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Multimodal take-home exams in online teaching and beyond: constructive and professional alignment in teacher education

Abstract

The authors propose an alternative to in-class exams (ICEs) based on the higher-order levels of Bloom's taxonomy as well as both constructive and professional alignment. In light of the COVID-19 pandemic, instructors were faced with restructuring both their teaching and assessment. The paper argues that take-home exams (THEs) tailored to the necessities of individual courses are advantageous to an online learning environment in comparison to an ICE and the pitfalls that accompany it, such as online proctoring, lower-level assessment, and the relative lack of constructive/professional alignment. In addition, THEs provide instructors with the possibility to utilize a variety of multimodal material that authentically reflect learner-centered assessment. The authors will continue to implement THEs post-pandemically as they allow for incorporating activities and strategies that are useful to students in their teaching careers.

Keywords

multimodal take home exam, online teaching, constructive alignment, professional alignment, TEFL teacher education

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1   Introduction

The COVID-19 pandemic has presented teachers in higher education with a number of challenges, including finding suitable assessment procedures in times of online teaching and learning. At the beginning of summer term 2020, and despite recent efforts to incorporate new classroom techniques and integrate multiple media as well as new forms of technology into university teaching practice, final exams were still a highly traditional, pen-and-paper format in some disciplines. As a result, many teachers in higher education began to experiment with online-proctoring strategies in order to avoid (or at least minimize) cheating in the new online environment by filming hands, tracking eye movements, using multiple hardware devices, and comparing handwritings. In addition to the considerable amount of time and effort required of both teachers and students within the online-proctoring regime, these procedures quickly led to heated debates about data protection and privacy in Germany (cf. HIMMELRATH, 2021; SCHWARTMANN, 2020). Despite these challenges, however, and out of sheer necessity, the accelerated digitalization of the educational system as result of the pandemic may have sparked the long-awaited "mini-revolution" (WILLIAMS & WONG, 2009, p. 227) in the university sector towards more innovative and competence-based forms of teaching and assessing. A growing body of current research aims to explore the potential of applying some of these changes and adjustments to post-pandemic teaching and learning (cf. KORDTS et al., 2021). This essay would like to contribute to this ongoing discussion by proposing the implementation of multimodal take-home exams (THEs) – in which students are provided with multimedia material and asked to complete a number of complex tasks over a prolonged time span – as an alternative assessment format that can be used in both online and classroom teaching, especially for teacher education.

This article draws upon our experiences restructuring and teaching the introductory seminar, "Teaching English as a Foreign Language (TEFL)," at the University of Jena for three consecutive semesters during the COVID-19 pandemic. In this specific course – as in many other traditionally assessed seminars – students would have normally written a proctored in-class exam (ICE) at the end of the semester, which, in large part, assesses student performance on the lower levels of Bloom's taxonomy. Bloom's well-known taxonomy provides a hierarchically organized description of learning that functions within two dimensions. The 'knowledge dimension' comprises of factual (e. g. knowledge of terminology), conceptual, procedural, and me-

ta-cognitive learning. The 'cognitive process dimension' focusses on the processes involved in learning. This second dimension is subdivided into the categories of remembering, understanding, applying, analyzing, evaluating, and creating. On the lowest level – remembering – students are asked to retrieve, recall, and recognize relevant knowledge (revised by ANDERSON et al., 2001). Being critical of online proctoring and wary of its invasiveness, and interested in assessing student performance on the higher levels of Bloom's taxonomy, the authors of this paper, who each taught the same introductory course simultaneously in different groups, chose to redesign the final exam altogether. Based on the multiliteracies approach to teaching (KALANTZIS et al., 2016), we designed a multimodal take-home exam (THE) that focuses on both the knowledge and cognitive process dimensions.

In line with the prevailing theory of constructive alignment (CA) (cf. BIGGS, 2014) in higher education and in an effort to embody what we call *professional alignment* (PA) in teacher education, we adjusted the structure of the entire seminar and focused on fostering personal and professional competences and skills in the appropriate application of acquired knowledge. In the following, we discuss the benefits and challenges of THEs in comparison to traditional, proctored ICEs and argue for the underlying concepts of constructive and professional alignment in exam design. As a good-practice example with didactic insights, we will outline our design and assessment guidelines and further explore the potential that multimodal take-home exams bear for other disciplines and course formats.

2 Advantages and challenges of (multimodal) take-home exams

In respect to exam design, *authenticity* lies at the center of the current paradigm of competence-based assessment (cf. HALBHERR et al., 2016, p. 252), which focuses on realistic, authentic examples and problems that students evaluate and solve in an exam. It therefore seems anachronistic that while computers and digital media are an integral part of both students' and teachers' personal and professional lives, modern technology still plays little to no role in examinations in many disciplines. In a study on the efficacy of final examinations, WILLIAMS and WONG (2009) ask whether

exams at university are, in fact, off-limits for innovation – and their investigation is still relevant today:

"[G]iven it is still the most commonly administered summative assessment instrument in universities today, is there some other special intrinsic value attached to a closed-book, invigilated exam that justifies its continued use?" (p. 228)

As we do not ascribe "special intrinsic value" to closed-book, pen-and-paper ICEs and further wish to incorporate the principle of authenticity into all aspects of our exam design, we designed a THE that includes digital and online material. THEs have been commonplace in the humanities at U.S.-American universities since the mid-1980s, and their advantages in comparison to ICEs have been widely discussed in anglophone research: ICEs are mainly characterized by a strict time limit (2–6 hours) and the stress that this necessarily and purposefully imposes on students. In traditional ICEs, learners are required to activate (factual) knowledge under an artificial amount of pressure, without help or opportunities for collaboration. While scholars in favor of ICEs and closed-book exams (CBEs) mostly stress the connection between expert performance and "rich, well-organized content knowledge of a subject" (DURNING et al., 2016, p. 1) as well as the ability of students to retrieve and activate knowledge under pressure, ICEs have been frequently criticized for several reasons. One important point of criticism is the artificially constructed, high amount of pressure inherent in the ICE setting that has been shown to have an adverse impact on students' performance (cf. BENGTSSON, 2019). Further, higher level exam tasks which foster an active, creative, and lasting engagement with the seminar content and acquired knowledge are frequently omitted in ICEs due to time restraints and other pragmatic factors. As such, ICEs are "not suitable for assessing students' performance on the higher levels of Bloom's taxonomy scale," nor can they promote anything but superficial learning, and thus are "not consonant with the prevailing theory of 'constructive alignment' in higher education" (IBID, p. 1).

Take-home exams are designed in opposition to ICEs: Due to a prolonged time span and unlimited access to textbooks, the Internet as well as other resources, they invite students to more thoroughly reflect on the tasks and materials at hand as well as make intelligent editorial and interpretive decisions regarding the applicability of specific sources and sets of knowledge gleaned from the wealth of material available to them. In their discussion of open-book and open-Internet exams (whether in the classroom or at home), WILLIAMS and WONG argue that when "learners

are presented with unstructured problems that require the application of relevant skills and knowledge, rather than selection from predetermined options as is the case with multiple-choice tests," authentic and competence-based assessment can more accurately capture an "understanding of learning processes in terms of real-life performance as opposed to a display of inert knowledge" (2009, p. 229). Such exams, they conclude, "emphasize the importance of learner-directed discovery of knowledge" (IBID). In addition to these salient points, we further argue that the inclusive, complex, realistic environments provided by THEs allow for a substantially higher degree of not only constructive alignment but also professional alignment in teacher education, meaning that the exam itself is heuristically valuable. It functions as a "highly educational task in which students experience a deep learning process" (LÓPEZ et al., 2011, para. 3) as well as a highly professional assessment tool in which students and instructors alike experience a reflection process on exam design.

Studies have further shown that open-book and THE settings minimize student anxiety and that working with textbooks and other material can increase student confidence in their ability to successfully complete exam tasks (cf. JOHANNES et al., 2017). This is not surprising since such inclusive environments would more readily appeal to authentic and thus more tangible and less arbitrary learning and work strategies than ICEs. Students can work at a time of day and in a physical space that best suits their time management needs. What is more, they can analyze and apply both familiar as well as newly researched, supplementary material; and in cases where feasible, helpful, and reflective of professional praxis, they can cooperate with peers. Given these environmental advantages, THE exam questions and tasks can more robustly address all course material and "force students to higher level thinking, to apply knowledge to novel situations and synthesize material" (BENGTSSON, 2019, p. 9). In regard to assessing learning objectives, THE task structures can result in a more comprehensive and accurate testing of the targeted, multi-faceted learning objectives customarily engineered into a syllabus.

While there are many advantages to implementing THEs as an assessment format, they have also been contested. One main caveat is the issue of cheating: Recent studies support the general concern among university teachers that dishonesty, cheating, and unwanted cooperation increase outside the university classroom (STEFFENSEN & SCHUSTER, 2020, p. 604–610). ICEs are thus mostly used to avoid unethical student behavior (i. e. cheating and unwanted cooperation). Yet, during

the first COVID-19 semester, the need to create online-exams that offered the same degree of proctoring led to time-consuming and often ineffective or legally problematic attempts at online-proctoring. However, even before the digital semesters of the pandemic, ICEs by no means guaranteed a cheating-free exam setting – on the contrary, as many so-called 'cheating-scandals' have shown (cf. PÉREZ-PEÑA, 2013). While it has been pointed out that a "non-proctored exam conducted in a closed dorm room with an Internet access is the perfect setup for frame-ups and imposture" (BENGTSSON, 2019, p. 11), it is important to note that THEs often do not specifically prohibit or sanction cooperation between students. Instead, we take the position that because THE task structures assess student performance on the higher levels of the learning taxonomy – especially understanding, applying, and creating – cooperation does not necessarily compromise their final performance but may instead enhance their output and ability to activate and apply factual knowledge in dialogical, cooperative learning (cf. also JOHNSON et al., 2015). As THEs test higher levels of Bloom's taxonomy and consist of open-ended questions that require essay-style answers designed to foster higher-order cognitive skills (HOCS), the possibilities for unethical student behavior are minimized. While we condemn unethical phenomena such as pens-for-hire and plagiarism, we want to challenge the notion of 'unethical student behavior' – especially in teacher education. We would rather promote a culture of trust, cooperation, and reflection as these values align constructively and professionally in our field.

This, however, leads to the next point of criticism – the format's practicability. Considering the time needed for designing THEs such as choosing multimodal material and formulating comprehensive reflection questions as well as for grading answers in prose, they may be better suited for smaller group sizes and for certain disciplines. However, as this article argues, due to their commitment to competence-based, authentic, and aligned assessment, THEs appear to be more rewarding for both teachers and students. As we found during three semesters of assessing our courses with THEs, this is also due to the guiding principles of constructive alignment for higher education and professional alignment for teacher education. The prevalent theory of constructive alignment (CA) is an outcome-based approach in which teaching is designed to help students reach the pre-defined outcome and assessment is designed to "enable clear judgements as to how well those outcomes have been attained" (BIGGS, 2014, p. 5) – not only are teaching and assessment aligned, but both are also aligned to the intended learning outcomes (IBID, p. 9). For the design and imple-

mentation of a THE, this implies that the learning outcome of the course is defined and openly communicated at the beginning of the semester.

Constructive alignment also goes hand in hand with what we came to call 'professional alignment' in teacher education. For teacher education, this means an alignment of the assessment with professional skills such as ethical and personal responsibility, self-reflection, critical thinking, information and time management, written communication, and appropriate use of different media. Guiding principles for professional alignment of outcome, teaching, and assessment are proposed as follows:

1. Establishing a culture of trust.

2. Taking one's own teaching into account within the assessment regime, i. e. testing what has been taught and preparing students for the exam throughout the entire course.

3. Allowing for differentiation and designing an exam that is suitable for most learning strategies and learner types.

4. Applying a pedagogy of multiliteracies (KALANTZIS et al., 2016) in order to foster a deep engagement with multiple types of media and focusing on creative application, critical analysis, experiencing of old and new media and content, and conceptualization by theorizing and naming.

5. Creating tasks that authentically prepare the students for their profession (e. g. lesson planning, developing multiliteracies, researching own material).

3 The design and assessment of our THE

3.1 Exam design

As our THE is meant to function as a learner-centered assessment that constructively and professionally aligns with our course content, the test itself also shapes the seminar syllabus (cf. also RICH et al., 2014). Thus, designing the THE also entails designing the course. Our specific course was an introductory seminar that is a first-level prerequisite for all TEFL students of education, entitled "Teaching English as a Foreign Language (TEFL)." The course content and final examination are based entirely on the textbook *Teaching English* (GRIMM et al., 2015) and the assignments were specifically designed around an incremental series of tasks to hone the skills needed for the final examination.

The assignments function as formative summative assessments (FSA), which measure student progress throughout the semester in order to modify instruction and to enhance student performance by reviewing student work in class, producing "both quantitative and qualitative feedback from the students about their comprehension" (WININGER, 2005, p. 164). In our seminars, the FSAs take the form of tailor-made worksheets on a chapter-by-chapter and week-by-week basis that students must complete before commencing the week's seminar session. The worksheets consist of closed, semi-open, and open task types, ranging from multiple-choice questions to gap filling to project work such as creating lesson plans based on differing media types including literature, film, music, GIFS, cartoons, etc. The worksheet tasks aim to target 1) knowledge of terminology and concepts and their creative application, 2) critical analysis of methodologies, 3) researching and analyzing both traditional and new media and content, and 4) inferencing by theorizing lesson objectives and tasks, and specifically relating practical examples to their underlying theories on (second) language acquisition and didactics. The seminar sessions consist of 13 weeks of online meetings where students, either in group work or in teacher-student interaction, present solutions to the worksheet tasks and optimize their responses and lesson plans based on peer and instructor feedback. A master worksheet is then collocated for that week's chapter and uploaded in a shared digital forum. By the end of the semester, all worksheets including the lesson plans produced in project work are avail-

able to the students during the THE. The final exam takes place in the final week of the semester and students are given a time span of 48 hours to complete the THE.

The final examination entails two main sections – 'Application' and 'Reflection' – whereby 'Application' is further divided into two parts which comprise of open tasks that operate on the higher levels of Bloom's learning taxonomy by requiring comprehension, application, and creative production in order to be completed: 1) designing a lesson plan based on specific media prompts provided by the instructors and according to the PWP (pre-, while-, and post-activities) method and lesson-plan template taught in class, and 2) elucidating in an open-essay format their theorizations and arguments on the efficacy of their chosen design and how it contributes to their defined learning objectives. Students are asked to use the specific terminology, theoretical concepts, and factual knowledge they acquired in their course work reading through, working with, and internalizing the contents of GRIMM et al. (2015). This section is especially attractive in terms of design because the material chosen by the instructors can provide a higher degree of multimodality than traditional ICEs would allow. In our exam, we provide students with six specific teaching materials, mostly in the form of URLs, from multiple media types, of which they can choose one to create their lesson plan, but they are also sanctioned to include any relevant supplementary media/materials based on their own research. Designing *multimodal* THEs, as we suggest here, that includes different kinds of material ranging from YouTube videos, GIFs, and TikToks to cartoons and poems, enables students to reflect on their material preferences (e. g. audio-visual, textual, etc.), their own learning styles, and their strategies for approaching their material. The THE thus also aims to produce the confident and transparent application of online sources as learning material. In the collection and choice of material provided for and by the students, THEs adhere to a multiliteracies pedagogy that enables students to actively and creatively engage with multiple text types (KALANTZIS et al., 2016). Further, the provided material can easily be updated and rotated on a semester basis with little time and effort.

The 'Reflection' section comprises of a semi-open, professionally-aligned task where students are asked to write a short essay on one of two questions that tests 1) factual knowledge of a specific concept, theory, or media type, 2) their ability to reflect on and create an informed opinion based on knowledge, and 3) their ability to illustrate

how didactic theory informs practical solutions and vice versa. The questions are each accompanied by an illustrative cartoon that students can use and build upon.

In designing our THE, we include the more professionally-aligned tasks that are too time-consuming in an ICE. The flexibility of this design further allows for a greater variety of topical, interesting, and multimodal material that speaks to the students and their realities, therefore engaging and motivating students to a higher degree. By doing so, THEs create a rich and multimodal learning experience that requires and encourages reflection on students' processes of learning and adheres to the principles of the post-method pedagogy.

3.2   Student and instructor assessment of exam design

Course participants provided feedback to the instructors directly after they had met the deadline for submission. This feedback proves invaluable for the adjustment of future THE designs and will be the focus of the following section. In addition, we present some self-reflective remarks on the experiences surrounding THE from an instructor's perspective.

While students were working on the exam's assignments, they were able to pose questions to the instructor. Depending on the instructor, students could write an email with questions, or post questions on a server that was specifically installed for this course. The latter in particular mimicked situations during ICEs when students would ask questions to the instructor, as they were able to either ask a question in a direct message (visible only to the instructor) or ask in chat (visible to everyone). Instructors were thus able to react to questions whose answers may be beneficial for all participants in case they clear up uncertainties with the exam that were shared by more than one student. Likewise, instructors confirmed the timely submission of students' papers via email or text chat, which in turn reassured students of their submission status. We observed that the lack of a submission on paper was a potential cause for anxiety on the students' side, so confirmation via email or text seems beneficial.

Students evaluated that they found the assignments' goals self-evident and feasible within the provided time window. However, many also claimed to be short on time; almost all handed in their digital papers shortly before the deadline and individual

students remarked that they needed almost all of the allocated time to work on the tasks. We observed the same issue from some papers' lengths – while most submissions were in the range of five to six pages, some students came close to handing in a paper that is the equivalent to a term paper in terms of length (ten pages). As such, the pressure in ICEs as observed by BENGTSSON (2019, p. 1) appears to still be present in THEs. It remains inconclusive whether this pressure is due to the inherent design of THEs or reliant on student expectations inherent to a course's final exam, regardless of its design. As regards the preparation of classes for a THE, instructors should therefore not only take care of preparing their courses' content in accordance with the requirements of a THE, but also prepare their students on what to expect and how to approach the allocated time for such an exam. Students may appreciate not only a hard deadline that tells them when they ought to submit their paper, but also an estimation of how long they should actually work on the assignments within that time frame.

Feedback for the material offered in the exam was universally positive. When asked, students assessed that they found the material in the exam to be of great variety in terms of both topic and medium. In particular, one assignment that revolved around designing a TEFL lesson plan with material provided in the exam let students choose between various media, such as: GIFs with grammar puns to design a grammar lesson; a video speech at the DNC by Michelle Obama; a short clip from the US television show *The Simpsons* that commented on the January 6, 2021 insurrection at the United States Capitol. The last example especially proved to be popular since the exam took place mere weeks after the incident. Implementation of these media, among many others, shows the flexibility of a THE in comparison to traditional ICEs, where this high-level application of multiliteracies is virtually impossible.

Opponents of THEs may argue that the format makes examination easier for students. After all, an open-book exam with more time to work on assignments is bound to give students advantages that they would otherwise lack in a proctored, in-class examination. We found the opposite to be the case; in fact, the average grade in our THEs is close to averages of former ICEs for the same module. Figure 1 shows these averages for summer and winter term 2019 (in-class) and summer term 2020 to summer term 2021 (take-home) on a 1-to-5 scale, where 1.0 is the best grade achievable and 5.0 is a failed exam. The averages show that there is no significant difference between ICEs and THEs in terms of student performance. We hypothesize that the

slightly lower average performance in summer 2020 may be due to the relative novelty of a THE to students or due to mostly individual circumstances surrounding the emerging pandemic that may have affected students. The results after summer 2020 remain stable around the 2.2 to 2.3 range.
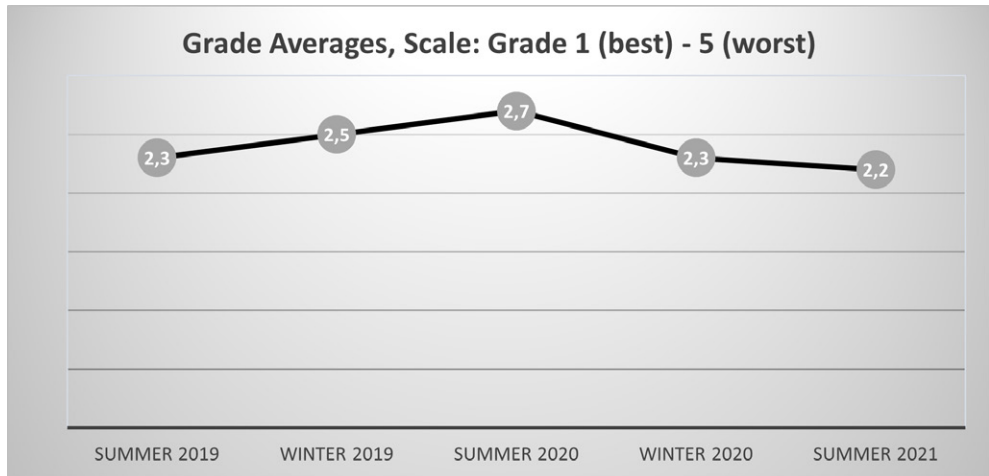

Fig. 1:   Grade averages for course exams (illustration by the authors)

4 Conclusion

We mentioned above that THEs activate higher levels of Bloom's taxonomy and, in addition, foster professional alignment for teacher education, by which we imply that the exam presents teacher degree students with a best-practice example of how to assess a course's performance. This meta-didactic strategy proved successful in our TEFL course. However, such a conclusion does not necessarily mean that THEs are a viable solution for all kinds of courses in all kinds of disciplines. Modules with output-oriented curricula and open-designed tasks will benefit more from THEs than modules with closed-designed tasks. As an example, exams that ask students to prove a mathematical theory will not benefit from a THE since, traditionally, mathematical proofs by necessity allow only for a very limited number of ways to arrive at the correct conclusion. With that in mind, we propose that our exam design is quite flexible across didactic seminars of all disciplines – designing lesson plans and discussing didactic topics with an informed background (based on seminar input) are open to some degree in terms of students' creativity. As such, the well-known teacher idiom, "teaching to the test," gains a new meaning in light of THEs: We still teach to the test; however, due to professional alignment, the test now incorporates useful didactic heuristics and models that will be useful to teacher degree students in their careers.

Our experience with THEs also reveals a constructive alternative to online proctoring. While traditional exam formats require a high degree of effort from both teachers and students as well as constant online monitoring during the exam, which raise questions of efficiency, data protection, and ethics, a THE renders such issues a moot point by design. We have seen that students arrive at the same conclusion. While the concept of a THE arose out of necessity in a time of digital solutions where in-class courses were simply impossible, we have found the practicability of a take-home exam to be far more valuable than being an emergency alternative to in-class exams. As we prepared the first in-class seminars for the same module in almost two years, we decided to retain the exam's THE format. While a take-home exam at first seemed uncalled for in an in-class structure, we determined that the advantages of a THE exam outweigh the traditional ICE exam even with an in-class course preceding examination. In conclusion, we are determined to refine the THE design further by implementing it into in-class courses.

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