ESSAYS

Reintroducing the Oral Exam: Finding Out What Your Students Really Know in the Age of ChatGPT

—Gina J. Mariano, Debra E. Allwardt, Paul R. Raptis and Kristine Stilwell

Gina J. Mariano, Troy University, gjmariano@troy.edu

Debra E. Allwardt, Western Illinois University, d-allwardt@wiu.edu

Paul R. Raptis, University of North Georgia, paul.raptis@ung.edu

Kristine Stilwell, University of North Georgia, kristine.stilwell@ung.edu

Abstract

The advent of ChatGPT and other artificial intelligence chatbots will require adjustments by educators in their assessment strategies to prevent plagiarism and to accurately assess student learning. Through the practice of integrating oral assessments into their undergraduate courses, instructors can minimize academic dishonesty, observe and measure students' verbal communication skills, and assess their understanding of the material. Oral exams were found to increase student depth of knowledge and improve oral communication skills, but the time and effort oral examinations require means that this form of assessment is only a partial solution.

Keywords:

Assessment, oral exams, plagiarism, academic integrity, ChatGPT, generative AI, higher education, communication skills, critical thinking, workplace readiness

Introduction

On November 22, 2022, OpenAI, an artificial intelligence (AI) research laboratory, announced the introduction of ChatGPT, considered to be "the starter pistol for today's AI race" (Fiesler, 2023, para. 6). Shortly thereafter, those inside and outside higher education quickly recognized that AI and generative AI (GAI) applications have significant potential to disrupt the academy. Generative AI tools such as ChatGPT and Google Bard (now Google Gemini) allow individuals to interact through a conversational format with an AI chatbot, which when prompted creates novel text (Rospigliosi, 2023). Tools such as Bard and ChatGPT can answer study guide questions, write a term paper, produce a literature review, and do it more quickly than humans (Thomas, 2023) with almost no skill or effort required on the part of the student. Chatbots can translate languages, compute mathematical calculations, and edit text for grammar (Tamkin & Ganguli, 2023). Many early responses to the launch of ChatGPT expressed uncertainty, anxiety, and apprehension. During that first wave of reactions, Thomas (2023) suggested that, "Educators *fear* [emphasis ours] they may have to go back to oral exams to prevent cheating" (p. 141). Instructors should be aware of large language systems like chatbots and that some students, when given the opportunity, will rely on them to complete assignments in the least amount of time and with the least amount of effort.

Not quite a year later, astrophysicist Neil deGrasse Tyson appeared on *The Late Show with Stephen Colbert* (2023, October 3) in a segment titled "AI is

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All around Us" to give his views on the new world of artificial intelligence and generative AI. He discussed the implications of AI for education and challenged educators to acknowledge that AI is deeply embedded in our daily lives and cannot be avoided. When asked by host Stephen Colbert to address students getting AI to write term papers, deGrasse Tyson exclaimed without missing a beat, "So maybe education includes an oral exam where you actually know whether someone has learned it!" (4:55).

Are oral examinations something educators should dread—or are they a solution to some of the problems posed by generative AI in higher education? The purpose of this article is not to promote or discourage the use of AI in higher education, but to consider alternatives for assessing student learning. Educators can *and should* consider strategies to incorporate new ways of critical thinking into their assessment and evaluation toolkit. Instructors who relied upon take-home written exams and essays to assess their students' proficiency or mastery of a topic or subject matter are going to have to pivot, as are university administrators who will have to deal with academic integrity issues (Keegin, 2023). Indeed, the traditional written essay has always had the limitation that students may access information for papers, essays, and assignments from external sources without fully understanding how to apply that information in a novel situation (Supiano, 2023). One partial solution is to create assessments that require students to demonstrate critical thinking, problem solving, and communication skills (Cotton et al., 2023).

While a thorough explanation of what generative AI is lies beyond the scope of this article, a basic explanation is provided here for context. Products such as ChatGPT and Google Bard allow individuals to interact in a conversational format with an AI chatbot. A user asks a chatbot a question, and based on the chatbot's response, the user may then ask subsequent questions if needed until a satisfactory answer is provided. Asking questions to an AI chatbot is different from a web query because the chatbot does not search the web for information. Instead, it generates novel text by predicting the next word as it creates content (Rospigliosi, 2023). This is a key issue in higher education as it creates new challenges for detecting student cheating via AI tools. Generative AI tools are able to develop answers to questions and

engage in idea generation that up to this point is not consistently detected by plagiarism detection tools (Kan, 2023). Importantly, using generative AI requires little effort on the part of the student. Some students will eagerly trade actual learning for a shortcut to complete take-home assignments. Without taking steps to address the use of generative AI by students, the university risks "becoming a diploma mill" (Belkin, 2023, para. 10). It is unfair to assume that all students create essays and answer homework wholesale with AI tools, but many are using them in ways that limit critical thinking (Terry, 2023).

The challenges posed by generative AI are mitigated by using oral exams because they directly address problems that an over-reliance on this type of technology poses. Oral examinations provide instructors with a method of assessment that all but eliminates academic cheating and plagiarism (Akimov & Malin, 2020; Baule & Baule, 2023; Belkin, 2023; Buehler & Schneider, 2009; Kifle & Jacobs, 2023). According to Buehler and Schneider (2009), oral exams are superior to written exams in that they provide opportunities for students to demonstrate higher levels of critical thinking involving analysis, synthesis, and evaluation. Moreover, instructors can design exam questions so that multiple cognitive levels are addressed at once (Nitko, 2004). In addition, Buehler and Schneider (2009) point out that oral exams enhance students' critical thinking and communication skills by allowing instructors to ask follow-up or clarifying questions. Asking clarifying and follow-up questions provides students with opportunities to further explain their ideas and for instructors to assess their thought processes and level of understanding. By actively engaging in one-on-one communication with their instructors, students also practice and develop verbal and nonverbal communication skills (Joughin, 1998). These are skills that will be quite useful in future job interviews, success in the workplace, and promoting the students' ability to engage in civic discourse.

The Rationale for Oral Examinations

The oral examination as an assessment of student learning has a long history. Socrates questioned his students in a back-and-forth exchange to probe his students' mastery (Martin, 2013). Medieval European universities employed oral exams, but by the early 1700s, oral examinations were beginning to be replaced

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by written tests (Worthen, 2022). In the United States, American educator Horace Mann advocated using written examinations in 1845 because he believed it to be a fairer form of assessment (Gershon, 2015). Presently, oral exams in higher education are more common in countries other than the United States (Ehrlich, 2007). In the United States, the disciplines that utilize oral examinations most frequently include mathematics, engineering, science, business, and political science, and oral exams are usually taken by graduate students (Crecelius et al., 2021; Fitzgerald, 2016).

Yet instructors, regardless of discipline, generally rely on written exams to assess student learning. They default to in-class and take-home exams because written exams are thought to be easier to manage and grade, especially for large class sizes (Hazen, 2020). Despite the ease of administration of written exams, there are drawbacks. These exams may miss assessing the depth of learning students have achieved; this is especially true with multiple-choice questions. Students may not understand why a certain multiple-choice answer was correct or incorrect (Hazen, 2020). Rather than proof of learning, luck and a bit of logic may result in correct answers. More recently, concerns about student cheating in written assessments grew during the COVID-19 global pandemic (Belkin, 2023). Asking students to answer questions by providing oral responses using their own words in real time is a safeguard against plagiarism (Theobold, 2021).

Oral exams are not only a way to counter student cheating. They can also be used to develop critical thinking skills (Worthen, 2022). Explaining answers in an oral exam can be viewed as teaching the material to the instructor (Boedigheimer et al., 2015). To teach, a person must have a deep understanding of the material and be prepared to answer questions when asked. Sayre (2014) discusses how oral exams in physics courses can help instructors understand the differences between students who memorized steps and those with conceptual understanding because the instructors can ask students "why" questions. As Sayre (2014) explains, "The oral exam can thus be more kind than the written exam (because of nudging) and a more thorough assessment (because of questioning) than the written exam" (p. 30).

The oral examination provides the opportunity for insights into student thinking during the examination process. Boedigheimer et al. (2015) state that oral exams allow instructors to work around student misunderstandings in a way written exams do not. If students do not understand a question or give a wrong answer because they misunderstood the question, the instructor can provide an explanation, a better prompt, or another chance for students to explain and/or clarify their answers (Dobson, 2023). Once students see their grade on a written exam, there is no guarantee that they will read all the comments (Boedigheimer et al., 2015). During an oral exam, however, students will be present for the instructor's immediate feedback.

Rawls et al. (2015) found that not only did business students who took an oral exam increase their content knowledge, but they also improved their communication skills. The more practice students have with oral communication skills, the stronger these skills may become. Bridges (1999) notes the continuing importance of communication skills for new graduates seeking employment. Implementing oral exams in undergraduate courses can help students develop workplace readiness by improving their communication skills, learning to manage anxiety, engaging in problem-solving, organizing and expressing thoughts, and developing creative thinking skills (Dumbaugh, 2020; Plant et al., 2019). The format of oral exams provides a way to experience "real world" scenarios such as suddenly being put on the spot and talking with people face-to-face (Boedigheimer et al., 2015; Buehler & Schneider, 2009; Worthen, 2022). These experiences differ significantly from written exams, where there is no face-to-face contact and students can take more time when answering questions. Buehler & Schneider (2009) explain that oral exams help prepare students by providing one-on-one communication between student and instructor, which is somewhat similar to job interviews and workplace interactions. Often oral examinations are unscripted, and students cannot memorize answers for every possible response. Similarly, Burke-Smalley (2014) discusses the use of oral exams to develop the skills of explaining recommendations and justifications in cost-benefit scenarios. This can mimic employee–supervisor interactions and help prepare students for future workplace settings.

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Burke-Smalley (2014) asserts that students perceive oral assessments as vocationally relevant to their professional development in terms of building confidence, enhancing communication skills, developing critical thinking skills, improving information-gathering skills, and fostering the ability to "think on their feet." Compared to written exams, oral assessments measure greater depth of students' understanding, ability to organize ideas, and use of language to express their ideas. Rawls et al. (2015) point out that students recognize that oral exams provide them with positive learning experiences, such as improving their content knowledge, communication skills, and overall learning. Students studying for oral exams developed a deeper understanding of the material because they were not just memorizing content and rereading notes (Hazen, 2020). As one undergraduate mechanical engineering student noted, "In some classes you can memorize a process and then on the written exam you can plug and chug, you don't have to understand what you're doing with those calculations…[b]ut on an oral exam you have to explain why you're doing what you're doing" (Belkin, 2023, para. 16).

Students report being more motivated to study harder for oral examinations and that the way they study for oral exams is different. Chemistry students reported believing oral examinations increased their knowledge and learning of the subject (Sweeder & Jeffery, 2013). Other students reported studying in more active ways such as practicing answers out loud and discussing ideas with other students (Belkin, 2023; Hazen, 2020). The oral exam format may encourage students to study more or harder (Boedigheimer et al., 2015) because they may develop deeper attachment to material (Gaudet, 2015). The students also spent *more* time studying the material (Burman et al., 2007; Guest & Murphy, 2000). There are students that prefer oral examinations to written forms of assessment because oral exams are more inclusive and better serve some students with certain disabilities, such as dyslexia (Huxham et al., 2012).

Finally, oral assessments may also improve student engagement. Worthen (2022) suggests that oral exams may decrease students' self-censorship in the classroom. Students may feel more comfortable speaking and asking clarifying questions to the instructor or examiners (Buehler & Schneider, 2009).

Best Practices for Implementing Oral Exams

Instructors can help students prepare for their oral exams by providing them with information about the structure and grading of the exam. For example, instructors should provide students with a clear sense of their expectations for the format of the exam and how they will follow up on student responses. Instructors should also be clear about whether they will provide students with exam questions in advance as well as how students should prepare their answers. Students should also know if they will be permitted to use notecards, formula sheets, or other references during the oral exam. Instructors can also encourage students to collaborate with their peers to practice their answers and obtain feedback when studying for their exams (Oral Communication Center, 2023).

Preparation is key to successful implementation of oral examinations. The structure of the assessment can take the form of a presentation, questioning or interrogation, and application (Akimov & Malin, 2020) or problem-solving. While the construction of oral exam questions is often discipline-specific, there are some helpful general guidelines. Oral exams are well suited to case-based or scenario-driven questions (Fitzgerald, 2016). There should be a clear connection between the question and class discussions and readings, so that students can demonstrate that connection. For shorter assessments, such as oral quizzes, Dumbaugh (2020) limits questions to one topic. Ohmann (2019) recommends three types of question designs: free-form discussion based on conversation prompts, demonstration or discussion of an example, and the "why" question in which students demonstrate their reasoning skills in defending a position, argument, or fact.

Instructors should prepare students for the type of oral exam they will encounter. Burke-Smalley (2014) suggests that instructors should explain evaluation criteria to students and provide them with a bank of exam questions beforehand so that they can prepare by studying individually or in groups. To further reduce student anxiety, instructors should also consider the weight assigned to the oral exam grade for each student. For example, the grade should count enough for students to take the exam seriously, but not be weighted so heavily that perceptions of unfairness result. By applying the structured approach as a pedagogical tool in the

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oral exam process, instructors can significantly reduce student anxiety and increase learning (Rawls et al., 2015). Furthermore, while the students' lack of exposure to oral assessments may result in students feeling anxious about the prospect of taking oral exams, the anxiety they experience is not necessarily negative (Theobold, 2021). On the contrary, anxiety often motivates students to prepare more thoroughly for their oral exams than they otherwise would for standard written assessments. Interestingly, despite their anxiety, in one study students preferred oral exams because the exams focus more on gaining deeper understanding and learning rather than just memorizing facts (Boedigheimer et al., 2015). Worthen (2022) also contends that oral exams provide students with opportunities for managing modest amounts of stress, similar to that which they will face in their professional careers. Still, student anxiety is a serious issue in higher education and universities have been challenged to address student mental health issues on campus, especially since the COVID-19 pandemic. While some students may experience disabling levels of anxiety, Worthen (2022) maintains that dealing with some level of anxiety is a part of the college experience in that it moves students beyond their comfort zones and encourages them to grow. Much like building muscles, experiencing eustress or positive stress can factor significantly into the process of growth and development.

There are other steps that instructors can take to reduce student test anxiety. Luckie et al. (2013) reported giving an oral final exam that was graded as either pass/no pass and allowed students the option to retake the oral exam several times. If students still did not pass, they would take a written final exam. They deliberately structured the examination this way to decrease students' anxiety about the oral examination. Their students reported that not only did oral exams increase the amount of time they studied for the course, but they also changed the way they studied for the course and helped them learn the material.

Gharibyan (2005) discusses the importance of instructors being aware of this anxiety and being sensitive to it by helping the students feel comfortable. As stated by Fitzgerald (2016), "Another obstacle for the implementation of oral exams is that students and instructors prefer what they know" (p. 7) rather than change. Prior to administering the oral examination,

instructors need to discuss the exam and what is expected (Bridges, 1999) to help students feel prepared. This increased transparency has the potential to decrease stress and anxiety among students. Gharibyan (2005) suggests using a friendly tone of voice and calming remarks to help decrease student anxiety. Akimov and Malin (2020) note that instructor tone and friendly conversational manner can reduce student anxiety and improve student performance on oral exams. In addition, instructors can encourage students to focus on their expertise on the topic and visualize successful outcomes. Some students fear oral exams because they worry that they will not be able to articulate a correct answer quickly enough in timed exams. To address this fear, Theobold (2021) provided students with exam questions and the grading rubric a week prior to the assessment. Also, oral examination anxiety may decrease if this type of assessment is given more often (Worthen, 2022).

Limitations and Weaknesses of Oral Examinations

The reliability of oral assessments can be an issue, with some of the low reliability issues attributed to factors such as the examiner's active participation in the examination, which can introduce bias (Davis & Karunathilake, 2005). Having assessors review oral exam questions and undergoing examiner training may reduce bias (Gardner & Giordano, 2023), but this takes time. Also, reliability can be threatened by examiner variation. This can occur because oral exams are often graded globally and without structure (Daelmans et al., 2001). For example, if there are multiple raters without a common rubric or expectations, reliability can be affected adversely.

To reduce bias, Fitzgerald (2016) and Worthen (2023) suggest that instructors video record oral exams. These recordings can then be viewed by multiple raters if more than one person is rating the oral exam. Grades can be given after a panel or multiple raters discuss the final grades and determine that the students were graded appropriately and without bias (Burchard et al., 1995; Dobson, 2023). Worthen (2022) recommends that instructors further engage students by asking them to use their own phones to video record their oral exams. Video recording oral exams can also reduce potential liability issues for instructors if grade complaints or challenges arise. In addition, students can engage in active learning and reflection by reviewing the video of their oral exam and writing a self-assessment afterward.

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Bias can also occur in oral exams because raters know students' identities, and faculty can overemphasize test questions of personal interest on written exams (Burke-Smalley, 2014). Additionally, it may be difficult for instructors to be objective when grading oral exams because the tests are not taken anonymously (Westhoff & Hagemeister, 2014). Other factors that may influence oral exam scores include verbal style and dress (for example, professional or nonprofessional) (Burchard et al., 1995; Davis & Karunathilake, 2005). Implicit bias or outright prejudice on the part of the instructor will limit the effectiveness of oral examinations. Instructors may need training to help prevent discrimination in oral exams (Roberts et al., 2000).

Standardized rubrics are important for oral exams given by multiple instructors/raters, which helps prevent subjectivity or bias in grading (Fitzgerald, 2016). Rubrics can be used to provide feedback to the student after the oral exam and help explain what went well and what areas were challenging for the student. These should be developed in advance, and the instructor(s) should determine the level of prompting that will be permitted prior to administering the tests (Rawls et al., 2015). Rubrics are also beneficial in increasing test reliability. Care must be given on how to evaluate among multiple reviewers (Rawls et al., 2015). A consensus must be reached when building the rubric and scoring the oral exams. Theobold (2021) underscores the importance of instructors having a rubric from which they can grade during the oral exam. Likewise, rubrics should be developed early in the term to be the most beneficial to students. Instructors should also determine what types of feedback to include on the rubric. For example, instructors can provide students with only the rubric scores they receive for each question or they can also include a written justification for each score. Adding the justification can help students better understand their scores and offer further clarification of their scores. Another consideration when developing a rubric is to use objective language. Words such as "excellent," "good," "acceptable," and "needs improvement" can help distinguish performance levels (Center for Instructional Technology and Training, 2023).

An additional challenge to oral exams that instructors may encounter is student resistance. Fitzgerald (2016) commented on resistance to oral examinations, stating that, "Another obstacle for the implementation of oral exams is that students and instructors prefer what they know" (p. 7) and oppose change. Moreover, effective implementation of oral examinations requires forethought, preparation, and hard work on the part of the instructor—educators must put time and effort into this form of testing (Lourenco et al., 2023). Oral exams usually take more time to administer than written exams (although grading is generally much faster) and giving multiple oral exams in one day can be exhausting for instructors (Fitzgerald, 2016; Giordano & Christopher, 2020; Young, 2023). Conducting oral exams in larger classes, such as 35 students or more, can be difficult for faculty because of the time it takes to administer them (Fitzgerald, 2016). Therefore, some ways to support instructors include hiring more faculty, especially for larger classes (Guder et al., 2009). Also, the use of teaching assistants (Luckie et al., 2013) may help decrease time commitment and instructor workload. Both options would require training to help ensure raters are consistent with the grading and expectations of oral exams and may not be possible because of budgetary constraints.

Administering oral exams in groups may also help to decrease the time commitment for oral exams. Guest and Murphy (2000) used cooperative oral final examinations where students worked in groups of four and one grade was given to the group for the exam. The students were given a list of possible questions three days before the exam and were able to study and prepare for the exam together. They also watched a teaching video and were asked questions about theories and practices. During the actual exam, each group met with two instructors for 15 minutes.

Other time management strategies are to limit exams to only one day per week and set a cut-off date where no more final exams are permitted. This can help examiners build a schedule and decrease last minute changes (Luckie et al., 2013). Furthermore, using a timer (Bridges, 1999) may prevent exams from going over their allotted time.

Specific Recommendations for Online Education

For instructors teaching online classes, Giordano and Christopher (2020) state that the benefits of oral exams in identifying and addressing gaps in student knowledge and observing students' thought processes and problem-

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solving strategies far outweigh any potential challenges in online learning contexts. In a case study by Akimov and Malin (2020), the authors find that the online oral examination is a "high-quality assessment tool" (p. 2018) in terms of validity, reliability, and fairness. Kifle and Jacobs (2023) encourage the adoption of oral exams in their undergraduate online courses to prevent cheating and overcome the potential limitations of online proctoring technologies, such as falsely flagging a student for cheating.

Instructors giving online oral exams may want to have an online waiting room. This can help prevent students from logging in during another student's exam (Theobold, 2021) and provide privacy for each student during the exam and when discussing rubric feedback. Instructors should also create a dedicated online exam room, so that they do not have to create separate meetings for each student (Theobold, 2021). Giordano and Christopher (2020) suggest using a virtual whiteboard so students can show their work. Instructors recording exams can also save the whiteboard work and discuss it when providing feedback to students.

Lang and Schlosser (2021) employ oral exams as an effective formative, low-stakes assessment in online classes because they provide quick feedback about student knowledge. Administering oral exams early in the semester allows for adaptation to student needs and should make up only a small portion of the course grade. Similar to in-person classes, instructors should provide students with grading rubrics in advance to reduce uncertainty and anxiety. Lang and Schlosser (2021) also recommend that instructors encourage their online students to practice discussing and explaining course concepts with other students in the class prior to the exam. Each chance students have to engage collaboratively with their classmates provides them with opportunities to not only explain their understanding of the material, but to also practice for the oral exam.

For online oral exams to be effective, Sun (2021) notes that asking shorter questions with specific answers promotes grading consistency. To reduce student anxiety, instructors can begin with easier questions that students

should be able to answer and build up to more difficult questions. Instructors can also begin and end the oral exam session with casual conversation to engage students and encourage them to discuss their thoughts about the exam process. This may also serve to reduce "grade grubbing" or haggling with students over points on their grades (Sun, 2021, para. 5).

Conclusion

Oral exams can help instructors minimize cheating, protect academic integrity, identify knowledge gaps and misunderstandings, and develop deeper connections with students. This type of assessment allows instructors to probe the students' learning and parse out what knowledge is truly the students'. By incorporating oral assessments into their undergraduate courses, instructors can help students become more workplace ready, develop strategies for effectively adapting to the stressors they will face in their careers, and improve their communication and critical thinking skills. With this said, oral assessments do have drawbacks such as increased workload and time commitment for instructors and increased test anxiety for some students.

Generative artificial intelligence will not go away, and newer iterations are on the horizon. Instructors will have to adjust to this new educational environment. The traditional forms of assessment, such as asynchronous written assignments, will be discarded or come with "guard rails" to prevent cheating. Oral examinations are not a "one size fits all" solution to the challenges of artificial intelligence chatbots, but they also are not something to fear. The oral exam is simply an additional tool in the educator's toolbox—and in certain situations, it is precisely the tool that instructors *and* students need.

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