% of undergraduates are dealing with a mental illness (Eisenberg &amp; Lipson, 2017). These conditions are linked to impaired concentration, memory, and mental stamina - making it difficult to attend to lectures and take notes.</td>
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<tr>
<td>“Students [with mental health issues] may have particular problems receiving, processing, and recalling information. Side effects from medication may also impact attention, memory, alertness, and activity level.” (DO-IT, n.d.)</td>
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<th>Content &amp; Procedural Novelty</th>
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<td>The university lecture format is an unfamiliar learning context for many first year students. Their classes are often content-dense, introducing new concepts and terminology. Students often struggle to make sense of lectures, and to identify the main points to note down (Nordmann &amp; McGeorge, 2018).</td>
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<td>Lecture note-taking “presents a range of challenges for many, if not most, first-year students. To process lecture information and make meaning of this, students have to understand not just the lecture content but also the structure of lectures.” (Van der Meer, 2012)</td>
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<th>Learning / Modality Preference</th>
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<td>The lecture format is at odds with the information processing preference of at least 30% of learners, meaning they can struggle to take meaningful notes. E.g. reflective learners need time to process lecture content, whereas visual learners are prone to disengage (Felder &amp; Spurlin, 2005; Gysbers et al., 2011; Miller, 2001).</td>
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<td>Where the lecture format is mismatched to learner preferences, “students become bored and inattentive in class, do poorly on tests, get discouraged about the courses ... and in some cases ... drop out of school.” (Felder &amp; Silverman, 1988)</td>
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<th>Language Proficiency</th>
<th>Learning / Modality Preference</th>
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<td>Lecture note taking places a considerable processing burden on learners studying in a second language (Al Musalli, 2015). This impacts around 9% of undergraduates, including international students, American ESL students, and deaf students whose first language is ASL (American Sign Language) (Reetz et al., 2016).</td>
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<td>Non-native speakers “face the task of interpreting in real time a monologue which is both linguistically and cognitively demanding.” (Teng, 2011)</td>
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<td>9%</td>
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* Unless otherwise stated, all data from the American College Health Association’s National College Health Assessment Report for Undergraduates, Spring 2018 (ACHA, 2018).
Many students have difficulty sustaining concentration during lectures. Students with neurological disorders such as ADHD and Autism Spectrum Condition, in particular, struggle to filter out external stimuli, cope with sensory sensitivities, and avoid distractions (Rodden, 2017; Vekaria, 2011).

Postsecondary students with executive function deficits struggle with lecture note-taking “because of the huge burden” involved in “inhibiting other distractions not directly related to the lecture, and maintaining attention for the entirety of the lecture.” (Vekaria, 2011)

“Adequate handwriting (or typing) speed [is] a necessary condition for skilled note-taking” (Peverly et al., 2014) “so that the mind can efficiently process information without thinking of basic letter formation.” (Yancosek, 2010)

Learning disabilities (LD) such as dyslexia affect the way information is received, organized, and remembered. Students with LD typically have limited working memory capacity, making it very hard for them to encode information and take notes. Difficulties with word recognition and poor spelling further hamper the production of notes.

“Students with learning disabilities are often unable to identify the important information to note; are unable to write fast enough to keep up with the lecturer; and, even when they do record notes, are frequently unable to make sense of their notes after the lecture.” (Boyle, 2001)

If not impossible, note-taking is extremely cognitively demanding for students with sensory impairment. Hearing impaired (HI) students often rely on visual input such as lip-reading, or following an interpreter or transcript; whereas visually impaired students may need to access visual information via a screen-reader whilst listening to the lecturer (Hewlett et al., 2015).

Lectures impose heavy listening demands on students with HI: “lipreading and being attentive –, processing and constructing meaning out of half-heard words and sentences. ... It’s like doing jigsaws, Sudoku and Scrabble all at the same time.” (Noon, 2013)

The actual number of college students with disabilities may be much higher than official statistics suggest: “Only 28% of students who received special education services in grades K-12 disclosed their disability to their postsecondary schools.”

(Hudson, 2013; cf. Raue & Lewis, 2011)
Postsecondary institutions have a legal obligation to ensure equal access to the curriculum for students who disclose a disability (APA, 2017). Students who experience cognitive, mechanical or sensory barriers are likely to need note-taking accommodations. Typically, they will be assigned a note taker to take class notes on their behalf, or may be provided with a recording device to make their own audio recordings of lectures. These accommodations aim to enable students to focus on “understanding ideas as they are presented ... without worrying about recording information” (Grabe, 2005), and to provide an accurate record of lecture content so that students can access their teaching later, at a pace and duration appropriate to their abilities.

Additionally, institutions may implement Universal Design for Learning (UDL) approaches to note-taking provision, such as making instructor-generated notes or centralized lecture-capture recordings available to all students. Such approaches minimize the need for individualized accommodations, recognizing that adjustments in curriculum delivery can benefit a wide variety of students (Meyer et al., 2014; cf. Roberts et al., 2011).

For some students, especially those with complex or profound disabilities, these accommodations are essential to accessing the curriculum. Many more students report that these provisions relieve the ‘strain’ of having to take written notes in class. Lecture recordings, in particular, are considered an “important pedagogic resource” for many students who are disadvantaged by traditional note taking, as well as offering “more general cohort benefits” (Nordmann & McGeorge, 2018; cf. Leadbeater et al., 2013).

However, research suggests that note-taking accommodations “can inhibit learning for students with disabilities” (Boyle et al., 2015).

Firstly, significant additional effort may be required of the student to achieve equitable access. For example, accessing third party notes may create a further hurdle for students with print disability. Likewise, students with a learning disability “may need to view a recorded class multiple times to develop a functional set of notes” (ADCET, n.d.) impacting the time they have available to dedicate to other forms of independent study, as evidenced by student comments recorded by Leadbeater et al. (2013): “[Lecture recordings are] very time consuming... it could take time off researching by yourself, like going to textbooks.”

Student engagement & efficacy

Beyond this impact on student workload, researchers highlight that both note-taker support and centralized recordings can hinder learning, since they allow students to “assume a passive learning mode ... thereby missing the benefits of active participation in the lecture” (Boyle et al., 2015, cf. Brazeau, 2006). This is reflected in student experiences reported by Lux (2016): “It allows me to doze off in class ... I know someone is taking notes for me, so I don’t really have to [pay attention].”

Rather than enhancing a student’s ability to encode information, delegating the production function of note-taking to a scribe or recording device can cause students to ‘zone out’. Consequently, they miss out on the critical active learning that comes from processing information, evaluating importance, and synthesizing with other course material. Clearly the perceived benefits of such accommodations need to be weighed up against the potential for diminished student engagement.

“Students with learning difficulties are often passive learners; combining passive notes and passive learning strategies poses serious negative educational consequences” (Ritter, 2013)

Learner Independence

Finally, traditional note-taking accommodations do little to foster learner independence, skill-building or self-efficacy. As ADCET (n.d.) state: “note taking is a crucial study skill outside of the lecture room, but primarily honed within the lecture room”. ‘Outsourcing’ of the note-taking process deprives students of the opportunity to “develop their own strategies for organizing information in their own cognitive perspective” - an important element both for academic learning and the development of transferable lifelong skills (Brazeau, 2006; cf. Chester et al., 2011).

Dedicated note-taking technology can address many of these issues: empowering students to take effective notes independently, by reducing barriers to classroom engagement and enabling them to balance both the ‘encoding’ and ‘external storage’ functions of note taking.
How does Sonocent help students become better note-takers?

Sonocent is a flexible, interactive workspace for capturing, organizing and reviewing information from lectures.

Rather than trying and failing to do everything at once, Sonocent gives students the flexibility to break down the note-taking process into manageable steps, and engage with learning in the way that best suits their individual abilities and learning preferences.

Sonocent’s innovative audio visualization enables students to fully engage in classes, and create a personalized, annotated record of lecture information - with minimal cognitive effort.

“Students can import slides into Sonocent before class - that can really help them to understand what is going on in the lecture whilst they are recording.”

Martyn Stahl, Specialist AT Tutor

“Sonocent gives time for more active note-taking, as students capture the whole lecture as audio which is displayed in bars.”

Martyn Stahl, Specialist AT Tutor

“During class, students can write as little or as much as they’re able - Sonocent automatically links their text notes to the audio being recorded, so when they come to review the context is just a click away.”

Sarah-Jane Peake, Assistive Technology Consultant

“There are times when I have difficulty with spoken information and Sonocent helps me overcome this by allowing me to color-code my recording in real-time or while reviewing.”

Amanda, Biomedical Engineering Student
Student-controlled capture

The Sonocent note-taking solution comprises a desktop software - Audio Notetaker - and companion mobile app - Sonocent Link, so students can use their preferred device in class: laptop, smartphone, or tablet.

The Link app enables students to use their device’s camera to add photos of classroom activities to their recording, or use the Scribble function to create hand-drawn notes, particularly useful for jotting down equations or adding sketch notes.

"With Sonocent I can pick up all the information I need. I put it on as soon as my professor starts talking and as I'm recording, I can take photos and add notes and highlight things, so it's very interactive".

Ebony, Student with ADHD

Enhancing accessibility

Sonocent Audio Notetaker includes a number of accessibility features, including customizable background colors, text-to-speech, integration with Dragon Naturally Speaking*, and audio enhancement tools.

For students with visual and auditory impairments, or print disabilities, these features help make classroom engagement and learning accessible.

"Sonocent Audio Notetaker allows me to use technology to hear what I cannot."

Blake, Student with Hearing Impairment

"Sonocent allows disabled students to have more agency in their learning. Students can actively engage in class material in ways that are comfortable and work best for their individualized needs."

María Zoraida Maclay, Disability Resources Specialist

* Audio Notetaker for Windows features integration with Dragon NaturallySpeaking 11 and above, Premium and Professional
Supporting flexible classroom learning with technology

At the most fundamental level, Sonocent supports the ‘external storage’ function of note taking: using a laptop, tablet or smartphone, students record their classes, and audio is visualized as bars, phrase-by-phrase. Numerous studies confirm that students benefit from access to class recordings which allow them to revisit lecture information at their own pace, digest difficult concepts, and consolidate learning (e.g. Nordmann & McGeorge, 2018). However, research also highlights the disadvantages of deferring learning in this way. Actively engaging with the lecture content and summarizing it in note form underpin the ‘encoding’ of information - creating connections in the brain which aid understanding and recall.

To facilitate encoding, Sonocent’s multimedia workspace has been designed to enable students to engage with and annotate information in a variety of ways, supporting a broad range of abilities and learning preferences. The software’s audio visualization allows for easy navigation, editing and organization of spoken information. Students can use the customizable Audio Color Key to easily highlight key moments, rather than trying to frantically take notes down. Just as they would use a highlighter pen with written information, students can pick out parts of the recording that are really important, or bits they didn’t understand. Interacting with content in this way is a really simple but effective way to facilitate encoding.

“Sonocent empowers users to become more active listeners and make engaged judgements about the content of their recordings.”

Myles Pilling, Specialist ICT Consultant & Lecturer

Scaffolding effective study

As well as facilitating encoding and annotation during class, Sonocent helps scaffold effective study after class.

Students can return to their project, and focus straight in on their own personal lecture highlights. They have the flexibility to stop, restart, and review lecture materials at their own pace. Notes they made in class are fully editable, so they can hone them into their own personalized study resources.

For example, students may add summaries of the key concepts in their own words. They can type these summaries or, if they are an auditory learner, record themselves speaking through them.

Visual learners may wish to add supporting images, or use color coding to categorize and structure their notes.

“Sonocent combines auditory learning with tactile learning and with visual learning. Students are able to put all three receptive learning styles together and leverage them in a way which supports learning.”

Amy Mason, Director of Academic Centre for Educational Success

Once they are done, Sonocent projects can be revisited and utilized when composing essays or preparing for exams. Students can export projects as text documents, music files or videos, for self-paced study in the medium that best suits their learning style.

Students can also use the software for a range of study strategies, including essay composition, presentation practice, and Cornell notes.

“Sonocent changed the way I study. With it, I can focus on responding to class material as it is presented, safe in the knowledge that I am able to return and re-listen only to the key portions. The real proof came at the end of the semester with my drastic improvement in cumulative GPA!”

Eric Rosenstock, Law Student, New York
Measuring the impact

Feedback from students and educators alike speaks to the positive impact Sonocent technology is having.

Learner independence

Sonocent technology fosters independence by removing the reliance on peer note-takers as a means for students to access and engage with lecture content. By offering an active, personal learning experience, Sonocent empowers students to work to their strengths, and gives them greater agency in their own learning.

“Sonocent is wonderful in increasing independence. Students aren’t waiting for a peer note taker - with this tool they have the independence and the ability to take notes on their own. That is such a critical piece in preparing our students for real life.”

Jessi Wright, Assistive Technology Specialist

Self-efficacy

As a note-taking and study tool, Sonocent supports students’ academic self-efficacy - confidence in their ability to meet course objectives and succeed in college. Self-efficacy “predicts academic performance”, is positively related to motivation and engagement, and “negatively related to anxiety” (Chester et al., 2011).

“I’ve realised how much more efficient my notes are now - I feel much more confident coming away from lectures.”

Shannon, College Student

Student outcomes & GPA

Colleges who have implemented Sonocent report overwhelmingly positive outcomes on student success and retention. On average, student users saw a ½-¾ grade point increase. For some students, particularly those at increased risk of retention failure, the benefits have been even greater: using Sonocent has enabled them to raise their GPA by several points, and achieve the results they needed to progress from one year to the next. As well as supporting individual student success, the financial and reputational implications for colleges are clear.

“We had a student who’d flunked the previous semester go to a 3.0 average. Had it not been for Sonocent he wouldn’t still be at the college”

Edward Beason, Assistant Director- Disability Services

87% of students say Sonocent has improved their grades.

“I feel able to study independently, without help from others”

Before Sonocent 39% 92%

“I am engaged throughout my lectures”

Before Sonocent 41% 93%

“I am very well prepared for exams, essays and presentations”

Before Sonocent 36% 93%

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3 Student feedback from a June 2016 survey of 929 students with Sonocent software licenses.
Faculty FAQ

How does recording impact the rights and privacy of faculty and students?

Instructors, understandably, may have concerns about privacy or intellectual property (IP) rights relating to the recording of lectures. The information below is intended to advise faculty how institutions can meet their obligations to make reasonable adjustments for disabled students, or implement campus-wide UDL recording policies, without compromising the rights and privacy of staff or students.

**U.S. Copyright Law**

Under U.S. law, copyright protection applies to any 'original work' in a 'tangible medium'. So when an instructor prepares teaching materials, such as written lecture notes or presentations, these materials are covered by copyright. Depending on the IP policy of the institution, the content of a lecture is therefore either the property of the institution or the instructor. In addition, the instructor typically retains *performance* rights for the live delivery of a lecture (Carlson, 2016). If a student *distributes* lecture notes in any format (whether as text, photographs, or an audio recording) without permission from the IP owner, they are in breach of copyright and could be liable for civil and criminal penalties (Leytes & Weller, 2017).

**'Fair use'**

From a legal perspective, capturing audio or images of a lecture for personal, educational purposes (better note taking) would most likely fall under 'Fair Use', regardless of whether or not the student has permission to record as an accommodation under the ADA or whether the instructor’s consent has been sought. N.B. This only applies where a student uses the recording exclusively for their own purposes, and not where they distribute it for any reason (Ricci, 2016).

**Student Rights to Privacy**

If a recording of a class includes students asking questions, or revealing any personally identifying information, this raises a data protection issue: these portions of the recording constitute ‘protected educational records’ under FERPA (the Family Educational Rights and Privacy Act). Distribution of such recordings without written consent from the affected student(s) may have serious repercussions (Leytes & Weller, 2017).

**Institutional Policies**

Most post-secondary institutions will have some form of recording policy which sets out the circumstances in which recording of teaching sessions are permitted, the responsibilities of those involved, and the implications of breaches of policy.

In some instances, this will be limited to students who receive note-taking accommodations via Disability Services. Typically, the student will be required to sign a contract under which they agree to protect the rights and privacy of faculty and fellow students, and to share this agreement with their instructors. The onus is then on the instructor to inform the class that a recording is being made.

**Campus-wide Recording Policies**

Many institutions are also adopting campus-wide lecture recording policies. There is significant demand from students to be able to make recordings (Ibrahim & Howarth, 2014), and institutions increasingly recognize that recording lectures and other teaching sessions can support learning across the undergraduate cohort (e.g., University of Oxford, 2015). Campus-wide policies help address the pedagogic issue of ensuring equal treatment for all students: lecture recording as a note-taking accommodation is intended to level the playing field for students with disabilities. However, it may be argued that this unfairly disadvantages the larger population of students who have only a single opportunity to hear the lecture (Wightman, 2010).

IMPORTANT: This information does not constitute legal advice and is provided as general guidance only. The information covered is relevant to the U.S. only - copyright laws vary from country to country. This guide pertains only to personal note taking and is not intended to cover questions concerning broader non-commercial or commercial distribution. Institutional policies and/or academic contracts usually clarify ownership of materials produced for teaching purposes. For further guidance, consult the legal affairs office at your institution.
Moreover, given the prevalence of smart mobile devices, institutions are acknowledging the likelihood that students are already recording lectures - whether overtly or covertly - and establishing policy guidelines which define the limits of acceptable behaviour and the penalties for misuse (Ibrahim & Howarth, 2014).

Policies are typically outlined within the institution’s student code of conduct, or other agreement entered into at the point of enrollment. Permission is usually predicated on recordings being made exclusively for a student’s personal use in relation to their studies, within a limited time frame, and provided that everyone present (both staff and students) is made aware that recording is taking place (Ibid.).

A UDL policy might grant blanket permission for students to make recordings. Otherwise, permission for the general cohort to record typically remains at the discretion of the instructor. However, under the ADA, it is unlawful for a lecturer to prevent a student who is eligible for note-taking accommodations from making a recording for personal use.

“At UCF, we quickly found that Sonocent improves core study skills for all students, supporting transition and retention across campus. We partnered with Veterans’ Services, Academic Learning Services, Athletics, and First-Year Experience.”

Brad Held, Accessible Technology Coordinator

How should I notify students that lectures may be recorded?

Where a conditional recording policy applies, it is best practice to announce at the beginning of each class that recording is permitted, and that students must abide by your institution’s policy on recording of lectures. Announcements should not identify any students in receipt of note-taking accommodations.

With a campus-wide recording policy, permission and consent may be implicit. However, the institution might display signs in teaching spaces to remind staff and students that recording may take place.

It may also be helpful to include your institution’s recording policy on your syllabus, so that all members of the class are aware that classes may be recorded, the conditions under which recording is permitted, and the penalties for infringement.

How do I balance students’ rights to record with individuals’ rights to privacy?

A robust recording policy should clarify that permission to record cannot infringe individual privacy rights. Individual students have the right to request recording to stop if they do not want their personal contribution recorded. This request applies to all students, including students in receipt of note-taking accommodations.

Where students do object to being recorded, you may wish to state a version of the following: “To protect the privacy of your classmates, please refrain from recording student contributions”. If the student’s contribution or question may benefit the whole class, you may want to repeat the information for those who wish to record it, as long as this will not personally identify the student.

Additionally, teaching spaces may incorporate designated “recording-free zones”, where recording on personal devices is not permitted, to accommodate students who wish to opt-out of third-party capture.

How should I handle situations where recording would be inappropriate?

In order to ensure equal treatment of all students, this is best approached from a standpoint of “note-taking appropriateness”, rather than focusing specifically on recording as a means to capture lecture information.

Institutional policies or codes of conduct should clarify that lecturers retain the right to instruct note taking, including recording, to stop during teaching sessions where sensitive or personal topics are being discussed, or client/patient confidentiality is implicated.

To restrict all note taking for a portion of class, you may wish to state a version of the following: “The note-taking portion of this class is over. Please turn off recorders/recording apps, and refrain from taking written or typed notes”.

13
Isn’t technology a distraction in the classroom?

A number of recent studies have explored the impact of technology use on student engagement and performance (e.g. Hembrooke & Gay, 2003; Kuznekoff & Titsworth, 2013; Rosen et al., 2011; Sana et al., 2013). These studies are unanimous in their findings that “distractions from in-class multitasking correlate with decrements in learning” (Sana et al., 2013), and that students who spend more time ‘on task’ tend to perform better on tests. Crucially, though, these studies recognize that the core issue is not access to technology per se, but rather lack of engagement with the primary task (attending to the lecture). When students are ‘off task’ they suffer “multitasking deficits” in learning performance (Ibid.). As Hembrooke & Gay (2003) note, “distraction in the lecture hall ... is nothing new; note passing, doodling, talking, completing other class assignments, and even taking notes on the current lecture are all familiar forms of low-tech distraction”.

Technology & Engagement

Regardless of whether or not they are using technology in the classroom, students are prone to “attention failures”. Indeed, research has shown that “mind wandering in classrooms occurs 30-40% of the time” (Varao-Sousa & Kingstone, 2015). Hence Sana et al. (2013) conclude that students “need to work hard and stay focused to keep classroom learning at an optimal level”, while emphasizing that technology in the classroom “fosters[s] positive learning outcomes when used appropriately”. This is reflected in the results of Sonocent’s latest user survey: 93% of students reported that they were able to remain engaged throughout their lectures using Sonocent software, compared with just 41% prior to using the software.

Tech-etiquette

Sana et al. (2013) suggest that instructors discuss technology use with their students at the outset of a course. By outlining the benefits of appropriate use of technology, including dedicated note-taking tools such as Audio Notetaker; highlighting the negative impact of technology misuse; and establishing class “tech-etiquette”, instructors can empower their students to make informed choices (cf. Hembrooke & Gay, 2003). It may also be useful for institutional policies and/or course syllabi to specify that in-class use of laptops / phones / tablets for any purpose other than that which is related to the lecture is prohibited.

“In class I process things very quickly. At the same time, I don’t pay attention sometimes because I get distracted so easily. It’s not that I don’t want to listen. But with Sonocent I can pick up all the information I need. There’s so much going on in class and there’s a lot to take in, but with the software I can focus on one thing. It’s effortless, because everything I need is there in front of me.”

Ebony, Student with ADHD

Does your institution’s recording policy meet the grade?

Find sample policy and contract documents at www.sonocent.com/faculty

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4 Data from a June 2016 survey of 929 students with Sonocent software licenses.
Key References


For a full list of resources used in the compilation of this guide, visit: www.sonocent.com/faculty

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