

Higher-order thinking e-assessment in online EFL courses: Swedish instructors' perceptions and experiences

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Abstract

Previous research indicates that higher-order thinking skills (HOTS) have an important role in L2 learning. In an online learning context, e-assessment tasks are ideally designed to target these skills. A recently conducted study by Johansson (2020) indicates that HOTS e-assessment is relatively common in Swedish online English as a Foreign Language (EFL) courses. Generally, instructors' perceptions of HOTS and HOTS e-assessment have been described as important for the implementation of these skills in assessment tasks; however, little is known about this in the online EFL context. Hence, the aim of the present study was to achieve a more comprehensive understanding of online EFL instructors' views on HOTS e-assessment and the challenges of this. To investigate this, a questionnaire was sent out to university instructors working with online EFL courses. The study found that most of the instructors intended to target HOTS through e-assessment tasks and that there is a general agreement about what constitutes such skills. The majority of the instructors had not been offered training in how to target students' HOTS, but had taken own initiatives to this kind of training. Moreover, the main challenges in developing HOTS e-assessment were instructors' lack of time and technical skills.

Key words: critical thinking; higher-order thinking skills; the revised Bloom's taxonomy; online teaching; e-assessment; online instructors' professional development

1 Introduction

The ability to think critically is seen as essential to both personal and collective well-being. For example, links between critical thinking (CT) and economic growth as well as personal qualities such as tolerance, creativity and resilience have been established in previous research (Wegerif, Li & Kaufman 2017). In higher education (HE), and education generally, critical thinking is associated with so-called 'higher-order thinking skills', and the development of students' higher-order thinking skills (HOTS) and critical thinking is an important goal. Pertaining to this, Ghanizadeh (2016:102) mentions that "there is a general consensus among educationalists that developing deep and higher-order thinking skills of university students must constitute the core objective of the agenda of higher education".

HOTS are often defined using a revised version of Bloom's taxonomy (Anderson & Krathwohl 2001). According to the taxonomy, thinking skills are hierarchical and divided into six categories: Remember, Understand, Apply, Analyze, Evaluate, and Create. The three highest levels, Analyze, Evaluate, and Create, are considered to be higher-order thinking skills, while the remaining levels are defined as lower-order thinking skills. Thus, it is clear that HOTS and CT are highly related terms (see e.g. Ennis 1985, Halpern 1998, Schraw & Robinson 2011) and will therefore be treated as such in this study.

Not only are HOTS considered important from the point of view of general education, but studies have also found that thinking skills have a significant role in L2 learning. More specifically, there are indications of a positive correlation between HOTS and L2 learning (Soodmand Afshar & Movassagh 2014, Alcón 1993, Yang & Gamble 2013). Among the most essential findings is that an integration of CT and HOTS in L2 instruction proved to be positive for students' development of certain L2 skills such as speaking (Chen 2010), listening and reading (Yang & Gamble 2013). The vast majority of the previous studies on HOTS in L2 learning consider traditional face-to-face (f2f) classrooms, however, which means that little is known about if, and how, HOTS are considered in online language learning. This calls for more research, particularly in light of the fact that higher education is shifting towards increased use of online options. That is, as it cannot be automatically assumed that previous research within the f2f context can be directly applied to online language learning, it seems important that HOTS are also investigated in online language courses.

One important topic for such research is how HOTS can be assessed in e-assessment tasks. As argued by Rust (2002), assessment tasks which are the core of students' learning should be designed to tap these skills. In a recent study by Johansson (2020), it was found that online EFL courses given at Swedish universities contained more HOTS e-assessment tasks than lower-order thinking (LOTS) e-assessment tasks, but at the same time it has also been shown that university teachers experience the development of such e-assessment tasks as challenging (McNeill, Gosper & Xu 2012). Related to the question of assessment is how HOTS and CT are understood in EFL as a discipline. A number of studies, primarily from Australian universities, point to the complexity and role of the discipline in how generic graduate attributes, such as critical thinking, are understood. For example, Jones (2009) conducted an interview study with academics working within history, physics, economics, law, and medicine, and found that views on CT are influenced by disciplinary knowledge. In light of this, investigating EFL instructors' perceptions of HOTS and CT skills and if they are considered in e-assessment tasks become interesting. Moreover, online instructors have specific needs and face certain challenges that need to be considered in the transition from f2f teaching to online teaching. Hence, the aim of this paper is to investigate online EFL instructors' perceptions of assessing HOTS with a focus on perceived challenges and needs. The findings of the study have implications for professional development courses.

2 Background

This section includes a review of previous research on HOTS and CT in L2 learning and teaching, assessment of higher-order thinking skills, teachers' views on developing e-assessment that targets HOTS, online language instructors' needs for continuous development and obstacles for developing HOTS e-assessment.

2.1 HOTS and CT in L2 learning and teaching

Previous studies indicate that interventions aimed at fostering students' CT skills are beneficial for students' L2 learning. Among the first of these studies was Alcón's (1993) investigation on the effect of high-cognitive questions on foreign language comprehension and production. She found that L2 students trained in asking high cognitive questions wrote more semantically and syntactically complex texts than students who had not undergone the same training. Since Alcón's study, several studies have been conducted that indicate correlation between the teaching of thinking skills and L2 development (e.g. Chen 2010, DeWaelshche 2015, Hashemi & Ghanizadeh 2012). However, as Alnofaie (2013) notes, the vast majority of these studies are experimental. One of the criticisms raised against experimental studies is the question of representing real learning settings. The high focus on investigating the effectiveness of certain interventions combined with the experimental nature of many studies contributed to an interest to research the topic of thinking skills in authentic L2 learning settings.

The vast majority of studies conducted so far have focused on teaching thinking skills in f2f education (e.g. Alcón, 1993; Chen, 2010; DeWaelshche, 2015). However, the present study is part of a larger research project which aims to contribute to our understanding of HOTS assessment and development in online EFL courses. In an investigation of HOTS e-assessment tasks in online EFL courses at Swedish universities, Johansson (2020) found that HOTS e-assessment was more common than LOTS e-assessment in most of the full-term courses investigated. The study relied on Anderson and Krathwohl's (2001) revised Bloom's taxonomy in order to define HOTS and classify HOTS e-assessment tasks. E-assessment tasks that tapped the thinking skills Remember, Understand, and Apply were considered LOTS e-assessment tasks, and those tasks that tapped the thinking skills Analyze, Evaluate, and Create were considered HOTS e-assessment tasks. The courses investigated included both literature and linguistics modules. Table 1 illustrates typical examples of HOTS and LOTS e-assessment tasks in both literature and linguistics. The universities that agreed to participate in the study did so under the condition that all the material they shared was to be confidential and not published. Hence, the examples of e-assessment tasks in table 1 have been modified with that in mind.

Table 1. Examples of HOTS and LOTS e-assessment tasks

	Literature	Linguistics
LOTS	Choose one of the poems in the compendium and name the text and the author	What are direct speech acts? What are indirect speech acts? Illustrate both notions with examples from your own experience.
HOTS	Give examples of two texts that we have studied in this course and which illustrate trends you associate with literary realism. Compare and contrast these texts.	Formulate a rule for forming verbs in the passive voice in words like these in English.

2.2 Assessing higher-order thinking skills

While few would disagree on the importance of critical thinking and higher-order thinking in higher education, there are tendencies in previous research that point to difficulties in developing assessment tasks and learning tasks that target these skills (Bryan & Clegg 2006, McNeill, Gosper & Xu 2012). Arum and Roksa (2010) carried out a longitudinal study aimed at measuring, among other things, American university students' development of critical thinking. The participants in this study were measured on their critical thinking skills in the first term and in the end of their second year. The study found that most students only made minimal improvements of critical thinking during their university years and for at least 45 percent of the students, no statistically significant gains in critical thinking were observed. The authors mentioned university instructors' low focus on improving undergraduate education as one of the factors behind their findings.

Assessment is particularly important for the development of HOTS and LOTS since it is well-known that assessment is among the main drivers of learning (Bezuidenhout & Alt 2011). The focus and design of the assessment tasks set the standard for the qualities and knowledge that are considered important. Also, students put most of their efforts into assessment tasks (Northcote 2003). For e-learning, previous research indicate that academics found it challenging to develop e-assessment tasks that focus on higher-order outcomes. For example, the low focus on CT skills mentioned in Arum and Roksa's study is also present in a study conducted by McNeill, Gosper and Xu (2012) on higher-order thinking in e-assessment. Through interviews and surveys with Australian academics working with online units in HE, they found that while some instructors aim at higher-order learning outcomes, there is still a strong focus on lower-order thinking skills such as recognition and understanding.

Thus, while new technological advancements can be used to support and assess HOTS (Boitshwarelo, Reedy & Billany 2017, Hopson, Simms & Knezek 2001), there are sign that the uptake of these in HE is low. To address this challenge, McNeill et al. (2012) conclude that teachers need to be empowered with knowledge and skills to make informed assessment choices. Furthermore, developing e-assessment tasks that focus on higher-order thinking is not impossible. McNeill

(2010) examined two case studies from an Australian university which uses a range of technologies to support and assess higher-order thinking and found that if well designed, e-assessment tasks support higher-order outcomes.

Previous studies in the field of computer assisted language learning (CALL) also indicate a limited focus on HOTS. Ganapathy et al. (2017) investigated Malaysian EFL university instructors' perceptions of challenges in using CALL to promote HOTS. Of the 40 instructors participating in the mentioned study, 95 percent mention that they found the extra time and effort in using technology to be the main challenge preventing them from teaching HOTS. Other challenges mentioned were lack of technological skills and difficulties in keeping up with technological advancements. Teachers' lack of time seems to be among the most common drawbacks when it comes to developing successful language teaching using technology. Comas-Quinn (2011) surveyed instructors' experiences following the introduction of a blended model for distance language learning courses at the Open University, UK. In this study, lack of time emerged as a strong theme among the new online instructors.

Further, viewing critical thinking as a discipline-specific skill, as mentioned in section 1, is arguably necessary to understand if and how CT can be implemented in teaching and assessment. Jones (2009, p. 179) found that "while attributes such as critical thinking, problem solving and communication are valued by academics and seen as part of the structure of their discipline, they are often not explicit in teaching". Among the barriers to teaching these attributes were that they were not considered to be part of the disciplinary knowledge, and had become de-disciplined. Moreover, both Barrie (2006) and Jones (2008) emphasize the instructors' role in the implementation of graduate generic attributes. The implementation of graduate attributes is described as "patchy" and initiatives to implement these skills are dependent on individuals who believe that they are valuable for graduates (Barrie 2006). The mentioned discrepancy between teachers' beliefs in the importance of generic graduate attributes and the absence of teaching and assessment of these in Jones (2008) was partially explained by time pressure and large classes.

Several of the studies mentioned above (Arum & Roksa 2010, Barrie 2006, Jones 2008, McNeill 2010, McNeill et al., 2012) point to the role of the instructor in students' processes of developing HOTS and CT. Instructors' understanding of these concepts and their efforts to include them in assessment tasks seem to be essential for students' opportunities to develop these skills. As teaching moves from the traditional classroom to online alternatives, it seems crucial to design professional development initiatives that may help instructors incorporate these skills into e-assessment tasks.

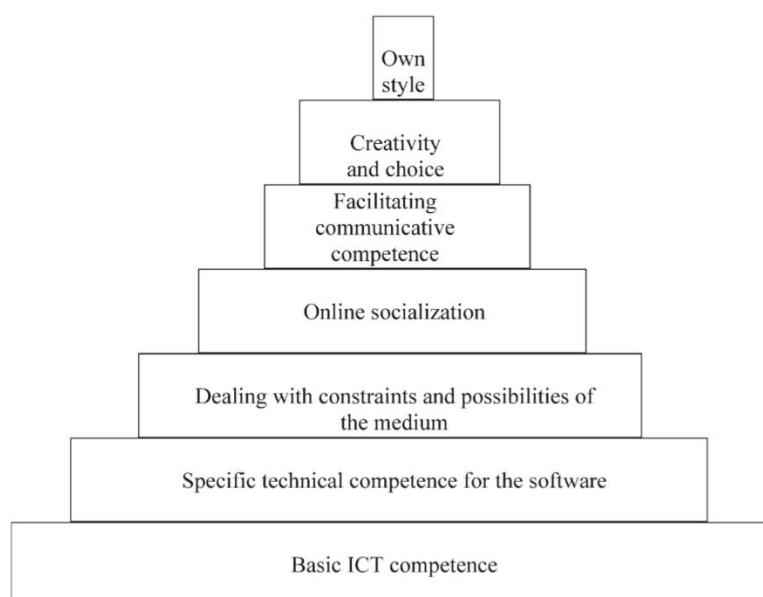
2.3 Online language instructors' need for professional development

Online language teaching is, and should be, treated as different from conventional f2f teaching. This also implies that online instructors have unique needs for conducting good teaching. Hampel and Stickler's (2005) well-known skills pyramid for online language instructors (see figure 1) assumes that the skills needed

for online language teaching build upon one another, ranging from general skills to more specific ones.

Although the skills pyramid includes many essential skills, Compton (2009) notes that important skills such as application of language learning theories, online language assessment and task evaluation have been overlooked. The conclusion that can be drawn from Compton's (2009) and Hampel and Stickler's (2005) proposed needs for online language instructors is that both technical and pedagogical skills are required. Put differently: for online language instructors to be able to develop e-assessment tasks that support students' higher-order thinking, understanding both the affordances of e-learning and the features of online pedagogy is essential.

Figure 1. Hampel and Stickler's (2005:317) Skills pyramid



Arguably, then, the special needs of the online language instructor necessitate professional development specifically aimed at online instructors. Guichon and Hauck (2011:188) explain that the instructor is “the lynchpin around which successful online learning revolve”. For the online language instructor to be truly successful, *continuous* professional development is necessary. However, the transition from traditional f2f teaching to online teaching is seldom followed by professional development of academic staff, and as a consequence often results in “online practices that just replicate conventional classroom environments, delivering inadequately designed courses through instructors who have no prior experience or training in online teaching” (Adnan 2017:88). Moreover, the rapid development of technology, and of CALL, demands continuous professional development among instructors (Son 2018). Egbert and Hanson-Smith (2007) point out that while all areas of language teaching are in need of regular professional

development, CALL is perhaps the one area most in need. This has several reasons, including rapid technological advancements, lack of sufficient foundational competencies in teacher training programs and the wide variety of technological tools and platforms available. While Egbert and Hanson-Smith (2007) mainly discuss the professional development needs of f2f teachers using CALL in their classroom, the same can be said about online language instructors' needs.

Recognizing the need for continuous professional development among CALL instructors, Son (2014) undertook a study of professional development in the field of CALL. In this study, 45 members of an international association of CALL, both school teachers and university lecturers, completed a questionnaire on the topic. The study discovered that informal learning activities, such as reading journal articles or books, participating in email lists and connecting with other CALL instructors through social networks, are more common than formal training activities. Son (2014) concludes that this indicates that CALL instructors are autonomous and social learners. CALL instructors' limited participation in formal training could perhaps also be an indication of lack of formal training opportunities.

3 The present study

As shown above, although various aspects of HOTS and CT have been explored in previous research, it remains an area that needs more attention in online L2 learning and teaching. In particular, little is known about online EFL instructors' perceptions of, and experiences with, HOTS. Thus, the present study aims to address the following research questions:

1. What are online EFL instructors' perceptions of HOTS in L2 learning?
2. How do online EFL instructors consider HOTS in the development of e-assessment tasks?
3. What kind of training, if any, do online EFL instructors have in developing e-assessment tasks that target students' HOTS?
4. What type of challenges, if any, do online EFL instructors find in developing e-assessment tasks that support HOTS?

Similarly to the tradition in EFL teaching in many countries, English courses at Swedish universities are divided into linguistics and literature modules. Thus, the groups of informants in the present study consist of linguistics instructors, literature instructors and instructors teaching both subjects (see 3.1.1).

3.1 Methodology

3.1.1 Participants

As relatively few online English courses are given at Swedish universities, the participants in this study were chosen through convenience sampling (Dörnyei 2007). The single criterion for selecting participants was that they were teaching an online English course during the Spring semester 2019. The aim was to invite all instructors who fulfilled this criterion. Of 46 invited instructors, a total of 19 instructors teaching English online at different Swedish universities participated in

the study. It is, however, possible that some online EFL instructors were not invited as course instructors are not always mentioned on the course page. In order to reach such participants, emails with an invitation were sent out directly to the instructors or, when the email address of the instructor could not be found, to a representative of the department.

Table 2 provides details about the participants. The column *Courses* shows which courses the participants teach. At Swedish universities, 30 credits equal one full-time semester of study. The courses English 1-30, 31-60 and 61-90 are first cycle courses, while courses at a level higher than 91 credits are second cycle courses.

Table 2. Participants (n=19)

Participant	Age	Years of experience	Highest degree	Courses (credits)	Subject
1	41-50	10-15	Master's	1-30, 31-60	Literature
2	51-60	15+	PhD	91+	Linguistics, literature
3	51-60	0-3	Master's	1-30, 31-60	Linguistics, literature
4	41-50	4-9	PhD	1-30, 31-60, 61-90	Literature
5	41-50	4-9	PhD	1-30, 31-60, 61-90	Literature
6	41-50	10-15	PhD	61-90, 91+	Linguistics
7	31-40	10-15	PhD	1-30, 31-60, 61-90	Literature
8	41-50	4-9	PhD	1-30, 31-60, 61-90, 91+	Linguistics
9	41-50	0-3	Master's	1-30	Literature
10	61+	15+	PhD	1-30, 31-60, 61-90, 91+	Linguistics
11	61+	15+	Master's	1-30	Linguistics, literature
12	51-60	15+	PhD	1-30, 31-60, 61-90	Linguistics, literature
13	41-50	10-15	PhD	31-60, 61-90, 91+	Linguistics
14	31-40	4-9	PhD	1-30, 31-60, 61-90, 91+	Literature
15	41-50	10-15	Master's	1-30, 91+	Literature
16	31-40	15+	Master's	1-30, 31-60	Literature
17	31-40	0-3	PhD	1-30, 31-60, 61-90	Linguistics, literature
18	51-60	15+	PhD	1-30, 31-60, 61-90, 91+	Linguistics
19	41-50	4-9	PhD	31-60, 61-90	Linguistics

3.1.2 Procedure

The invitation sent to the participants included a link to a Google Form questionnaire (Appendix 1). Questionnaire was considered a suitable research method as it allows for a higher degree of anonymity (Muijs 2004), which was seen as crucial as some questions regarding instructors' support from their employer can be considered sensitive. The first part of the questionnaire consisted of factual questions (Dörnyei 2007) aimed at finding out the participants' age, years of experience, educational level, and courses and topics taught.

The second part of the questionnaire included attitudinal questions (Dörnyei 2007) on higher-order thinking and HOTS e-assessment in online L2 learning. As the purpose was to find out the participants' perceptions on HOTS in L2 learning, no definition or explanation of HOTS was given to the participants. The attitudinal questions consisted of multiple-choice items and Likert scale items. Rating scale items were chosen for their ability to "combine the opportunity for a flexible response with the ability to determine frequencies, correlations and other forms of quantitative analysis" (Cohen, Manion & Morrison 2011:327). Furthermore, rating scales are described as particularly suitable for tapping attitudes and opinions

(Cohen et al. 2011), which was part of the aim of this study. Even though rating scale items were deemed suitable for the purpose of this study, they do not come without limitations. Among the limitations mentioned by Cohen et al. (2011) is respondents' tendency to opt for the mid-point. In order to avoid this, a 6-point scale was used in this study.

4 Results

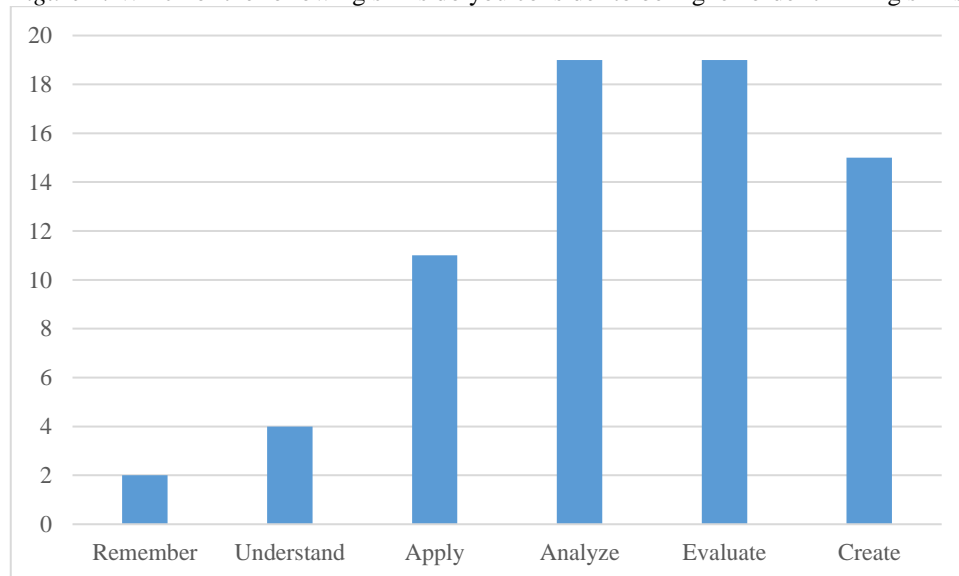
Sections 4.1, 4.2, 4.3, and 4.4 provide answers to the research questions mentioned in section 3.

4.1 What are online EFL instructors' perceptions of HOTS in L2 learning?

The participants were asked if they would be able to define HOTS, if requested. To this question 17 participants (89%) replied affirmatively, while 2 participants (11%) replied that they would not be able to define HOTS. The participants were then asked which skills among Remember, Understand, Apply, Analyze, Evaluate, and Create, they considered to be higher-order thinking skills (see figure 2). All participants agreed that Analyze and Evaluate are HOTS and 15 participants (79%) believed that Create is a higher-order thinking skill. The majority of the participants also included Apply in the definition of HOTS. With regards to the instructors' views on HOTS, some differences between linguistics and literature instructors were noted. While 50 percent of the literature instructors believed Create to be a higher-order thinking skill, 83 percent of the linguistics instructors and all instructors teaching both subjects did.

The instructors were asked how important they believed the development of higher-order thinking is in language courses. On a 1-6 scale where 1 represents "not important at all" and 6 represents "very important", the mean was 5.6. This shows that instructors in language courses considered the development of HOTS to be highly important. Moreover, the instructors were inclined to believe that higher levels of higher-order thinking help students learn a second language. Of the 19 participants, 15 replied affirmatively on this question. Taken together, the results of these two questions show that the participants in this study considered HOTS of importance in L2 learning.

Figure 2. Which of the following skills do you consider to be higher-order thinking skills? (N=19)

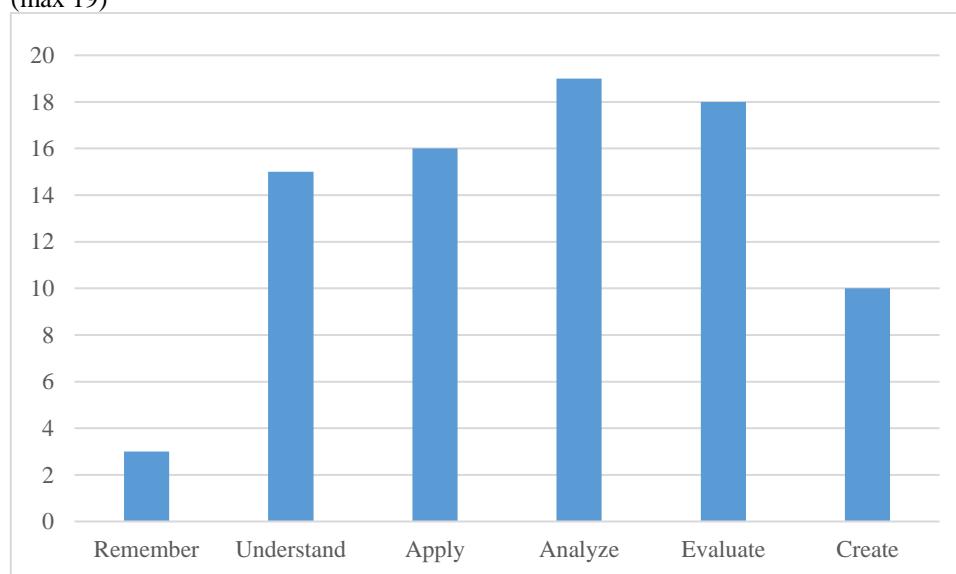


4.2 How do online EFL instructors consider HOTS in the development of e-assessment tasks?

The analysis of the data indicates that the instructors participating in this study thought e-assessment that target HOTS is important in L2 learning since they believed that e-assessment tasks that target higher-order thinking skills develop students' L2 proficiency. The mean for this question was 4.7 on a 1-6 scale where 1 represents “not important at all” and 6 represents “very important”. Moreover, the instructors were asked to rate the importance of e-assessment tasks in supporting students' development of higher-order thinking skills on a scale from 1-6. The mean among all instructors was 4.8.

All participants affirmed that they consider HOTS in the development of e-assessment tasks. The participants were asked which skills the e-assessment tasks in their courses target (see figure 3). The skills mentioned were Analyze, Evaluate, Apply and Understand. Even though 15 participants (79%) mentioned that Create is a higher-order thinking skill, only 10 participants (53%) have developed e-assessment tasks that target this skill.

Figure 3. Which of the following abilities do the e-assessment tasks used in your course target? (max 19)



Similar to the instructors' views on HOTS, some differences between linguistics and literature instructors can be noted regarding which skills they intend to target in e-assessment tasks. Linguistics instructors (33% and 83%) and instructors teaching both linguistics and literature (20% and 100%) reported that they target the skills Remember and Understand to a larger extent than literature instructors (0% and 62.5%). Similarly, Create was only reported to be assessed by one (12.5%) literature instructor, while three (67%) linguistics instructors and all instructors teaching both subjects reported that the e-assessment tasks used in their courses target this skill.

The instructors were asked if they feel confident in their ability to develop e-assessment tasks that target HOTS. On a scale from 1-6, where 1 is Strongly disagree and 6 represents Strongly agree, the average response was 4.7. The instructors were then questioned more specifically on how comfortable they felt with developing e-assessment tasks that target students' ability to remember, understand, apply, analyze, evaluate and create (see table 3). The results of these two questions indicate that instructors working with online EFL courses feel confident in developing HOTS e-assessment tasks.

Table 3. Mean for how comfortable instructors feel with developing e-assessment tasks that target the skill Remember/Understand/Apply/Analyze/Evaluate/Create

Skill	Remember	Understand	Apply	Analyze	Evaluate	Create
Mean	3.8	5.1	5.0	5.1	4.9	4.2

It is interesting to note that there were differences in how comfortable the linguistics instructors, the literature instructors and the instructors teaching both subjects felt in developing e-assessment that target the skill Remember. The Kruskal-Wallis H

test showed that the mean of the instructors teaching both subjects is statistically significantly higher than the mean of the literature instructors ($p = .03$).

4.3 What kind of training, if any, do online EFL instructors have in developing e-assessment tasks that target students' HOTS?

The participants were asked if they had been offered any kind of training by their university in how to target students' HOTS/CT. A total of seven participants (36%) replied that they had been offered some kind of training, while 12 participants (63%) had not been offered any training. The forms of HOTS/CT training offered are outlined in table 4.

The participants were also asked if they themselves had taken any initiatives to training in how to target students' HOTS/CT. Of all instructors, 12 participants (63%) replied that they had taken own initiatives to this kind of training and seven participants (33%) that they had not. The forms of instructor-initiated HOTS/CT training are outlined in table 5.

Table 4. Forms of offered HOTS/CT training

Forms	Courses	Workshop	Seminars	Podcasts
Number	5	4	1	1

Table 5. Forms of HOTS/CT training initiated by the instructors

Forms	Books	MOOC	Workshops	Pedagogy courses	Lecture	Discussions	Assessment course
Number	6	1	1	1	2	1	1

The majority of the participants (11 participants, 60%) replied that they need more training in how to target students' HOTS/CT through e-assessment.

4.4 What type of challenges, if any, do EFL teachers find in developing e-assessment tasks that support HOTS/critical thinking?

Lack of technical and pedagogical support and attitudes were investigated in order to see if these perhaps worked as challenges for the implementation of e-assessment tasks that support students' development of HOTS. The participants were asked to indicate their level of agreement on a scale from 1-6 with a number of statements regarding attitudes and support (see table 6).

Table 6. Attitudes to and support of HOTS e-assessment

Statement	Mean
1. The development of students' higher-order thinking skills is discussed in my department	3.7
2. The development of students' higher-order thinking skills is considered important in my department.	4.9
3. I'm given the technical support needed to develop e-assessment tasks that target higher-order thinking	3.3
4. I'm given the pedagogical support needed to develop e-assessment tasks that target higher-order thinking	2.9

The participants were given a list of supposed challenges in developing e-assessment tasks that support students’ higher-order thinking skills and were requested to state the main challenges they faced. Table 7 outlines the total results, showing that time is considered as the main challenge. Two instructors also mentioned in the free text field students’ lack of language proficiency among the main challenges for developing e-assessment that support HOTS in language courses.

Table 7. Challenges in developing HOTS e-assessment

Challenge	Percent
I do not have the technical skills needed	22%
I’m not sure what higher-order thinking is	0%
I do not have the pedagogical skills needed	20%
I do not have enough time to develop these e-assessment tasks	61%
I do not consider higher-order thinking important in language courses	0%
The learning management system does not support e-assessment tasks that target higher-order thinking:	11%
Grading e-assessment tasks that target higher-order thinking skills takes a long time and I do not have that time	61%
I do not feel that I have the support needed from my department to develop these e-assessment tasks	17%
I’m not interested in higher-order thinking	0%

5 Discussion

The first research question investigated online EFL instructors’ perceptions of HOTS. The results show that there is a general agreement of what constitute HOTS among the instructors. Most of the participants included Analyze, Evaluate, and Create in the definition of HOTS. Apply was also included in their understanding of HOTS by the majority of the participants. While Apply is considered a LOTS in the chosen definition, it is by some considered a higher-order thinking skill (Bissell & Lemons, 2006). Moreover, the results strongly indicate that Swedish online EFL instructors consider HOTS important in L2 learning. There is an agreement that higher levels of HOTS help students learn an L2. At the same time, the instructors mention that HOTS are discussed and considered important in their department. Taken together, these results point to the fact that instructors know what HOTS are and that they consider it important in L2 learning and teaching.

The second research question sought to investigate if and how online EFL instructors consider HOTS in the development of e-assessment tasks. The results show that there is a general consensus that e-assessment that targets HOTS help students both develop L2 proficiency and higher-order thinking skills, which is in line with the instructors’ beliefs about the importance of HOTS. All the instructors mentioned that they consider HOTS in the development of e-assessment tasks and that they feel comfortable with this in general. The general agreement about the importance of HOTS and the fact that all the instructors consider HOTS in developing e-assessment tasks point to the important role of the instructor in

implementing graduate attributes, such as HOTS, in teaching and assessment as mentioned by Barrie (2006).

Contrary to Jones' (2009) study, the participants in the present study who considered HOTS important made efforts to make this explicit in their teaching. This suggests that the instructors perceive HOTS as part of their disciplinary knowledge. This is further strengthened by the high agreement of the importance of HOTS in L2 learning. Moreover, while almost all the instructors reported that the e-assessment tasks in their courses target the skills Analyze and Evaluate, approximately 50 percent of the participating instructors mentioned that the e-assessment tasks in their courses target the skill Create. The high focus on the skills Analyze and Evaluate and relatively low focus on Create are in line with previous studies among online instructors in general (McNeill et al. 2012). Both the present study and McNeill et al.'s (2012) study discovered that online instructors target the skill Create to a low extent and that they feel uncertain about how to target it through e-assessment tasks.

Besides the higher-order thinking skill Create, instructors reported a strong focus on and confidence with designing e-assessment tasks that target the other two HOTS: Analyze and Evaluate. The findings of this study are partly in line with Johansson (2020), in which it was found that e-assessment tasks that target Analyze are the second most common e-assessment type, while e-assessment that targets Evaluate is relatively rare and e-assessment tasks that target the skill Create are the least frequent.

The third research question sought to explore what kind of training on teaching higher-order thinking, if any, online EFL instructors have taken part in. The results show that the majority of the instructors, approximately 60 percent, had either been offered or themselves taken initiatives to training on how to target students' HOTS. At the same time, 60 percent of the participating instructors felt that they needed more training. That the majority of the instructors have taken part in, or taken own initiatives to participate in, HOTS training further strengthens the claim that HOTS is considered important by the participants. As shown in previous research (Son 2018), today's rapid technological development necessitates online language instructors' continuous professional development. The combination of the high proportion of participants mentioning that they have not been offered any kind of training in how to target students' HOTS through e-assessment and the frequent mention of lack of pedagogical and technical skills as challenges suggest that universities offering online language courses have not fully understood the special needs of the online learning environment. Online learning should not be a replicate of f2f learning (Adnan 2017); rather, it is a unique learning environment that demands particular skills suitable for its purpose. Instructors' continuous training does not necessarily have to be in the format of formal training. The majority of the instructors mentioned that they had taken own initiatives to training in HOTS, which is in line with the findings of previous research within the field. Son (2014) discovered that CALL instructors prefer informal learning activities such as reading articles and books, which was also a popular activity among the participants in this

study. Furthermore, in the same study by Son (2014), CALL instructors are described as “autonomous and social learners” who make use of email lists and social networks in their continuous learning. However, very few mentions of these social learning activities were made among the participants in this study.

The last research question addressed the challenges online EFL instructors experience with developing HOTS e-assessment tasks. A theme that came through when asked about these challenges is that of instructors experiencing lack of time in both developing and grading such tasks. This has previously been noted in other studies that look into the presence of higher-order thinking in CALL (Comas-Quinn 2011, Ganapathy et al. 2017) and in f2f education (Jones 2008). Another theme that is evident is that of low pedagogical and technical skills. As proposed by previous studies (Compton 2009, Hampel & Stickler 2005), online language instructors need both technical and pedagogical skills to conduct good teaching. It is likely that the development of HOTS e-assessment tasks in CALL is perceived as more time consuming than in f2f education due to lack of pedagogical and technical skills and support.

6 Conclusion

The result of the present study indicates that online EFL instructors find that higher-order thinking is an important concept in L2 learning in general and that it needs to be considered in the development of e-assessment tasks. While most of the instructors in the study feel confident in developing HOTS e-assessment tasks, there are challenges such as lack of time, technical as well as pedagogical skills and support. The study also indicates that instructors want opportunities for both support and training that focus on how to develop students’ thinking skills through e-assessment tasks. Further, it can be concluded that since previous studies indicate that there is a strong connection between HOTS and L2 learning (Soodmand Afshar & Movassagh, 2014; Yang & Gamble, 2013), the neglect of these may lead to negative consequences for students participating in online language courses.

It is interesting to note that there seems to be some differences between linguistics and literature instructors’ perceptions of HOTS and HOTS e-assessment. A further exploration of these differences is not within the scope of the present study, but clearly a topic that is worth further investigation. It can be mentioned, however, that in light of the fact that critical thinking has been proven to be discipline-specific (see e.g., Jones 2009), a possible explanation for the differences is that literature and linguistics instructors have different views of what constitute HOTS and how to tap these skills through e-assessment tasks based on their discipline-specific understandings of this concept.

Interestingly, the present study, as well as Johansson’s (2020), indicate difficulties in developing e-assessment tasks that cover the higher-order thinking skill Create. As it is defined by Krathwohl and Anderson (2001), this skill does not seem to be applicable within online L2 teaching and as such, there seems to be a need for a revised framework for assessing and developing HOTS in CALL. Such

a framework would ideally be based on online instructors' views and experiences with HOTS e-assessment.

Among the limitations of the present study is the research method used. While a questionnaire may reach a large population, it does not provide opportunities for deeper understanding of the topic. One way forward would be to conduct an interview study investigating Swedish online EFL instructors' perceptions of the topic studied in this paper. Another limitation that should be mentioned is the number of participants. As there is no information on the number of university instructors working with online English courses in Sweden, it becomes difficult to draw conclusions about how representative the result of this study is. Despite these limitations, however, the study clearly points to the importance and challenges in developing HOTS e-assessment tasks in online EFL courses. This has implications for online EFL instructors' continuous professional development.

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Appendix 1.

Higher-order thinking e-assessment in English courses

This questionnaire aims at investigating university EFL teachers' attitudes to and experiences with developing e-assessment tasks that target higher-order thinking skills, and their epistemological beliefs. In this study the term "e-assessment task" includes everything that the students have to complete in order to pass the course. Please note that the questionnaire should only be answered by teachers working with online English courses. Participation is completely voluntary and participants may refuse to complete the study at any time or refuse to answer any of the questions for any reasons. All responses will be kept confidential. If you have questions or comments, please feel free to contact me at evelina.johansson@sprak.gu.se. Thank you for participating in this study!

*Obligatorisk

1. How old are you? *

Markera endast en oval.

- 20-30
- 31-40
- 41-50
- 51-60
- 61+

2. How many years experience do you have with teaching English online? *

Markera endast en oval.

- 3 years or less
- 4-9 years
- 10-15 years
- More than 15 years

3. What is your highest level of education? *

Markera endast en oval.

- Master's degree
 PhD

4. Which of the following courses do you teach? *

Markera alla som gäller.

- English 1-30 credits (A)
 English 31-60 credits (B)
 English 61-90 credits (C)
 English advanced level (above 91 credits)

5. Which of the following topics do you teach? *

Markera endast en oval.

- Linguistics
 Literature
 Both linguistics and literature
 Övrigt: _____

6. If requested, would you be able to define the term "higher-order thinking skills"? *

Markera endast en oval.

- Yes
 No

7. Which of the following skills do you consider to be higher-order thinking skills? *

Markera alla som gäller.

- Remember
- Understand
- Apply
- Analyze
- Evaluate
- Create

8. How important do you believe that the development of students' higher-order thinking skill is in language courses? *

Markera endast en oval.

	1	2	3	4	5	6	
Not important at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very important

9. Do you believe that higher levels of higher-order thinking help students learn a second language? *

Markera endast en oval.

- Yes
- No
- I don't know

10. To what extent do you believe that e-assessment tasks that target higher-order thinking skills develop students' proficiency in the second language? *

Markera endast en oval.

	1	2	3	4	5	6	
Not at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	To a large extent

11. How important do you believe e-assessment tasks are in supporting students' development of higher-order thinking skills? *

Markera endast en oval.

	1	2	3	4	5	6	
Not at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very important

12. When developing e-assessment tasks, do you consider higher-order thinking skills? *

Markera endast en oval.

- Yes
 No

13. How do you find developing e-assessment tasks that target higher-order thinking skills? *

Markera endast en oval.

	1	2	3	4	5	6	
Very difficult	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very easy

14. Which of the following abilities do the e-assessment tasks used in your course target? *

Markera alla som gäller.

- Remember
- Understand
- Apply
- Analyze
- Evaluate
- Create

15. I feel comfortable in developing e-assessment tasks that target students' ability to *

Markera endast en oval per rad.

	1 Strongly disagree	2	3	4	5	6 Strongly agree
Remember	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Understand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Apply	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Analyze	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evaluate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. Which skills do you believe the following e-assessment tasks can target?

Markera alla som gäller.

	Remember	Understand	Apply	Analyze	Evaluate	Create
Take-home exams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written assignments/essays	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Term paper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oral presentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discussion forum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Peer-reviews	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e-Portfolio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multiple-choice question quizzes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Have you been offered any training by your university in how to target students' higher-order thinking/critical thinking? *

Markera endast en oval.

- Yes
 No

18. If you have been offered training in how to target students' higher-order thinking/critical thinking by your university, in what format was this training?

Markera alla som gäller.

- Workshop
 Course
 Seminar

Övrigt: _____

19. Have you yourself taken any initiative to training in how to target students' higher-order thinking/critical thinking? *

Markera endast en oval.

Yes

No

20. If you have taken initiative to training in higher-order thinking/critical thinking, in what form was this training?

Markera alla som gäller.

MOOC

Lecture

Youtube tutorial

Book

Övrigt: _____

21. Do you feel that you need more training in how to target students' higher-order thinking skills/critical thinking through e-assessment tasks? *

Markera endast en oval.

Yes

No

22. Please indicate your level of agreement with the following statements *

Markera endast en oval per rad.

	1 Strongly disagree	2	3	4	5	6 Strongly agree
The development of students' higher-order thinking skills is discussed in my department	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The development of students' higher-order thinking skills is considered important in my department	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm given the technical support needed to develop e-assessment tasks that target higher-order thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm given pedagogical support needed to develop e-assessment tasks that target higher-order thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to design e-assessment tasks that target higher-order thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Which of the following alternatives do you find to be the main challenges in developing e-assessment tasks that support higher-order thinking? (You can choose several options)

Markera alla som gäller.

- I am not sure what higher-order thinking is
 - I do not have enough time to develop these e-assessment tasks
 - I do not have the technical skills needed
 - I do not consider higher-order thinking important in language courses
 - I do not have the pedagogical skills needed
 - The learning management system (läroplattformen) does not support e-assessment tasks that target higher-order thinking
 - Grading e-assessment tasks that target higher-order thinking skills takes a long time and I do not have that time
 - I do not feel that I have the support needed from my department to develop these e-assessment tasks
 - I'm not interested in higher-order thinking
- Övrigt: _____